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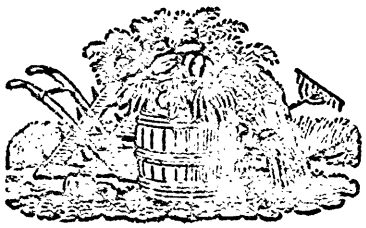
THE COLONIAL FARMER,

DEVOTED TO THE AGRICULTURAL INTERESTS OF NOVA-SCOTIA, NEW-BRUNSWICK, AND PRINCE EDWARD'S ISLAND.

VOL. 1. HALIFAX, N. S. OCTOBER, 1841. NO. 4.



THE COLONIAL FARMER.

HALIFAX, N. S., OCTOBER, 1841.

A REPORT UPON THE CULTURE OF WHEAT,

Read at a Quarterly Meeting of the King's County Agricultural Society, on the 6th September, 1841—By Chas. K. Harris, Esq.

Of all the farinaceous Grains which are cultivated for bread wheat is the most useful and takes the first rank. It will grow in almost every part of the globe, and thrives not only in temperate, but in very hot and very cold regions. In Africa and Siberia, as well as in the United States and Great Britain. Although this Grain is so important, we are ignorant of the country whence it was first derived. It cannot be doubted, however, that the numberless varieties which we now possess have all sprung from one origin and are composed of similar elements—some of them indeed to be classed as distinct species, the Egyptian wheat, for instance, which produces several ears from the same stem, but even this, when repeatedly sown upon poor land, gradually loses its supernumerary ears and at length all appearance of variety.

Soil.—A good wheat soil should always possess a certain degree of consistence, and consequently, the larger the proportion of clay and the less sand which it contains the better; for though light soils composed chiefly of sand and gravel will often produce wheat of good quality, yet heavy loams and strong clays yield that which is weightiest in the bushel and most productive in the crop. If strong with a small quantity of sand it has about 15 per cent. of lime, it may be classed among the best wheat soils, provided it also contain a sufficient portion of nutritive mould. A good soil must never be cold or sour and never wet—and wherever this is the case, draining is indispensable. The necessity of the presence of lime in the soil is evident from the fact, that it exists both in the straw and kernel of wheat, and, if it be not in the soil, it must be supplied or wheat will not grow. The large crops now raised in Great Britain may be attributed to the free use of lime by the Farmers there, while the Americans who hardly ever use it find that their crops are becoming annually smaller. The farmer should be anxious to create such a soil as will give him the handsomest return for his outlay and to supply all necessary ingredients where they are deficient. Thus if his soil has too much clay, he will mix sand—if too much sand he will add clay, and he will take care to provide an ample supply of lime. A few bushels of this material (even so small a number as two or three to the acre) are said to make an observable difference but 30 bushels to produce surprising effects. Animal manure is only proper to be used when it has undergone fermentation—wood ashes are also recommended when used with other things. In England it is the general practice to give a heavy top-dressing of compost when wheat is to be grown. Marsh mud has been applied with excellent effect in this Province.

Ploughing.—Deep ploughing on most lands as they naturally are and on all as they should be, is essential to good wheat crops. They are thus enabled to stand the drought of our hot summers and to derive the utmost nourishment from the soil. The roots of wheat penetrate to a great depth and spread wide. They are of two sorts, the first springing immediately from the seed called therefore seminal roots, and serving to fix the plant firmly in the ground; the other called coronal roots, spring from the stalk and collect nourishment from every quarter. These latter roots always form themselves immediately below the surface of the soil and are the bases of new stems which are tillered up and thus greatly increase the productiveness of the plant. One grain of wheat has been known to produce a plant with 116 fine ears, one of which counted 75 grains, and this ear was not larger than a great proportion of the whole—an increase of more than 4000 fold.

Seed.—There is a surprising difference in the productiveness of different kinds. An extremely interesting account of an experiment on the relative values of several varieties is published in the first volume of the Journal of the Royal English Agricultural Society, page 39. In November 1837, Mr. Morton dibbled 16 different kinds of wheat. The grains were covered 2 inches deep, and were 3 inches from each other, and the rows were exactly 6 inches apart. The following is an extract from his account and is confined to two of the varieties producing the greatest and the smallest yield—

No.	Name of wheat	No. of seeds planted	Loss of seeds, from birds, &c.	Produce of 99 square feet: Plants or Roots.	Produce of 99 square feet: Heads of Grain.	No. of ears in the square foot.	Average No. of heads per root.	Weight of grain produced from 99 square feet.	Weight of Wheat ℔ acre	No. of bush. ℔ acre at 64 lb ℔ bushel	Length of straw	Weight of Straw produced from 99 square feet	Weight of Straw ℔ acre	Weight of roots with 2 inches of straw.	Weight of Roots ℔ acre.
									T ct. qr. lbs.		ft	lbs.	T ct. qr. lbs.	lbs.	T ct. qr. lbs.
12	A red wheat..	792	252	540	3453	35	6 2-5	12	2 5 1 12	82¼	5	22	4 7 0 2	9	1 15 2 6
13	Egyptian cone bearded.	792	528	264	711	7	21-3	3 3-8	0 13 0 24	23	6	8¼	1 11 2 2	3	0 11 3 4

In page 123 of the same volume is a comparative statement of the result of a trial of four different kinds by Col. LeCouteur. The product of a kind called the Whitington was 33 bushels to the acre and the net profit £2 7s. 6d.; whereas the Belle-vue Talavera, raised on the same kind of soil, manured in the same manner, was 52 bushels to the acre and the net profit £8 12s. 9d. The difference of product in these cases is so striking as to make it evident that very much depends upon the kind of wheat now produced in England than formerly, is thought to be attributable to the greater attention given to the selection of seed from the best and most prolific varieties. The grain that ripens first in the ear and is separated with the greatest ease is the most proper for seed, as these circumstances shew that it is the most mature. A change of soil and climate has been highly beneficial to wheat. It seems as if it were an inscrutable law of nature that all seeds to maintain their vigour require a change of soil. The nature of the soil upon which the seed is to be sown should however be taken into consideration, and it is generally thought advisable to procure it from land of an inferior quality, as well as from a drier or warmer climate; for strong lands from poor light soils and for friable loam from stiff clays—for dike from upland and vice versa. Wheat raised on burnt land on the mountainous parts of our own township has also been strongly recommended for our old uplands and dike. It is extremely important to the preservation of grain for seed that it should be carefully guarded from dampness and heating. From experiments made in 1817 by the French Government, it was found that grain which has suffered a commencement of germination rises only in proportion of one half of the seed employed; if strongly germinated in the proportion of 1-3 and if fired or moulded of not more than 1-5. Wheat has been known to vegetate when 5 years old, but in general it should not be sown when more than one year old—seed should also be selected with regard to its ripening qualities: some varieties being earlier than others by 3 weeks. These different kinds ought by no means to be mixed and sown together. In such a field a part of the grain will be dead ripe, while another part will be perfectly green and not at all in a fit state to cut. It need hardly be said that the seed should be plump and perfectly clean. Some Farmers seem to think that any thing in the shape of wheat, however imperfect or defective the berry, if it will only grow, may be used as seed. This is very mistaken policy. It is impossible that the young plant should be as vigorous and perfect when springing from defective and shrunken seed as when growing from that in which the peculiar principles of the plant are fully developed, and the germination commences without check or hindrance. The expediency of clean seed will be admitted if we consider that weeds take strong hold of the land, are hard to eradicate, and are astonishingly gross feeders. It would be better for a farmer to pick over his seed wheat by single handfulls than to sow tares, cadlock and other vegetable nuisances; but the loss resulting from weeds will be hereafter more fully considered.

Time of sowing.—In this Province much depends upon the time of committing the seed to the ground, and experience has proved that it is always desirable to sow our spring wheat on the frost. A little more seed may be required, but the larger produce will in general make ample compensation. The grain too has so much longer time to grow as to be placed beyond the danger of rust, which is hardly ever found to attack the early sown wheat. From statements made to me by different farmers it does not seem at all necessary to harrow the surface of the land at the time of sowing in order to cover the seed. Many have scattered the grain on the snow—others have thrown it on the hard naked surface when the harrow could make no impression; and in both cases as good crops have been received as when the harrow was used. It is immaterial too how wet or soft the surface may be at the time of sowing, provided the frost is still in the ground, and that no water has been allowed to stand on the land. The action of the frost seems to answer every purpose of a harrow and as it leaves the soil, throws open its bosom and lets in the grain. If the land be well ploughed and the furrows well laid up, the grains when sown will roll into the hollow part of the furrow slices, and as the frost mellows and pulverizes the soil, the tops of these furrows will fall into the drills, as they may be called and completely cover the seed. In addition to the action of the frost we generally have heavy rains in spring which wash into the soil whatever is upon its surface, as they often wash out that which has been carefully covered by the harrow, later in the season. I would not however be understood as lightly esteeming the use of the harrow at any time. It can often be used before the frost is out of the ground when the surface is softened and dried by the sun and wind, and it is unquestionably better, if possible, in all cases to cover the seed, than to allow it to remain exposed on the surface for an indefinite time; but I would not delay to sow in consequence of not being able to use the harrow immediately, whether the frost be in or out of the land; for should neither the frost nor wet weather cover the seed, there always will be a time to harrow and a few days exposure of it cannot make any great difference. The advantages of early sowing are obvious. The spring work is not only much advanced and more time allowed for other indispensable operations of the farm, such as preparing compost heaps, &c. but the harvest is thereby brought on at a time when the weather is generally favourable and before the fall rains set in, which have frequently injured and in some cases entirely destroyed the crop. Sowing on the frost was, I believe, first introduced here on occasion of inclosing new lands from the sea. These were so soft in the spring as to render it impossible to take cattle upon them after the frost was out, until it became too late to sow wheat; and the farmers were consequently obliged to sow while the frost was still in the land and the surface sufficiently hard to bear up the team. At the time of inclosing the Dead Dike on the Eastern part of our Grand Prairie this course was followed and it appeared to James Harris, Esq. your present Secretary, that it might be applied to the old Dike or Grand Prairie and to all other lands. He immediately acted upon the idea and found his expectations fully answered, and this has now become the invariable practice with many of our best Farmers in this township. The early sown grain too, being exposed to the spring rains is much more likely to come up—this is an important consideration, as Wheat has been known to be so musted and spoiled by lying long in the ground before rain, that it never came up at all. This was the case with a good deal of the seed sown last year after the spring rains were past, which were succeeded by a long spell of dry weather. Moisture is indispensable to vegetation. After the frost has left the ground, it ought never to be worked or sown when it is wet and out of order. The difference of a few days in this respect is not of much consequence and the farmer who waits for the proper period of sowing or planting, has often the satisfaction of seeing his crop overtake and distance that of his more precipitate neighbour. While on this part of the subject I cannot refrain, in passing, from again urging the immense importance of thorough ditching and draining, by which soils naturally cold and wet may be rendered not only more productive, but fit for the reception of the seed several days earlier than if these are neglected.

PREPARATION OF SEED.—The first step in preparing the grain for seed should be to screen, winnow and riddle it till perfectly freed from all improper admixtures. When this is thoroughly accomplished, it should be steeped in strong pickle and limed to prevent smut. The pickle should be sufficiently strong to buoy up an egg or potatoe, or, indeed, until the water will dissolve no more salt. The grain is steeped in a tub containing enough of the liquid to be a few inches higher, and to allow it to be well stirred, so as to bring the light grains to the surface from whence they are skimmed off, so long as they continue to rise. The water is then poured off and the grain put into a basket and placed over an empty tub to drain off the liquid. The wheat is then spread on the floor of the barn or granary and well sprinkled with sifted quick-lime which has been recently slacked with a small quantity of the liquid. About half a peck of lime is sufficient for a bushel of wheat, and it should be carefully stirred among the wheat that every grain may receive a portion; but many of our farmers find that a quarter of a peck carefully applied is sufficient. It does not seem necessary to wash and lime the seed for any particular length of time before sowing, nor that it should even be dry, though it is sown much easier when it is thoroughly dry. It may in fact be sown at any moment after liming. The chief requisite is so to apply the lime that every grain shall be covered with it. After the wheat is limed it should be occasionally stirred until it is sown, once or twice at least during each day, and it is said that it may be kept in that state when perfectly dry for any length of time without injury. The mode of preventing smut now detailed, besides its cheapness, is so certain and infallible that it would seem quite unnecessary to mention any other. The Messrs. Collins' of England who grew annually from 400 to 600 acres of wheat had only one instance of smut in forty years, and this was when the seed was not steeped, and it has never been known to fail when fairly applied by our farmers. Another recommendation of this mode is that besides the prevention of smut both the salt and the lime have undoubtedly a highly stimulating effect and increase the product of the soil.

QUANTITY OF SEED.—The quantity of seed depends upon whether it be sown broadcast, or dibbled or dribbled, and also in some measure upon the nature and condition of the land. It varies much in different countries. In England from 2½ to 4 bushels per acre are used when broadcast, and the crops there are not often excelled. In the United States the quantity varies from 1 to 2½, and in this Province from 1½ to 2½. As a general rule early sowing requires more seed than late, the grains being more exposed to destruction from the weather, &c. When, too, the berry is unusually plump and full, more is required than when it is lighter. On poor soils also, as a single plant will not throw out as many stalks as where the land is very rich and fertile, it would seem that more seed would be necessary. Rich land requires least of any. It may be remarked, that grain sown thin is less apt to lodge, as the stalks have more room, but it is more exposed to weeds.

MODE OF SOWING.—1. *Broadcast* is the mode almost universally pursued in this Province, and it is astonishing with what precision an expert sower regulates the prescribed quantity of seed to the acre. On the other hand the irregular distribution of the seeds by an inexperienced person occasions much waste and may be distinctly traced, some spots being covered too thick and others lying comparatively bare. It was formerly the practice for sowers to use a sheet hung over the right shoulder for the purpose of carrying the seed, but now they generally employ a basket suspended round the neck and held by the left arm thrust through the handle. This latter mode has certainly the advantage of occasioning the sower to measure the handfulls more accurately than when the seed is condensed at the bottom of the sheet.

2. *The Drill.* Drilling is described to be a more perfect and economical mode of sowing grain than when broadcast; for the seed is deposited with greater exactness and regularity in regard to depth and proportion of quantity than can be effected by the most expert seedsman. It is thus more equally covered and better secured from the depredation of birds, &c.

3. *The Dibble.* The practice of dibbling or setting the wheat; grain by grain, is pretty general in some parts of England. It is found to be cheaper than drilling (6 or 7 pecks dibbled being the usual quantity per acre, whereas in drilling 9 or 10 pecks would be required,) and it is considered by many, when well done as decidedly superior. The holes are made by men, but the seeds are dropped by women and children whose wages are very low. When correctly executed there can be no doubt that it not only saves at least a bushel of seed per acre but also sets the grains at equal distances as well as depth, which must, it is presumed, give more equal nourishment than can be ensured either by the drill or the broadcast systems. The straw is also said to be stronger and the product larger. Much difference of opinion however has been entertained in England as to the preferable mode of sowing wheat, and it is but fair to state that the broadcast system has still its advocates. The chief thing that seems to be desired is a deeper covering than can in general be given by this mode. All the seeds should be covered if possible 1½ or 2 inches below the surface of the ground. They thus obtain a firmer footing and the stalks are enabled to resist the winds and storms which would be likely to break them down or blow them over if covered more shallow. It is not however at all probable that either drilling or dibbling can often be used when the seed is sown upon the frost. After the grain is sown it is of much importance to run the ploughs in the hollows between the ridges. This opens a free course for the water and keeps the land dry and, as it occupies but very little time, ought never to be omitted when practicable. It also prevents the waste of the seed which falls into these hollows and which is found to produce scarcely any thing there, but which yields well when turned by the plough upon the ridge and covered by the furrow slice.

AFTER CULTURE.—The great effort of the farmer during the growth of the crop should be to keep the land perfectly free from weeds, and he should spare no pains or expense in this respect. It is quite lamentable to observe a field of grain, or indeed of any other description of vegetable production, overrun with these gormandizers, which withdraw the necessary nutriment from the crop and render it almost worthless. Few are aware how weeds or grasses growing in a grain crop detract from its value by lessening its product. A vigorous root of Cadlock or Thistle will draw from the earth the nutriment that would have given fullness to half a dozen ears of wheat, and when these or any other foreign substance is permitted to exist, the crop is sure to suffer in proportion to the quantity of the foul material present. Weeds are injurious in two ways: by the room they occupy to the exclusion of the valuable plants, and by the nutriment of which they rob the crop. On the best farms of England and Belgium not a plant or weed of any description can be found in a growing crop. Several experiments are recorded in Sinclair's Code of Agriculture, to show the difference of product between clean and foul fields.

1. Wheat. 7 acres sown broadcast. 1 was measured off and not a weed was pulled out of it, the other 6 acres were carefully weeded. The unweeded acre produced 18 bushels, the 6 weeded

acres 22½ bushels per acre, which is 4½ bushels or ¼ of the whole in favour of weeding.

2. Barley. A 6 acre field was sown with barley in fine tilth and well manured. The weeding, owing to a great abundance of charlock, cost 12s. per acre. The produce of an unweeded acre was only 13 bushels; of the weeded 28. Difference in favour of the weeding 15 bushels per acre; besides the land being so much cleaner for succeeding crops.

3. Oats. 6 acres were sown with oats. 1 acre ploughed but once and manured—produce only 17 bushels: another 6 acres ploughed 3 times, manured and weeded—produce 37 bushels per acre. This experiment proves that oats require good management and will pay for it as well as other crops—10 bushels of the increased produce may be fairly attributed to the weeding, and the other 10 to the manure.

It is admitted that the labour and expense of weeding a crop is considerable, but if the difference be such as is here stated, and there is no reason to doubt it, as it is abundantly corroborated by other experiments, then it should be more generally and promptly attended to than it is. If our farmers could raise 4½ bushels of wheat, 15 bushels of barley and 10 of oats, additional to their usual crop per acre the effect would at once be sensibly felt.*

Diseases of Wheat.—Smut and Rust are the principal diseases that prevail to any extent in this country. They are both occasioned by fungi or excrescences which fasten on the plants and are very injurious to the crops. The smut appears to be of a highly contagious character, and it will be communicated to sound wheat if this be put into a bag which has contained smutty wheat, however short a time it may have remained therein, or into a barrel which has held flour manufactured from smutty wheat. As the disease is highly offensive and cannot but, in some degree, affect the health of those who eat bread made from wheat infested by it, no farmer, in preparing his wheat for seed, will disregard the effectual remedy which has been already mentioned. With respect to rust, early sowing is generally the best preventive against that as well as most other diseases. The rust seems to prevail least on heavy soils and in spring wheats. In case however it should appear, a very simple remedy is described in the Colonial Farmer for August—which it is to be hoped will be confirmed on trial. It is to give the wheat a dressing of salt and water. The salt is said to be instant death to the fungus. The safest quantity of salt is 8 oz. and then the application may be rendered more effectual by frequent repetition without any danger of injury to the plants. This pickle is thrown over the grain by a man carrying a pail in one hand and a white wash brush in the other, and making casts as when sowing grain or else with a common watering pot swung with great force. Two men will get over 4 acres a day—the one to spread and the other to supply the mixture. This should be applied at the first appearance of the rust. In conversing lately with one of our most intelligent farmers on this subject, he suggested that fine salt might answer as well if applied when the dew was on. This suggestion is certainly worthy of notice.

Time of Harvest.—August is generally our Harvest month, but the time of cutting the grain will materially depend upon the time of sowing and other things being equal, early sown grain always comes to maturity soonest. Much difference of opinion exists among our farmers as to the proper time for cutting wheat, but the practice of early cutting seems to be rapidly gaining ground. The Albany Cultivator for August last contains some very interesting remarks upon this subject. For the sake of experiment, Mr Hannam, an English farmer, cut a sheaf of wheat on the 4th of August, 1840, green and full of sap—another sheaf on the 14th August in the state called "*raw*," the straw one foot from the ground yellow and above that, though to appearance green still, it was turning yellow—and on the 1st September a third sheaf which was ripe and the straw uniformly yellow. After careful calculations, which are detailed at some length in the Cultivator, it appears that the raw wheat had the advantage over the ripe in every respect, and Mr. Hannam estimates the comparative value of the wheat on an acre of each kind as follows:—

Green.....	£11	11	10
Ripe.....	12	7	0
Raw.....	13	7	3

It may be added that early cutting gives much more time for securing the crop (for the ground being hot and the days long it cures very rapidly) less waste in harvesting from the shelling of the grain and a better quality of straw. It is also said that the wheat makes better flour than that which stands until it is fully ripe, for the grain being long exposed to the sun and weather, the shell or husk becomes dark and thick and the flour is consequently less in quantity and of an inferior quality. Wheat when struck with rust, if it cannot be cured by the remedy before mentioned, should be cut without delay, as it is well ascertained that the circulation is at once obstructed and the plant derives no more nourishment from the soil; and, if the rusted stalk be immediately cut the head of the wheat seems to absorb all the nutriment which is in it and the grain will thereby be much larger and heavier than if the cutting be delayed. In proof of this an anecdote is related of two of our farmers who owned adjoining fields of wheat which were struck with rust at the same time. One cut his immediately and had twice as much grain in the sheaf as his neighbour who waited ten days longer. In these cases, the wheat should be bound as soon as it is fit and the stalks placed in an upright position in order that all the nourishment in them may ascend to the head.

Mode of Cutting.—The sickle and the cradle are the two Implements in use among our farmers for cutting all kinds of grain. But the cradle is becoming more and more generally used where the crop is not too heavy nor lodged. It seems to possess a decided advantage over the sickle by cutting more straw, and by spreading the grain more thinly on the ground, by which means it may be earlier cured and housed—a consideration of no trifling importance when the weather is catching and uncertain. Strict attention should be paid to putting the grain up properly when cut and to doing the work in a neat and farmerlike manner. Many farmers suffer much loss from carelessness in this respect. There is a vast deal of wheat and other grain put into the barn or stack before the straw or the green matter the sheaves may contain are cured and in such a state that the central parts of the sheaf heat, mould, and become nearly rotten. This is also occasioned by hurrying in the grain too soon after rain and while the bundles are still in a damp state, and frequently also by binding up the wheat too soon after it is cut and in too large bundles, especially if the straw be pretty green. The result in all these cases is bad wheat and musty and poor flour. Now all this may be avoided by care in the several processes through which the crop passes. In these as well as other cases, the judicious farmer will take care to observe due caution. He will neither make his bundles too large, nor

* After this essay was read, Mr. John Johnston stated to the society that he perfectly concurred in the ssatements made respecting the injurious effects of weeds upon grain crops; that last year he had weeded 8 acres of wheat and considered that he had had 1-3 more grain in consequence of it, and that this year he had weeded 6 acres. The weeding was chiefly done by boys at a small expense and the young wheat was not at all injured by being trodden upon.

have the straw too long on the ground unbound and exposed to the sun and wind, whereby the sap is dried up and no nutritive matter is communicated from the stalk to the grain. In fine weather it should never lie unbound 24 hours, and when bound the bundles should never be larger than 8 or 10 inches in diameter. There is much difference of opinion as to the expediency of using cap sheaves when stooking grain. In the olden time the farmer invariably put on these sheaves and this mode is still extensively followed, but at the present day many dispense with them, asserting that the grain is not apt to be so heated nor to sprout in a long period of wet weather as when cap-sheaves are used and that these by covering the heads of the wheat prevent them from being cured as soon as they would otherwise be. On the other hand it is urged that when cap-sheaves are well put on, they will protect a large part of the stook in the heaviest and longest rains and will generally prevent the water from penetrating far into the bundles and from wetting them about the bands, in consequence of which the bundles must be reopened and require a considerable time to dry. All things considered, the cap-sheaves seem fully entitled to hold their ground.

Mode of Threshing, cleaning.—The use of the flail still prevails in most parts of the country; but Threshing Machines, if not purchased at too dear a rate, would seem to deserve the preference. They thresh the wheat more clean and do not at all injure the straw, which if immediately stacked or moved away will be eaten by cattle as heartily as when fresh from the flail. Another great recommendation is that the work is soon despatched, whereas the labour of the flail is extremely tedious and protracted, and much loss is frequently suffered from the depredations of vermin. It is hardly necessary to expatiate upon the great advantage of having all kinds of grain perfectly cleaned. The farmer who spares no pains to effect this is sure to be well rewarded not only by the purity of his seed and the superiority of his flour, but also by the increased price for it which he will obtain and by the preference which will be invariably given to him in the market.

ESSAY ON AGRICULTURE,

Read before the Literary Society in Truro, in March, 1840—by a Member.

(Concluded.)

Turnips are not subject to any particular disease, but are almost invariably attacked by an insect called the turnip fly immediately after germinating, which continues its ravages with unabated industry during the whole season, although the plant is considered out of danger in the course of two or three weeks, or as soon as the rough or third leaf is properly formed. The most certain way to secure a crop and which scarcely ever fails, is strictly to observe the system I have just described and to drop a sufficient quantity of seed say three pounds to an acre.

In the course of three weeks after sowing the plants, which are perhaps ten to one in number more than are required, must be thinned out with a small hoe to about ten inches apart. This process is to be repeated in a fortnight afterwards, and every weed carefully destroyed, and the operation continued as long as any weeds continue to appear—should any remain they will reappear in the following Spring in great vigour, not only depriving the succeeding crop of much of the rich elements of the manure not appropriated by the former crop, but perhaps preoccupy the soil and choke in embryo the very plants the farmer may desire to cultivate. A crop of turnip placed at the distance above mentioned, viz. 26 inches wide in the drill, and the plants 10 inches apart, will completely cover the ground in the month of September, and yield from 600 to 800 bushels per acre. The same preparation and mode of culture is also required for Carrots and Mangel Wurtzel.

The value of these roots and the adaptation of our soil and climate in producing it has been tested on a small scale by myself for the last three years. I have fed oxen, cows, hogs, and sheep on turnips, potatoes and mangel wurtzel, an equal proportion of each boiled together in the same boiler, the only difference being that the hogs had their portion without being mixed with cut straw or chaff, while the other stock occasionally had theirs so mixed. The Beef was unusually fat for the time it was feeding, the sheep still fatter, and the cows acknowledged their gratitude by doubling the quantity of very rich milk. In consequence of the turnip being boiled, the butter had no taste of the turnip as is the case when given raw, the hogs made the very best of pork weighing about 180 lbs. when nine months old.

A Farmer in the State of New York, near Albany, fed twenty full grown Berkshire Hogs from the 1st November, 1838, on ruta baga or Swedish turnip and buckwheat bran, at the rate of six bushels of ruta baga and one of bran per day, fed them two raw meals and one warm boiled. When he began to feed them with roots the hogs were low in flesh, and at the termination of the three and half months they were too thrifty for breeding, and some of them fit for the butcher. He estimated that four quarts of corn each per day for the time they were fed with roots would not have brought them to a better condition. He then makes the following calculation:

4 quarts of corn per day for each hog would amount to 262 bushels in 3½ months, and which at 75 cents per bushel, would come to 196 dollars and 50 cents. The 105 bushels of buckwheat bran he valued at 15 cents per bushel, would make 17 dollars and 50 cents, and which deducted from the above sum would leave 179 dollars which sum divided by 630 the number of bushels fed out gives the value of a bushel of ruta baga used in this way 28½ cents per bushel. Deducting 4 cents per bushel or £7 6s 8d. per acre for the cost of raising the quantity being about the average product of an acre, leaves a nett profit of $154 25 cents or £36 2s. 6d. of our money; shewing, as the Editor of the Cultivator justly remarks, a demonstration of the utility of root culture. It ought not to be overlooked however that the value of a bushel of ruta-baga as above stated has been estimated by comparing its relative value to a standard which does not apply in this province. The average price of corn in this country is not overrated if we should call it 5s. per bushel, consequently the nett profit of ruta-baga when compared by the same standard would be 30 cents per bushel or £45 4s 1½d. per acre.

Attending the cultivation of this plant one great advantage in this country where labour is scarce and expensive arises from the circumstance that the work is performed at a season of the year after potatoes, the only other root crop cultivated in this country, are planted. By ordinary exertions I imagine there is scarcely any farmer in this country who may not raise at least one acre of this valuable plant every year. Say at all events that there are 500 bushels at a moderate computation, the nett profit would amount to £22,500 per annum. How can we procure a supply of manure necessary for cultivating this extra surface of ground in addition to the quantity of green crop now raised is the question that may be started by many? The answer is simply this, haul out about 200 loads of black mud in the month of October, immediately on taking it out of the swamp mix it up with 200 bushels of hot lime, make it into a heap 60 feet long and 16 broad, of a shape to turn

off the rain, let it remain there for 10 or 15 days or until the lime is completely slacked and has absorbed all the moisture from the mud, then turn it out into another heap, adding one load of barn manure to eight or ten of the mixture, cover it snugly over with a coat of long manure to enable it to ferment freely before the cold weather and you will have the best kind of manure to raise two acres of Turnips the following season.

The cultivation of this crop enables the farmer to raise a greater quantity of green crops than he otherwise could if potatoes were the only green crop produced, for the labor required, as I stated before, is after the planting season is over. This is a great object in a system of proper rotation. As the number of acres of grain crops is just double the quantity of that under green crop or fallow. The defects of the old method of raising grain crops and cutting hay from the same land in succession until the soil ceased to produce any crop whatever, and then abandon it to be overrun with weeds and inferior kinds of grass for a number of years afterwards to be again subjected to the same barbarous treatment has produced results which the most prejudiced supporters of the old system cannot longer overlook.

It is a common but I think a very flimsy excuse for the old system, to charge the increasing failure of crops on the change of climate and unfavorable seasons. No one can deny that the weather exercises an important influence on the labors of the field, but it is equally true that the labors of the farmer judiciously applied mitigate to an equal extent the rigor and vicissitudes of our seasons and ungenial climate. Drains of proper construction placed so as to conduct the surface water in the Spring and Fall of the year would greatly contribute to facilitate the operations of the field, by enabling the farmer to commence earlier and continue longer at the plough in these two important seasons.

A proper regard to the construction and position of Barns and other Buildings would also enable us to haul out the manure a month or six weeks earlier. Under an improved management there are many farmers in this neighbourhood who might cultivate 48 acres with one pair of horses, provided the buildings were conveniently placed and a rotation of five years pursued. The land would require to be divided into six equal allotments each field containing eight acres. The crop of each year would be as follows, viz. 8 acres of green crop or fallow, 8 acres of wheat, 8 acres of oats, 8 acres pasture, and 16 acres of hay. Under such a system the whole surface would be subject to the alternate change of crops in the following order, first green crop, second wheat, third hay two years, fourth pasture, and fifth oats.

This arrangement under ordinary culture would produce an average crop as follows, viz.:

8	acres of Wheat at 30 bushels ℔ acre				240 bushels	@ 8s.	£96
8	do	Oats	40	do	do 320	2s.	32
4	do	Turnips	500	do	do 2000	1s. 3d.	125
4	do	Potatoes	350	do	do 1500	1s. 5d.	105
16	do	Hay at 2¼ tons				40s.	72
8	do	Pasture				40s.	16
							£446

In making this calculation I am induced to make the average much lower than it would be after the first rotation in favorable seasons, perhaps the quantity produced might be increased 50 per cent. I must not however be overlooked that this is the actual produce without making deductions for labor, seed, and capital invested.

McCullock's Statistical account of the British Empire contains the following statement, taken from a paper written by a Mr. Oliver of Lochend, an intelligent Scotch farmer. The mode of cropping at the former period (1723) was peas, wheat, barley, oats, the produce being about four returns or 4 bolls to an acre, the quantity of straw for each boll of such a crop could not exceed 15 stones per boll or 42 tons 15¼ cwts. for one hundred acres, the only material consumed by the Stock and returned to the land in the shape of manure. But upon a farm of one hundred acres cultivated as at present, namely one fourth turnip, one fourth wheat or barley, one fourth clover or rye grass pastured or made into hay and consumed on the farm, and one fourth in oats, the account would stand thus 50 acres wheat barley and oats at 8 bolls per acre thus allowing as above 15 stones of straw to each boll gives 120 stones per acre which over 50 acres makes 6000 stones or 42 15¼ cwts. being equal to the whole quantity produced on the 100 acres under the old system. Now suppose that the 25 acres of clover and rye grass are made into hay (which however is not the mode practiced nor the best mode of procuring the greatest quantity of manure and keeping up the fertility of the soil) and that each acre yields 200 stones the whole quantity would be 35 tons 14 cwts., and add to this 500 tons of turnips being the produce of 25 acres being 20 tons per acre, and which is by no means above a fair average, upon these data, the weight of materials produced annually for manure would be as follows:

Old System——	Straw	42	15¼
New System—	Straw	42	15¼
	Hay	35	14
	Turnips	500	
		578	0¼

Thus making in round numbers the weight of materials to be converted into manure on the new system 578 tons, while under the old system 42 tons 15 cwt. was the quantity, leaving a balance in favor of the new of 534 tons per annum, being more than twelve times the quantity produced by the old system. Nothing more is necessary to shew the superiority of rotation, and it would be easy to show from unquestionable data that the new system is as superior to the old as regards comparative profit as in the supply of manure thus obtained.

To conclude, discoveries and improvements have been made in Agriculture within the last half century, an acquaintance with which must afford incalculable benefit to the farmer; they enable him to increase the indispensible necessaries of life and thus render him a benefactor to mankind. Nor are these benefits confined to the place or period at which they are discovered, but extend to different countries and descend to promote the enjoyment of mankind in future ages. By the wise system of nature the subsistence of man is not produced in perfection and abundance without his own exertions and the application of industry and ingenuity. By the prudent exercise of these means he may not only procure competence, but attain to that degree of affluence that will enable him to exercise the cardinal virtues of a Rural life, viz. Justice, Charity and Hospitality, while in his daily vocations he has continued opportunities for contemplating, as far as the limited faculties of the human mind enable him to comprehend, the grand economy of the universe, to admire the works of creation removed from the noise and strife of the busy world.

Farmers who have a short crop of Hay would do well to provide themselves with Strawcutters, as it is certain that it will save a great quantity of fodder; not less than one third, if the German practice of pouring scalding water on it 12 hours before it is given to the cattle, is followed. They make a tub for each cow by sawing fish barrels into halves. T. L.

From an English Work by A. Walker.

CATTLE.

The best cattle have the face rather short; the muzzle small; the horns fine; the neck light, particularly where it joins the head; the chest wide, deep and capacious; the tail broad and flat towards the top, but thin towards the lower part, which it will always be, when the animal is small boned;—the lower part of the thigh small; the legs short, straight, clean, and fine boned, though not so fine as to indicate delicacy of constitution; the flesh, rich and mellow to the feel; the skin of a rich and silky appearance; the countenance calm and placid, denoting the evenness of temper, essential to quick feeding and a disposition to get fat.

Every breed of animals which has, through a few generations (two or three is sufficient) been overfed, requires similar feeding; and the offspring of such animals require and can digest more food than others, who have lived upon little.

All growing animals, including mankind, ought to be sufficiently well fed to preserve health and strength, but never to be stimulated by excess of food. The children of parents, however, who have, through many generations, been well fed, would perish if given no more food than would be sufficient for an Irish or Highland Scot's peasant child.

The chief qualities sought for in cattle, are the tendency to fatten on little food, and that to yield abundance of rich milk. The tendency to fatten is indicated chiefly by the capacity of the chest. Animals of all species, says Mr. Knight, all other qualities being equal, are, I think, capable of labor and privation, and capable of fattening, nearly in proportion as their chests are efficacious; but the habits of ancestry will operate very powerfully.

It is the width and depth of frame, says Mr. Berry, which confers weight, and not the mere circumstance of great height. While equally great, if not greater weights, can be obtained with shorter legged animals, they are, independently of other recommendations, generally found to possess better constitutions and greater propensity to fatten.

Mr. Knight says, the constitutional disposition to form fat, is certainly hostile to the disposition to give milk. Cows which give little milk often present large udders, which contain much solid matter; and, to inexperienced eyes, a two years old Hereford cow would give a promise of much milk, where very little would be given. A narrow forehead, and a long face, nearly of the same width from end to end, as in the Alderney cow, certainly indicates much more disposition to give milk than the contrary and which I have pointed out as indicative of a disposition to fatten.

Fat animals are more generally those of the north, where the cold diminishes sensibility. Fat indeed, appears to be the means which nature very extensively employs to lower insensibility by interposition between the skin and the central parts of the nervous system. Fat animals, accordingly, have not only less sensibility and irritability of the skin, but of the organs of sense generally. Thinner animals, on the contrary, are more generally those of the south, and have more acute sensibility and exquisite sensation.

In reply to this observation, Mr. Knight says, I do not doubt but you are right respecting the use of fat in cold climates; all sleeping animals, through winter, go to sleep in a fatted state. I do not think that breeds of cows, which give much rich milk, are very hardy. The Alderney cows are what the Herefordshire farmer calls very *nesh*, that is, very incapable of bearing hardship of any kind, and particularly cold, consequently of greater sensibility.

Cows which give much milk have the power of eating and digesting much food, and they require, whilst they give much milk a very abundant and good pasture. The breeds of cows which give less milk, and present greater disposition to become fat, are generally less *nesh*, and will fatten upon less food. The influence of the feelings is very considerable I have observed that whenever a young Hereford cow disliked being milked by the dairymaid, she soon ceased to give milk; and I do not doubt that, in all cases, if the calves were twice every day permitted to suck after the dairymaid had finished her labor, the cows would longer continue to give milk, and in larger quantity.

This tends to corroborate what has been said as to greater sensibility being favorable to milking.

If this led only to distinction of these two kinds as to milking, namely—that of fatness and thinness, and that of smaller and larger organs of sense, and greater or less sensibility, it would still be valuable, as showing, either at a later or an earlier period, what we may expect in this important particular. But perhaps its utility may extend still further, and enable us to improve the race.

It may form a basis for our determining whether, in endeavouring to improve a breed, fatteners may most easily also become milkers, to some extent; or milkers may, to a similar extent, become fatteners; and what are the circumstances which would most favor such partial interchange, if not absolute improvement? Indeed, from these principles I would conclude, that an animal fattening in the north, where a more genial temperature would render fat less necessary, would increase sensibility and would cherish the secretion of milk, so intimately connected with that excitement of the re-productive functions which warmer climates produce.

As these two desirable qualities are both dependent upon one system, and as they are opposed to each other, (for excess of one secretion is always more or less at the cost of the other,) they will be most easily obtained by being distinctly sought for, and the animal of diminished sensibility will most easily fatten, while the animal of increased sensibility will most readily yield milk.

These views are confirmed by the conduct of the London dairymen While they acknowledge that the Alderneys yield the best milk, they keep none of them, whatever they may pretend, because these animals are peculiarly delicate, and more especially because they cannot, after being used as milkers, be fattened for the butchers. The York and Durham cows suit them best.

In certain constitutions, however, and to a certain extent, there is a compatability between fattening and milking.

Mr. Knight says, the disposition to give much and rich milk, and to fatten rapidly, are to some extent at variance with each other; but I have seen cases in which cows which have given a great deal of rich milk, have given birth to most excellent oxen the cows themselves, however, always continuing small and thin, whilst giving milk.

I very confidently believe in the possibility of obtaining a breed of cows which would afford fine oxen, and would themselves fatten well; but, as great milkers require much more food than others, the farmer who rears oxen, does not think much, perhaps not enough, about milk, and is in the habit (which is certainly wrong) of breeding his bulls from cows which have become his best, owing only to their having been bad milkers.

In the selection of bulls, besides attending to those properties which belong to the male, we ought to be careful, also, that they are descended from a breed of good milkers, at least if we wish the future stock to possess this property.

From the Cultivator.

BENEFIT OF CLAY TO CATTLE AND SHEEP.

Oxford, Chenango.

* * * In the winter of 1819, the hoof-ail, as this disorder is commonly called among Farmers prevailed to an alarming extent in this town; some farmers lost more than one half their cattle, attributing the effect to different causes. I had at this time only 18 head of cattle on my farm, which were kept confined to the barn-yard, and only out of it when going to and coming from water. They were watered at a trough standing near an old log-house; and as some farmers attributed the disorder to their cattle being fed with spear grass hay, the ends of which were black with ergot, which was the case with mine, I therefore more closely observed the habits of the animals subject to this disorder, and noticed that they would, very often, after they had drank, turn to the old log-house, and endeavour to eat the clay with which the spaces between the logs were filled; that is when the ground was covered with snow. As we know that they are governed by instinct, and seldom eat that which is not beneficial to them, I took a peck measure and filled it with the clay, and then offered it to them in pieces of proper size, and found that they ate it greedily. They were afterwards fed with clay two or three times a week till the snow disappeared, and never were cattle healthier or in better condition when the spring opened. Since then my horses, cattle, calves, and sheep, when the snow prevented them from obtaining earth or clay for themselves, have been supplied with it three times a week I have given it to calves in summer when their appetite for milk failed, which it always restored, correcting acidities in the stomach as Magnesia does in children, and stopping all scourings. Since I commenced feeding clay to them I have never lost a calf in winter and not two sheep in a hundred. Out of 140 which I

have wintered the past season, I have not lost one, and the most of them are good mutton.

My neighbour Dr. Benjamin Butler, one of our most extensive wool-growers and best practical farmers, had, a year ago last winter, a number of his sheep taken with the scours, and before he was informed of it some of them had died; he requested his superintendant to have some clay dug up and thawed, and placed upon boards under their sheds; it was done, and he did not lose another sheep. * * * G. VANDERLIN.

PROTECTION OF SHEEP.—The point which my very few observations will embrace, is the extraordinary increase in the growth and condition of sheep by being fed under cover, in an open yard, with a shed in it. This idea has, no doubt, occurred to many others besides myself, but I am not aware that any one has so fully examined into the effects attending that inquiry, as I happened to do in the course of last winter, and the winter before. Gentlemen, the principle is one that we have acknowledged in every practical way, by every thing that eats, namely, that if it has plenty to eat, is warm, and has nothing to do, it is very likely to increase. I certainly was not aware, until by repeated experiments, I tested the truth of it, namely, that the same animals, when placed in the shade, and kept warm, not only increase rapidly, very much more rapidly in their condition and weight than when out in the open air, but also that they consumed a much smaller quantity of food. This I have tested, both last year and this. I have not the papers by me to refer to, but as far as my recollection goes, it is this, that the quantity of food consumed was less by at least one-third, and that the increase of weight was fully one-third, taking it in round numbers.—*British Farmer's Magazine.*

DISEASES OF SWINE.—Swine are subject to a few diseases that are not very easy of remedy. The best preventive is to keep them clean and cool in summer, and to allow no carrion, or filth whatever, to remain in or near their sties. This rule would require to be more attended to in these provinces. The diseases they are most subject to are, pox or measles, blood-striking, staggers, quinsey, indigestion, catarrh, peripneumonia and inflammation of the lungs called heavings When pigs are sick, if they will eat they will take medicine in their food; but if they will not eat there is scarcely any help for them. As aperients, cleansers, and alteratives, sulphur, antimony and madder are the grand specifics, and are truly useful. As cordials and tonics, treacle and strong beer in warm wash, and good peas, and pollard. In the measles, sulphur, &c., and if the animal require it, give cordials occasionally. In staggers, bleeding, fresh air and nitre; in catarrh a warm bed and warm cordial wash; and the same in quinsey or inflammation of the glands in the throat. If external suppuration appear likely, discharge the matter when ripe, and dress with tar and brandy, or balsam. The heavings or unsoundness of the lungs in pigs, like the unsoundness of the liver in lambs, is sometimes found to be hereditary; there is no remedy. This disease in pigs is often the consequence of colds from wet lodging, or of hasty feeding in a poor state; in a certain state it is highly inflammatory, and without remedy. Unction with train oil, and the internal use of it, have been thought beneficial. Salt, nitre and sulphur, occasionally given in the food of swine, will be found a good preventive of disease in these useful animals.—*Evans.*

FARMS IN ENGLAND.—Nine-tenths of the cultivated lands of Great Britain are leased to tenants, who pay from two to five pounds sterling per acre, annual rent. Now admitting taxes and labor and other expenses to be no higher here than they are there, it will at once be seen that our common cultivation will no where do much more than pay the price of rent; but by superior productiveness, occasioned by superior cultivation, the British farmer is not only enabled to pay rents and taxes; but finding every thing for husbandry, and all articles put upon the ground; he obtains, also, wealth from the pursuit of his calling.

Murwen stated the produce of an English farm of 894 acres, in the year 1811, to be £8,578—equal to $38,000. On this ground were carried, in that year, the almost incredible quantity of 13,746 one-horse cart loads of manure, and in the next year 10,250 more! Suppose the rent of this farm to be twelve dollars an acre, the expense of manure and its application twelve dollars more, and the interest on outlay, taxes and additional labor of cultivation, &c., twelve dollars more; still there will be left, as profit, ten dollars an acre; leaving a clear gain of about ten thousand dollars to the tenant.

A hay-farm, near London, of 100 acres, was rented for twelve dollars an acre, or 1920 dollars a-year; the tenant commenced with a great outlay for manure—an outlay which would here be considered at least equal to the value of the land before it was manured, a large outlay for farming implements, and for accommodations and wages for laborers; and yet he has constantly been accumulating riches from this farm, after paying all expenses.—*Monthly Visitor.*

From a Supplementary Treatise on Agriculture, by W. Evans, of Montreal

ROAD-MAKING.

It may be useful to offer a few remarks on the most approved method of making and repairing roads as practised at present in the British Isles

In England, the principal roads or highways between the capital cities and seaports, where they are most frequented, as within a few miles of large towns, are from 30 to 60 feet wide, with foot ways on each side from 4 to 10 feet wide. In no case is the metalled part of these roads less than 20 feet; that width being requisite to admit of one loaded waggon passing another. These roads are supported by tolls levied on carriages and animals passing over them.

According to minutes of evidence before a committee of the British House of Commons, given by several engineers, "*A dry foundation and clearing the road from water*, are two important objects which ought to be kept in view, in laying out roads, that the foundation of the road should be kept dry, either by avoiding low ground, or by raising the surface of the road above the level of the ground on each side, or by drawing off the water by means of side drains."

Edgeworth observes "the substratum must be laid dry by proper drainage, and where the road is liable from the flatness of the country, to be at times under water, the expense of raising it above the water must be submitted to in the first instance. All drains for carrying off water should be under the road, or at the field side of the fences, and these drains should be kept open by constant attention, and should be made wide at the outlet."

Paterson recommends "That before the materials are put on, run a drain along the middle of the road, all the way, from two to three feet deep, then fill it with stones up to the surface, making those at bottom of a pretty good size, and those at the top fully as small as the road materials. And, in order that the quantity of stones used for the said drain may be as little as possible, and every way to save expense, it may be made as narrow as it can possibly be dug. From the leading drain make a branch here and there to convey off the water to the drains on the sides of the road." This mode of draining has been found so beneficial, that a road so drained would be better and more durable with eight inches than it would otherwise be with twelve inches of materials, and not only so but on such a road there would be a saving of the incidental repairs ever afterwards of about one-half of the labour, and at least one-third of the materials. There have been some roads made on this plan under Paterson's directions, which are said to have stood all the winter rains and frosts without injury, and promise now to make the finest roads in England. In some cases, two drains running parallel, and five feet apart are cut, and he recommends in wide roads that three or four should be cut. He says that though at all times the effect of these drains will be beneficial, it will be particularly so in time of a thaw, after severe frost. In frost the surface of the road, though wet before, becomes dry, the water being absorbed by the road, or otherwise condensed by the frost; but no sooner is this succeeded by a thaw, than the absorbed or condensed water, again makes its appearance all over the surface of the road, and this is the time these drains are so *peculiarly* beneficial. Where such drains are wanted, the road on the return of a thaw, throws up to the surface all the water it had imbibed, and in many places the materials swelling up become quite loose and open. This is a natural consequence when the materials are not thick, and where the soil under the road is not perfectly dry; but where a road is dried in the way described, it will be uniformly seen that the water instead of spewing out on the return of a thaw, is sucked in by the drains, so leaving the surface of the road quite dry. It may be observed that at such times the places of the roads where a few rod-

of such drains have been introduced, present to the eye at a quarter of a mile distant quite a contrast to the other parts of the road, the one opaque and dry, from the moisture being all sucked in; the other all wet and glistening, from its being thrown out of the surface. To adopt this mode of draining roads in British America, would, I am convinced, answer extremely well, provided some care was observed in making the drains sufficiently deep, and having many outlets from them.

The late Mr. Telford observed "that when roads are made on ground where there are many springs, it is absolutely necessary to make a number of under and cross drains to collect the waters and conduct them into the side drains, which should always be made on the field side of the fences. The surface drains or water tables formed between the metalled road and footways, should be made a few inches lower than the side of the road, and of the common width of the spade at the bottom, and they should have frequent cross drains under the footways and fences into the outside drains that are cut on the field side of the fences. These latter drains ought invariably be cut with a considerable slope. In another case where draining was, from the nature of the soil and situation, found to be impracticable, Telford laid down and joined by cement, blocks composed of coarse gravel and Roman cement. The water is thus prevented from oozing up, and a foundation formed at once firm and dry.

Water is one of the most serious causes of the wear of roads; it acts, aided by pressure, like gunpowder, in rending the surface of bodies. Frozen, it acts precisely in the same manner; and when it has penetrated deeply, as it usually does in Canada, into a stratum of materials, a thaw produces an entire derangement. Mud is formed in consequence of the presence of water and dust or earth and acts as a sponge to retain it and perpetuate its bad effects. In British America it is the most necessary part of road making to drain them perfectly, if the soil is not of a very porous nature. I have not seen many roads in the country that do not require great improvement in respect to draining and the formation at their surface.

Telford adopted another mode of making roads where the foundation was not dry, by forming a pavement of stone with the hand, the broadest end downwards, and filling up the cavities with stone chips or small stones so as to make all level and firm, and then puting on six inches of broken stone of the proper size.

According to the road act in England, the ascent or descent of roads in passing through a hilly country, should not be more than one foot in height to thirty feet of the length thereof, if it should be practicable without causing a great increase of distance. It is the general opinion that a perfectly level road is not always the best for every species of draft. Slight and short alternations of rising and falling ground are serviceable to horses moving swiftly; the horses have time to rest their lungs and different muscles. Telford, Paterson and several other engineers, were of opinion that it would not be proper to line a road upon a perfect level, even to the length of 1 mile together, though it could be quite easily obtained. They say it is well ascertained that where a horse, dragging a load over a long stretch of road quite level, will be exhausted with fatigue, the same length of road having here a gentle acclivity and there a declivity, will not fatigue the animal so much. This is easily accounted for. On a road quite level, the draft is always the same without any relaxation; but on a gentle ascent one of his powers is called into exercise, on the descent another of his powers is called into action, and he rests from the exercise of the former. Thus are his different muscular powers moderately exercised, one after another, and this variety has not the same tendency to fatigue.

McAdam in making roads preferred a soft bed, provided it was perfectly drained, and recommended that the stones should be reduced to a size that none should exceed six ounces in weight. The quantity of metal put on depends on the situation near great towns. Where they are much travelled on, from nine to twelve inches are considered necessary; and at a distance from large towns a third less would be sufficient to make a good road. The degree of convexity given to a road in laying on the metal, should not exceed what would be necessary to incline the water to the sides. If the road is raised too much in the middle, wheel carriages will run in the middle and soon wear that part into deep ruts and spoil the road. A road of thirty feet wide should not be more than eight or nine inches higher in the middle than at the sides, and a less width in the same proportion. Edgeworth recommends that clean gravel should be put over the broken stone, which would insert itself between the interstices, but that no more should be used than what will sink to a level with the surface of the stone. In all cases, after the road has been covered with stone, and before the gravel is put over, it should be carefully examined, and any stones that are over the proper size should be broken or picked off. Paterson says that the earth obtained at the sides of the road, and without expense, will answer as well or better than gravel, for putting over the stone.

According to Stevenson, the breadth of roads in the vicinity of towns of 50,000 inhabitants, should be at least fifty feet between the fences, and be metalled from side to side. Where the population would be only 30,000, the breadth should be 40 feet, and metalled from side to side, in each case with paved side drains, and provided with a foot-path on each side.

Narrow roads are generally in bad condition near large towns, which is accounted for from the circumstance of carriages being obliged to go in the same ruts or tracks, and these ruts being not over six inches wide, one foot only of the road is worn by the wheels, instead of the whole breadth of it, which would be the case if the roads were of the proper width and well constructed, not rising too high in the centre.

At a distance from large towns, and where there is but little traffic, it is unnecessary to waste land by making very wide roads. In such situations, twenty feet in breadth would suit the public convenience as well as a road of forty feet, but the principal public roads would always require to be at least forty feet wide, and strongly made with hard metal in proportion to their vicinity to large cities or market towns.

The London Commercial road is seventy feet wide; ten feet on each side is occuppied as foot-paths; twenty-feet in the centre is paved for heavy carriages, and there are fifteen feet of gravel road at each side for light carriages and saddle horses.

In the vicinity of all our principal towns, foot-paths ought to be made at the sides of all the public roads for the accommodation of those who may not be able to go in carriages or on horseback, and who surely are *entitled* to this accommodation. What are called *water-tables* are sometimes required to be made across the road, particularly in flat roads on a steep slope. These should be made at right angles with the road, with their sides gently sloping to occasion as little obstruction to carriages as possible. In cases where there may be considerable water, these surface-tables may be laid six feet wide at the bottom, which should be perfectly flat, and twelve feet wide at each side, to rise at the rate of one inch in the foot, which will make the depth in the centre one foot, and from the size, being altogether 30 feet, no carriage will feel any jerks or shakes in passing it. The pavement should be made of hammered stone of nearly equal depth, each stone from nine to twelve inches long on the surface, and four to eight inches broad, and at least one foot deep or more; the under side to be flat in the under face, and not of an irregular or angular under surface, as in that case it would not be solid. It would be well to have the stones on a firm foundation.

It is the opinion of experienced engineers that good roads of broken stone are preferable to pavements. They certainly are preferable to pavements that are not well made, and I have never seen a well made pavement in British America. Major Taylor who was at the head of the paving board in Dublin, before he began to pave a street, made a good gravel road, and left it to be beaten down by carriages for several months; it then became a fit foundation for a good pavement. A foundation of ten inches of broken stone would answer well. The stones used for paving should be of a cubical form, the lower bed having an equal surface with the upper face; they should be as nearly as possible of an equal size, and they should never be of unequal length on the face. In quarrying and preparing the stones, these matters should be strictly attended to; and though the dressing may be expensive, it will be well bestowed, and the stone broken off in dressing will answer for other roads. If the stones are properly prepared, and a good foundation of smooth surface for the pavement, it is easy to lay down the stones, which should all bear broadly and firmly on their base. The whole should be rammed repeatedly to make the joints close. The pavements should be covered with gravel which will fill the joints and serve to hold them together, and will preserve the pavement from the irregular pressure of wheels until the whole is consolidated. The stone should be of equal hardness, and one stone should not be higher than another. They should be laid at right angles from the sides, in perfectly straight lines, and the

joints broken in the courses, so that the joints in one course shall not be a line or opposite to a joint in any of the two courses adjoining. Filling up the joints, or grouting them with lime-water, which finds its way into the gravel between and under the stones, forms the whole into a solid concreted mass. It has been lately suggested to lay the paving stones properly dressed on a bed of good mortar placed on a firm foundation, and grout the joints with cement. It is said the whole mass will then become a solid body, and effectually prevent the rain from penetrating to the foundation, and hence could not be injured by rain or frost. Without adopting an improved mode of paving in Canada, and using stones of a proper size and shape laid on a firm foundation, we never can expect to have good or durable pavements.

THE USE OF FRUIT.

As various kinds of fruits are beginning to make their appearance, and as no inconsiderable amount of disease is usually imputed to their agency at this particular season, it may not be inappropriate for physicians to institute some inquiries in relation to their supposed deleterious effects on the health of people of different ages and conditions.

We are familiarly acquainted with the prejudices existing against the free use of our domestic fruits, but very much question whether they have ever operated so unfavorably as is generally believed. It would be quite as philosophical to discard bread stuffs, the various leguminous productions of the garden, and the meats offered in the market, as to interdict the rich fruits which nature has scattered around us. If a careful register were made of all the deaths arising from excess in eating these two species of food, it is quite probable as many would be found attributable to one cause as the other. Eating and drinking have become altogether too artificial; people consult their books oftener to discover how, when, and what sort of a meal should be taken, than to ascertain the state of their finances. Life is thus reduced to an unnatural scale, and the capacity of the stomach measured, as a tide-waiter would guage the dimensions of a hogshead, instead of following the simple indications of hunger, which makes no dangerous mistakes, under ordinary circumstances, in well regulated society. There is a vast difference between gorging beyond the ability of the stomach to relieve itself, and satisfying the cravings of appetite. Were an individual never guilty of any excesses, he would be exempt from the penalty invariably imposed on the breach of any law of the animal economy.

Instead therefore, of standing in any fear of a generous consumption of ripe fruits, we regard them as positively conducive to health. The very maladies commonly assumed to have their origin in a free use of apples, peaches, cherries, melons, and wild berries, have been quite as prevalent, and equally destructive, in seasons of scarcity. All naturalists will testify to the importance of the fruit seasons to the lower animals, particularly to birds. When there is a failure, or an insufficient supply, the feathered tribes are less musical, less numerous, and commence their migrations much earlier, than when amply supplied with the delicate nutrition designed for them at certain periods of the revolving year.

In the scheme of creative wisdom, the indications are clearly manifested that man is omnivorious; and it was not until muzzled by the opinions of one, perplexed by the ridiculous hypothesis of another, touching the subject of his food, of which he is himself better qualified to judge than the most learned physician in christendom, that he relinquished the faculty of discrimination implanted in his nature, to become the foot ball of those who raise themselves into a short lived notoriety by giving to unfounded theories the character only belonging to well established facts.

There are so many erroneous notions entertained of the bad effects of fruit, that it is quite time a counteracting impression should be promulgated, having its foundation in common sense, and based on the common observations of the intelligent. We have no patience in reading the endless rules to be observed in this particular department of physical comfort. No one, we imagine, ever lived longer or freer from the paroxysm of disease, by discarding the delicious fruits of the lands in which he finds a home. On the contrary they are necessary to the preservation of health, and are therefore caused to make their appearance at the very time when the condition of the body, operated upon by deteriorating causes not always understood, requires their grateful, renovating influence.—*Boston Medical and Surgical Journal.*

HEREFORDS vs. SHORT HORNS.

We find in the London Farmer's Magazine for December, a challenge from John Price, Esq. of Poole House, Upton-upon-Severn, "to all breeders of cattle in England," in which he says, "I am willing to show at any time before the end of the month next ensuing, for any sum not exceeding £100, nor less than £25, a bull, and twenty regular breeding in-calf cows, (Herefords,) all bred by myself, against any bull and a similar number of cows, of any sort that have been bred by, and are now in the possession of any breeder of cattle in the United Kingdom."

From a letter to Mr. Price, in reply to this challenge, by Thomas Bates, Esq. of Kirkleavington, we make the following extract. Mr. Bates says:—"I write to say, that on principle I cannot be induced to gamble, but if your object be the investigation of the merits of different breeds of cattle, &c., I am ready to meet such investigation, and show you my herd of Short Horns, and to any others who you may bring with you for that purpose, and shall then accompany you and them, to view your herd of Herefords. Such investigations may prove of the greatest benefit, not only to those who make them, but their report, candidly written down, and inserted in any public documents, may have the most beneficial effect for the public benefit. I visited Hereford above fifty years ago, and was then and continue still an admirer of the best variety of cattle (Herefords). But I consider now, and have for above forty years been convinced, that *the very best Short Horns—which are only a few*—are capable of improving all other breeds of cattle in the United Kingdom, as well as *the ordinary Short Horns which are far from a good breed, and inferior to the Herefords, Devons, and others.* I have at present two red twin year old bulls, out of the dam of Duke of Northumberland, which on inspecting, you may not think unworthy to be put to your herd of Herefords for one season, to give you an opportunity of testing the merits of this cross-breed. In my opinion, they would prove an invaluable cross with the best Herefords—increase the growth of the Herefords, and at an earlier age be fit for the butcher, with a less consumption of food, and quality of beef unimpaired; and also give that breed an increased milking quality—both in quantity of milk and richness—yielding more butter."

Mr. Price replies to Mr. Bates that the bad state of his health prevented his accepting his invitation to visit him, and adds: "I have myself tried many crosses in breeding both cattle and sheep, and have witnessed the result of such trials made by others, all of which have signally failed where the object has been to obtain more *size* and *weight* by using large animals with females of smaller dimensions. I stated that I had formerly seen what were then considered to be the best sort of Short Horns in existence, and latterly, among others, those of Lord Spencer, with whom I had the pleasure to spend a few days at Wiseton, three years ago, yet that I had never seen any thing to shake my belief that Hereford cattle would pay more money for the food they consumed, than any other breed with which I was acquainted." My desire has long been, and still is, to endeavor by all practicable means to ascertain which is the best description of cattle for both breeder and feeder, that is, which sort will pay the most money for the food they consume. I have repeatedly made public my willingness to find cattle to test this point with other sorts in the way I think best, viz., by keeping together and feeding in the way usually adopted by graziers, some animals of each breed, with this proviso, that the *quantity* of food consumed by each sort should be as nearly as possible ascertained."

In reply to this, Mr. Bates says, that "Whenever Mr. Price's health admits of it, *if he will state why, on the true principles of breeding*, it is wrong to breed from a *large male and a small female*, I am ready to meet him, and prove the contrary by incontrovertible facts."

SWEDISH STABLES.—In Sweden the horse stables are never littered at all. The floors of the stable are planked; the planks perforated with holes, so that no wet can remain on them; and these planks kept clean are the only bedding allowed. To this method of treating their horses, (strange as it appears to Englishmen, of those who litter their stables carefully,) the Swedes attribute the soundness of their horses' feet, as it is quite uncommon to meet with a lame or foundered horse in Sweden, that has been so stabled.

That which makes us discontented with our own condition, is the false and exaggerated estimate we are apt to form of the happiness of others.—*Fr.*

From the Cultivator, for September, 1841.

IMPROVING STOCK.

"*Messrs. Editors*—As I am a young farmer, and wish to commence improving my stock, having heard much about 'Herd Book Cattle,' and 'Cattle without pedigree,' and yet remain in the dark on the subject; I will consider myself much obliged if you, or some of your correspondents will give the desired information on these points in your valuable paper, as I wish to start in the right road, and doubtless many others wish the same. A SUBSCRIBER."

East Windsor, Ct 1841.

Since the increased attention to the improving of cattle has taken place in England, and particularly since the Collings, Berry, Althorp, &c. have effected such wonders on the Short Horn breed of cattle, in order to prevent imposition, and show that the animal was of the improved breeds, a list of all the principal herds of this stock, those that could claim an undoubted descent and purity of blood, were collected by Mr. Coates in a volume, regularly numbered, and breeders of pure stock, that is those derived from the herds of the gentlemen named, or which can be directly traced to them, are in the habit of naming and numbering all such choice animals as are kept for breeding or are worthy of particular notice, and these recorded in the successive editions of Mr. Coate's book, are termed Herd Book cattle In the hands of Mr. Collings, the bull Hubback may be considered the founder of the Improved Short Horns, and all of unquestionable purity of blood can be traced to the herds originating from him. Pedigree means nothing more than the list of animals through which the sire or dam or both have received their blood for several generations; and by tracing the breed through these, the value of the stock, and purity of the animal may be easily determined. In improving stock, it is very desirable to begin with animals in which the desired qualities that constitute the value of the breed, whether it be form, aptitude to fatten or milk, have become constitutional, and therefore permanent. Animals of the common breeds are sometimes found embracing some or all these qualities, but they are accidental, are not types of the race, and the progeny is therefore frequently wholly unlike the parent. With Herd Book animals the case is different. Skillful selection and careful breeding for generations has rendered the desirable qualities of the improved stock constitutional and permanent. If the pedigree of an animal is good, that is, if the Herd Book shows a descent from the best animals, there is little or no danger that the stock will prove inferior, or as the phrase is "run out."

NEW-JERSEY MARL.—New-Jersey was formerly famous for its *barren sands*, but it is now, owing to the liberal use of marl, fast becoming one of the most productive States of the Union. The Cabinet says:—"My friend R. S. whose farm, a few years since, yielded nothing but blackberries, and was one uncultivated waste, produces the finest crops of wheat, and other grains and corn, and yielded more than 100 loads of hay the last year, at a cut of two and a half tons per acre; and all this is owing to the marl." The value of these marl beds may be inferred from the fact, that Mr A. Cooper by selling the marl by the square rod, "is realizing $1500 per acre for the marl, the land afterwards being more valuable than before."

PROTECTION TO THE FEET FROM FROST.—Capt. Parry, in his attempt to make a N. W. Passage, found great difficulty in keeping his men's feet from freezing while wearing boots or shoes; and he was obliged to substitute coverings made of the thick woolen blankets and cloths brought with them from Europe With this covering of the feet his men would bear without injury an exposure, which with the best covering of leather would have frozen their extremities fatally. Those in our latitudes who are exposed to great cold may take a useful hint from these facts.

WORKING TO BE IDLE.—There is many a person who has such an abhorrence of every thing that goes by the name of labor, that to avoid it, they actually incur more effort and trouble than they would to labor strenuously the same number of hours. The shabby genteel man or woman, will despise an honest laboring person, yet will spend more time in striving to render a threadbare half-worn garment passable, than the laborer, or they themselves if they would shake off their dread of work, would in earning a new one of good quality. Prudence from proper motives, is a virtue, but when it arises from false pride and a scorn of labor, it is a curse.

FATTENING PIGS.—Mr. E Marks, of Onondago County, has, at our request, kindly furnished us with the following statement respecting the pork made by him on his farm in 1840. "*First lot* – Six pigs, ten months old. Weaned when eight weeks old, and received through the summer the slop of the dairy of three cows, and, perhaps, in the whole time one bushel of barley meal each. Weight of the heaviest 286 pounds, average weight 258 Total 1,548 pounds. *Second lot*—Twelve pigs 16½ months old, turned to pasture in the spring, and fed no more until about the 10th of October. Weight of the heaviest when killed 381 pounds, average 295 pounds Total 3,440 *Third lot*—One sow 2½ years old, raised two litters of pigs during the season, and was fattened with the others, weight 393 pounds. One boar purchased of Mr. Bement 3½ years old, castrated the fore part of October and fed with the others, weight 454 pounds. One boar pig 16 months old, castrated the same time as the foregoing, and fed; weight when killed 300 pounds. Total 1,237 pounds.—In all, 6,325 lb; strained lard from these hogs 676 lb.

The regular feeding of these hogs commenced about the middle of October, and they were slaughtered on the fifth of January, and weighed from one to three days after they were slaughtered; the 6 pigs were three-fourths, the 12 from half to three-fourths, and the boar full blood Berkshires. The sow was half blood, and the boar pig nearly full blood. They were fed as follows. about the 10th of October they were turned in the orchard and fed with steamed potatoes a week or two, when they were confined in a yard, and fed with steamed potatoes mixed with barley meal; at first at the rate of one bushel of meal to twenty-five of potatoes, but the meal was increased until three bushels were used with the same quantity of potatoes They were fed in this way till about 600 bushels of potatoes had been used, when their food was changed to barley and peameal, commencing with one fourth peas, and ending with three-fourths The meal prepared as follows a little salt was put into boiling water and then meal stirred in until it was as thick as would conveniently pour. This soon began to ferment and was then fed out while warm None was kept until much soured, and very little fed before fermentation commenced. To have had the fattening most profitably conducted it should have begun near 40 days earlier, as the same food will make more pork in September and October than in December and January. The last pig of the third lot gained from the time he was put up to fatten about three pounds, five ounces daily.—*Cultivator.*

REARING POULTRY.—I have again alluded to this disease, the gapes in chickens, in hopes that you, or some of your able and scientific correspondents would give some light upon the origin of the worm in the throat that causes it. Did we but know from whence it came, a great point would be gained, as we might then make a "stitch in time save nine." From 45 hens, I have the past season (1840) raised more than 150 chickens, although I had rather poor success in hatching the eggs. I have sold eggs to the amount of $21.29; have now over 300 on hand, and the year since the receipt of the first egg last spring will not be up till the last of this month, and we are now getting from 20 to 25 per day, from about 80 hens. The question may be asked, why I am getting eggs now, but got none last winter! The reason, I doubt not, is this. A year ago I fed them oats in sufficient quantity to keep them through the winter only, thinking it useless to attempt making them lay in cold weather. This winter I have fed them about as much corn as they could eat, over a peck a day, and believe I have sent that proportion of corn to a profitable market. I have no doubt the value of the eggs produced from the last of December to the last of February will more than pay for the food consumed, and say nothing of the value of the manure. I give them access to a box of pounded clam-shells, sand and lime, for them to pick and dust themselves in. I make use of artificial nest eggs, so few of the eggs get froze.—*Correspondent of Cultivator.*

CURE FOR BOTS IN HORSES.—I. L. Smith, Esq. who has been an extensive dealer in horses, informs the Editor of the Southern Cultivator, that as a preventive or remedy for the bots, he feeds to his horses occasionally a quantity of the heads of *rye* which he keeps on hand for that purpose. He is convinced that the heads and chaff of the rye, cut out and effectually carry off the grub, and that if a horse be fed every few days in this way, he will never be annoyed by the bots. If preferred, the rye may be fed in the sheaf.

The rust of the mind (idleness) is the blight of genius.—*Seneca.*

ON STEAMING FOOD FOR HORSES.

It has been ascertained, though perhaps generally known, that *grain of any kind cannot be dressed or cooked by dry steam applied to the dry grain.* If the steam is at a low pressure, or a little above atmospheric, a species of parching is produced on the grain so treated; and if the steam of very light pressure is applied, the grain may be entirely carbonized. An intermediate and very simple process has however been found, whereby grain of any sort can be completely boiled, which is done by *soaking* the grain in water for a period of from six to twelve hours, according to its state of dryness; and then placing it in the receiver described for steaming roots, and applying them for an hour, the grain will come out completely boiled. From this it may be inferred, that each grain becomes a little cauldron, containing as much absorbed water as serves to boil it by the application of steam; but whatever be the rationale of it, we are thus provided with a simple and efficient steaming and boiling apparatus applicable alike to the cooking of juicy roots or tubers, and dry grains.

That horses on a farm may be kept more economically on prepared food than in the state and manner in which food is usually administered to them, I have no doubt. The fact, however will soon be ascertained, in consequence of the premium which the Highland Society has just now announced on the subject. The results of the experiments which some farmers will make, will, we fondly anticipate, prove the facility of preparing food, and economy in the use of it. We have the authority of the owners of some of the coaching and posting establishments in Edinburgh, for stating, that the saving which will arise from the use of prepared food, in the keep of forty horses, will amount to £140 a year. We have also the high authority of Mr. Dick, the Professor of Veterinary Surgery in Edinburgh, for saying, that *the general health of horses under work, is much better on prepared than unprepared food.*

It is obvious, says Mr. Dick, the grand desideratum is to give food containing as much nutriment, and in as small bulk, as is consistent with the economy of the animal. If this problem is solved, it will follow, as a corollary, that it will be important to give that food which has been found best suited to its proportions, in such a state as is best suited for digestion. This is a point, however, worthy of consideration; and naturally suggests the question, How is the body supplied with nourishment in taking food into the stomach? The common notion is, that much depends, as I have indeed before mentioned, on the hardness of the food; and it is a common saying, in order to show off a horse which is in condition, "that he has plenty of hard meat in him." Now this is a very silly and erroneous idea, if we inquire into it; for, whatever may be the consistency of the food which is taken into the stomach, it must, before the body can possibly derive any substantial support or benefit from it, be converted into chyme—a pultaceous mass, and this, as it passes onwards from the stomach into the intestinal canal, is rendered still more fluid, by the admixture of the secretions from the stomach, the liver, and the pancreas, when it becomes of a milky appearance, and is called chyle. It is then taken into the system by the lacteals; and in this fluid, this soft state, and in this state only, mixes with the blood, and passes through the circulating vessels for the nourishment of the system.

Now if the hardest of the food must in this manner be broken down and dissolved before it can really enter into the system, it must appear evident that something approaching to this solution, if done artificially, would greatly aid the organs of digestion in this process, and that thereby much exertion might be saved to the system, and at the same time nourishment would be rapidly conveyed into it. It is with this view that I would recommend the general adoption of cooking food for horses.—*Edinburgh Quarterly Journal of Agriculture.*

"I owe my success in business chiefly to you," said a stationer to a paper-maker, as they were settling a large account; "but let me ask how a man of your caution came to give credit freely to a beginner with my slender means?" "Because," replied the paper-maker, "at whatever hour in the morning I passed to my business I always observed you without your coat at yours."—There is a world of wisdom in this little anecdote; more good sense and more judicious admonition than are to be found in all the declamation of all the "ten-hour" orators that ever made a speech, or drew up a resolution. Practical mechanics will never grow rich by standing out for limits to working hours, or by any other mode or form of striking for wages.

Winter Butter, it is known, is generally deficient both in color and flavor. This arises partly from the cows being kept at this season exclusively upon dry food, and partly from not managing the churning process under the right temperature. A writer in the New-England Farmer says he finds in the carrot a corrective for both these evils. To adopt his words, his method is to "take four carrots of the Altringham kind (and other kinds will serve as well) of about one and a half inches in diameter, to cream enough to make ten pounds of butter, and after washing them, to grate and cover them with new milk, and after they have stood ten minutes to squeeze them through a cloth into the cream, and the effect has been to make the butter come quicker, and give it the color and *sweetness* of May butter." We can readily believe that carrots will impart a fine color to butter, and even a rich flavor—*if given to the cows in sufficient quantity*—the substance, and not the coloring matter, must be required to give much flavor. Cows fed with ruta baga, or mangel worzel, or carrots, will produce butter, at all seasons, defective neither in color or flavor.

A Cow worth having.—The Syracuse Western State Journal says, "Mr. Storrs Barrows, a little west of this village, on the railroad, is the owner of one of the most valuable cows in this county, if not the very best. She is a mixed breed—Durham and Leopard: and is now about eight years old. Last summer she produced over 21 lb of butter in one week, besides supplying the family with what milk was needed. Mr. B. brought us last week one of two rolls of nearly equal size, just made, which we found weighed 7 lb 14 oz.—being nearly 16 lb per week this winter. He has been offered $150, and refused the handsome sum. She is undoubtedly worth, taking all things into consideration, half a dozen common cows" As there is no such distinct breed as the "Leopard" known, this cow undoubtedly owes her milking proties to a fortunate cross of the Durham with some of the many varieties of our common stock. The celebrated Cream-pot breed of Col. Jacques had a similar origin.

USEFUL RECEIPTS.

Secret of Soap Making.—Many persons are much troubled to make soap *come*; but there is no art and mystery or "luck" about the business. The whole secret consists in having strong lye—and it must be strong. If the ashes are clean, the soap will come without using lime. If the ashes are made from dirty chips, or burnt upon a clay hearth, lime in the leach at the rate of one quart to the barrel of ashes, may be used to great advantage. If lime cannot be procured, boil down the lye until there are coarse grains of salt in the bottom, then pour off the lye and *throw away the salts.* It will 'spoil your luck' to attempt to make soap with the salts in the kettle, for it is the salts of earth, not ashes. If your lye is strong, and you put in as much grease as it will dissolve, you will have soap whether it is put in hot or cold.

Cure for Sore Teats.—Scarcely a dairy of cows can be found in which more or less are not subject to sore teats, and from the irritation thus caused, much trouble in milking, and loss of milk will ensue. The following preparation, if kept on hand and applied occasionally to such udders and teats as require it, will prevent or cure the disease. Somomes the flies will be troublesome, if so add one ounce of assafoetida or aloes in powder, and incorporate it thoroughly with the ointment. Sometimes the teats are tender only. When this is the case, washing with weak salt and water is beneficial, and usually sufficient.

Ointment made of sweet elder, 4 oz.; yellow basilicon ointment, 4 oz.; spirits of turpentine, 1 oz.; mix and well incorporate on a slab or in a mortar, and it is fit for use.

Remedy called Cure All.—1 pint of strong spirits of wine, 2 drachms of Alkanet root, let this stand 2 days; then add 1 drachm of camphor, and strain through muslin; then add 2 drachms of opium, 8 drachms of origanum, and 2 drachms of spirits of turpentine. It is good for cuts, green wounds, cholic, pains in the stomach, &c. for pain in the ear, drop it on wool and apply it; for internal complaints take 20 or 30 drops on sugar.

Colic in Horses.—Take 1 ounce of tincture of rhubarb, ½ oz. of laudanum; 1 oz. spirits of nitre, and half a pint of warm beer. Mix well in a bottle, and turn down the animal.—*F. Bourne.*

Blind Staggers in Sheep.—Half a pint of hogs lard melted and poured down a sheep will cure the blind staggers in ten minutes.—*Cultivator.*

TO THE EDITOR OF THE COLONIAL FARMER.

Mr. Smith—Have you ever heard of the worm in the mouth of a Hog. The thing is entirely new to me. I a few days since had a fine yearling Boar, I kept for a sire to use the ensuing season—he began to falter and refused to eat; had what I called the staggers, for when he attempted to walk he appeared to be much like one under the influence of ardent spirits; he eventually got so he could not walk at all. I concluded I should lose him. I asked a neighbour of mine if he could tell me what disease my Pig had, he said he had heard of the maggot in the lip, we accordingly examined the lip, but found nothing like that to our satisfaction; so it passed until the day following, still getting worse, when a man came to work for me, I asked him if he could tell me what was the matter with my Pig,—he said perhaps he had the worm in the lip; we then examined, and found the lip on the under jaw had grown up entirely above the teeth, to a hard gristle, that prevented his teeth coming together. We took a needle with a strong linen thread put through the lip, to raise the lip up, and cut off about three-eighths of an inch all round the lower and on one side of the upper jaw, and in twelve hours he began eating, and has continued progressively to get better, and is now I think out of danger with that disease. So this is what may be called the worm in the lip of a Hog. Your's respectfully,

FARMER B.

Brookfield, Queen's Co. September 6, 1841.

STAGGERS IN SWINE.—J P. De Gruchy in a communication to the Philadelphia Agricultural Society states that he kept from 100 to 250 hogs and annually lost several, 6, 8, and a dozen being taken in a few hours. They were generally attacked in the month of September. The hog would all at once turn round very rapidly, and if assistance was not at hand would, in less than half an hour, die. Bleeding and Brimstone were applied with but little success. At length one of his workmen put into his hands a pamphlet printed in 1707, in which he found the following prescription—"You will see a bare knob in the roof of the mouth, cut it and let it bleed, take the powder of loam and salt and rub it with it and he will mend." Mr. DeG. employed this remedy for several years with success, but although the hogs generally recovered they never throve so well afterwards. He mentions another disease which he calls the Sore Throat, which attacked his best hogs (in pen) and carried off thirteen in a few days. The hog would often die in ten minutes after he was attacked. He bled the fourteenth and had him carried and laid in a cloverfield, and he recovered. The remainder were then turned into the clover field and the disease disappeared. This was thenceforward done annually and the hogs had neither staggers nor sore throat.

From the Cultivator for April 1841.

Editors of the Cultivator—Your correspondent R. L. asks "Is there no remedy for diseases in Swine," and states his loss of a number of valuable hogs by the Blind Staggers. The remedy for that disease is simple, and has been used with great success. I once had 17 shoats taken down in one day with the Blind Staggers. My family supposed they had been poisoned. I secured each one with a rope around his upper jaw, so as to keep his head still, and with a sharp knife made an incision in the forehead about 2 inches in length. I then loosened up the skin on each side of the cut, and filled the place full of fine salt—nothing more. Fourteen out of the seventeen were well the next day. Care should be taken to cut *only* the skin, and not let the knife touch the bone.

WM. THURBER.

Cramton, R. I.

It appears probable that the disease described by our correspondent B. is the same called Blind Staggers above, but in that country a similar disease is produced in the Spring by a plant which does not grow with us—the Poke or Garget (Phytolacca decandra) a gigantic plant which is common in highways, sometimes has its roots killed by a hard winter—pigs will then eat and are poisoned by them. Thus our horned cattle here are sometimes injured by the roots of the Cicuta which grows on the banks of brooks. It is a tall plant resembling Celery, but with larger leaves and seed. The roots resemble in form a bunch of carrots, and are sometimes thrown out of banks by the frost, when cattle will sometimes eat them, after they are withered, (for they never taste this plant when green.) They produce staggering and soon oblige the cattle to lie down, when they either die or recover within 12 hours. If in April, or early in May, cattle who have been rambling near to brooks are found staggering, give a pint of vinegar mixed with three pints of water to each as soon as possible. T. S.

Microscopic observations have taught us that we see but a small proportion of the living creatures by whom we are surrounded, and that the greater part of the diseases of plants may be traced to the operations of Animalcules, many of which are invisible to the naked eye. The terms of "Blight" and "Blast" shew that these diseases have been ascribed to an unfavorable state of the atmosphere, and in many cases this has been the primary cause; yet the disease is caused nevertheless by animalcules. Both animals and vegetables when in perfect health are armed against the attacks of diseases by certain natural means of defence, but when deprived of these by accidental circumstances they are always far more subject to disease. When horned cattle are half starved they frequently become covered with vermin, which will be communicated to all the very lean beasts in the drove, but will not be found upon those which are in good order. If young pigs are allowed to become very poor, they will generally be worth less than nothing. Hydatids will occupy their livers and sometimes fix also upon the lungs, (these creatures appear to be simple bladders filled with water, but they are living animals nearly akin to the Tape-worm,) and scrofulous knots will also form in the liver, and mesentery. Should these pigs be well fed, and have sulphur given them for a considerable time, they will appear to become healthy, and may be fattened, but will require a double allowance of food, and gain flesh very slowly. Thus an apple tree in a cold bleak situation will have its branches covered with small scales resembling mussell shells in form, each of which covers from ten to twenty animalcules, which though hardly visible to the naked eye, ruin the health of the tree, even in the most fertile soil. Yet very near to the sickly trees sometimes one may be found completely sheltered by forest wood from all winds, though open to the sun. This will always be found free from these vermin. The cucumber, a native of a warm climate, if sowed early, comes up pale and feeble, and the down upon the leaves almost immediately falls off—the little globular turnip flea (Podura atra) attacks and kills it in twenty four hours. But if sowed in very hot weather in July, these insects, still very numerous, will not touch it. Growing in weather so warm that it is in good health, it has its full suit of defensive armour. The Microscope shows it covered with down, each hair of which is tipped with a viscid fluid like birdlime.

When those substances which are used for manures are suffered to accumulate, they emit effluvia which render the air unfit for respiration, exposing those who breathe in this tainted atmosphere to every kind of pestilential disease, but it is not probable that these diseases are originated by this bad air, but that it deprives those exposed to it of their natural defence against a small portion of contagion, for the Plague, Jail or emigrants Fever, Sea Scurvy, Asiatic Cholera, and Epidemic Dysentery, are very different diseases, almost equally destructive to those who are crowded together in situations where they are surrounded by filth, and very rarely spreading much where a scrupulous cleanliness is observed. A very small quantity of arsenic swallowed has been thrown off by a violent Erysipelas on the skin, and they who inhale a portion of

the smoke of burning Poison Sumach or Mercury, (Rhus toxicodendron and Rhus radicans) or stand to leeward within 20 yards of a quantity of these shrubs that have just been cut, will often have a considerable part of their skin covered with Erysipelas while otherwise in good health.* When Wheat is struck with rust, and Potatoes with black blight, sometimes called rust also, it is during a spell of weather when the nights are as warm as the days, that is to say, when the sky is covered with clouds, or haze through the nights.

The nourishment swallowed by animals, or inhaled from the air goes through a course of digestion and is then circulated through the body, and being modified by passing through machinery which the eye of man has never seen, it deposits where needed, fibre, fat, bone, hair, sinew, &c. throwing off at the same time what is useless or hurtful by the proper emunitories. The Heart and Lungs form the power which pushes forward the fluids in the vessels of the animal. Vegetables by the agency of their roots and leaves take up their nourishment from the earth and air. This food goes through changes analogous to the digestion of animals, and is in like manner circulated through them; passing organs which separate and deposit in the proper situations woody fibre, mucilage, oil, scales of buds, epidermis, &c. Yet there is in the Vegetable no organ acting with the strong mechanical power of a heart to propel their fluids through the vessels, but there is another power that performs this work well in ordinary weather—a part of the vessels of vegetables are occupied by aerial fluids. The volume or bulk of air is greatly increased by heat; an empty bottle will always burst by the swelling of the air it contains if it be corked and set near the fire. Whenever the night is clear the air is much cooler than it was on the preceding day. The bulk of the air in the vessels of the plant being then much diminished, they readily absorb juices from the earth. When heated by the sun the following day, the volume of the air will be so much increased that it will, by a power similar to that of the steam engine, push the juices forward, their motions being directed by the principle of *Life*, which, in the plant as well as the animal, acts by laws which we do not understand, and which are neither those of Mechanics or Chemistry.

But when for a considerable time the heat of the earth is prevented from radiating to the Heavenly bodies by a nightly covering of clouds and fog.† If the weather is hot the grain rusts, the leaves of potatoes, beans, carrots, and many trees, turn black and fall off, the vegetables being then in a feeble unhealthy state, as the principle of life is deprived of its usual assistant, that is to say, of the aid it receives from the alternate expansion and contraction of the air in its veins. Thus when some injury has weakened the action of the brain it produces Apoplexy, often followed by palsy of part of the body; and the motions of the heart and lungs being very feeble, mortification frequently ensues and puts a period to the life of the patient. The Rust is a species of fungus which rapidly destroys the plant it attacks, and as we cannot prevent its growth, we must endeavour to learn to avoid it, as we do some of those insects which affect our crops. As the weather most favourable to the production of rust generally comes on late in the summer, it is important to use a kind of wheat which ripens early, and to sow as early as possible. It is also necessary that the ground should be in good tilth, for every farmer must have observed that *hard* rich ground produces straw with very large watery leaves, which continue green long after the grain on well wrought mellow soil has ripened, and which rarely fail to rust. As fresh unfermented manure always produces the same watery leaf, it should never be applied to wheat. Lime, and the ashes of wood in moderate quantities are manures of a different kind, favoring the growth of the solid parts of plants, and accelerating their ripening. Burnt earth possesses the same properties in a remarkable degree. If a mixture of several varieties of Wheat are sowed, it will always be perceived that the rust affects some more than others. It has been observed that in a field of wheat considerably injured by rust there was one kind perfectly free from the disease. The surface of the husks of the seed in this variety were uncommonly hard and smooth. The epidermis or outer bark of every kind of grass, from the Bamboo down to the shortest bent-grass, is composed in great part of Silica or the earth of flint. In the worst kinds of sedge which grow in water, it is so thick that the leaves cut like a knife, while on the best grasses it is extremely thin. The proportion varies much in the straw of the different varieties of oats and wheat, and for this reason some varieties which are very prolific in one climate, are of no value in another. By selecting the plants not affected with rust, there is little doubt that a variety might be formed in the course of a few years which would rarely be injured by this disease. Plants as well as animals possess the capacity of becoming accommodated to the climate in which they are placed, and of resisting the diseases peculiar to the climate. When a new variety is introduced from a distant country, it is prudent at first to sow but a small quantity till its capacity of resisting disease has been tested. A new kind of Wheat introduced into the neighbourhood of Halifax a few years back, generally suffered greatly with rust in seasons when the common kind received no injury. During the operation of the former Agricultural Society a quantity of wheat was imported for seed, supposed to be of superior quality. A Farmer in Dartmouth purchased the last of this seed, but there not being enough to sow all his field, the remainder was sowed with wheat from Musquodoboit, a place at that time remarkable for producing rusted wheat. That part of the field where this was sowed was good and bright, but that sowed with the Society's seed was much injured by rust. Land which has been ploughed for several years in succession more frequently produces rusted grain, and blights

* Hence it appears probable that in a wholesome air we possess the power of throwing off a small portion of contagious matter by perspiration, and also the power of throwing upon the surface of the skin certain noxious substances inhaled into the lungs, but that in an atmosphere loaded with as much unwholsome vapour as our organs of perspiration can discharge from the body, we are exposed to be affected by every contagious disease.

† In a clear hot day if a thermometer is laid upon the ground, exposed to the sun, and another hung five feet above the ground it will be found that the earth is warmer than the air, but if the sky continues quite clear, within half an hour after sunset the surface of the ground will be considerably colder than the air. It appears from the experiments of Dr. Wells that the heat radiates from the earth to the heavens in straight lines, subject to the same laws as light. As transparent air holds water in solution in a quantity proportional to its heat, therefore as soon as the earth has become colder than the air in contact with it, this last necessarily deposits a part of the water it held in solution in the form of dew. but should clouds or haze conceal the sky, the heat, moving only in straight lines, cannot pass to the heavens, and the earth and air being of the same temperature, no dew is formed. A violent wind also prevents the formation of dew by mingling the air in contact with the earth with that above it, before it has time to be much cooled, and for this reason vallies which are remarkably sheltered by hills are exposed to early frost, while the summits of high hills though much cooler by day, are free from frost at night. The thinnest paper is a covering sufficient to keep off a light frost by preventing the radiation of heat, and the growth of wall fruit is accelerated by fixing boards of half a yard in breadth on the top of the wall, which at sunset are slided forward so that they are perpendicularly over the trees which are trained against the wall.

potatoes, than that which was lately in grass. There being no half-decayed grass to keep the ground loose and open, the roots of the crop penetrate but little into the soil, and are soon injured by a slight drought, which, checking the growth of the leaves, and increasing the roots, exposes them to be nearly drowned by sudden showers of rain, there not being sufficient leaf to dispose of the moisture taken up by the roots. Should such a change from dry to very wet weather happen when grain is in the milk, or potatoes nearly out of blossom, they are frequently attacked with disease, when no injury is received by these crops upon land which was in grass a year or two before.

CUCUMBER INSECT.

This mischievous animalcule is believed to have been imported from Boston more than forty years ago, in the rinds of watermelons, which were full of them. During a succession of warm seasons they spread far and wide; and there were some years in which scarcely a cucumber fit for pickling could be found near Halifax after the month of August. In the cold seasons that followed the warm summer of 1831 they nearly disappeared, being found only in hotbeds that were always confined to the same part of the garden, but this year they have appeared in many places upon land where Cucumbers had been raised from 12 to 20 years back, originating probably from eggs that have remained in a dormant state. The insect may be found in the black rotten spots upon the cucumber, and also in the center of all those vines which have curled leaves near their termination. It is white, in form resembling the snow-flea (Podura nivis), but so small that it cannot be distinctly seen without a magnifying glass. As there is reason, from past experience, to believe that these insects will be more numerous next year, should it prove a warm season, it will be well for those who design to cultivate this vegetable, so grateful to most people in hot weather, to use proper precautions to avoid them. The hot-bed frames and sashes should be white-washed with lime slacked in strong brine, and then placed at a distance from the bed. No part of the manure from the old bed should be used next Spring in making the new ones, which should be at a considerable distance from where cucumbers were grown the present year; and the cucumbers, squashes, and pumpkins in the open ground, should if possible, be planted where it is not remembered that ever they were grown before. There were several seasons in which all the cucumbers planted on cultivated ground were attacked by the insect—during those years nearly all the pickling cucumbers brought to market were raised, by the help of manure, on rough barren land which had never been cultivated. There are many who believe that watery vegetables are unwholsome in the hot season, and that they expose persons to the bowel complaints. This prejudice probably originated at the same period with another which still continues among some of the more ignorant class, that is, that fresh air and cold water must never be allowed to the sick: conceiving them to be equally mischievous. I will mention a few facts that I have observed. During a great part of the hottest August in the last fifty years, the weather was constantly calm and hazy, showers frequent, the air suffocating—the sun rarely visible, and the stars not seen at all. the nights being as warm as the days. Many vegetables were blighted, but cucumbers were of the best quality, and produced a much greater crop than was ever seen in Halifax before or since. Berries were also abundant and of superior quality. It was a sickly time in Halifax; bowel complaints were very frequent, and numbers were attacked with Cholera morbus. Having a very large family I took care that they should have through this hot Season as many cucumbers as they chose to eat, generally three times a day; and also that they should be plentifully supplied with Berries. They continued in good health, as also did many others who used the same regimen, but all within my observation who were violently attacked were persons accustomed to live upon very solid food. Nature often points out to us our proper nourishment. In very hot weather fruit is of the best quality, and more grateful to our taste than solid food, but when the weather turns cold, the cucumber grows bitter, the delicious watermelon grows insipid, like the wretched specimens we import from Boston, the blackberry loses its taste, and all seem to say, "now let us alone, our season is past." T. S.

HEDGES.

In those parts of the Province where the land is sheltered by the hills from the Southwest sea breeze, or wherever the Apple tree thrives, it will make very good hedges, requiring little or no lopping. They are common in some parts of France, and have been found very profitable. As they bear a small quantity of fruit among the thousands of trees in the hedges an apple of superior quality is occasionally produced; a great number of stocks are grafted with the new fruit, and then offered for sale, and frequently a considerable sum is realised in this way from a single tree.

In the South of France hedges are generally beech, and in the same country Cottages are often made of living beech, which was planted so close that the trees united as if they had been joined by grafting. As a fence the beech hedge exceeds all others in common use, being a solid wall of wood 6 or 7 feet high, surmounted with a green bushy top. As beech can hardly bear transplanting, the nuts are always planted where the hedge is required. This may be done in the fall if there should be no danger from field mice; but if the nuts are kept till spring, they must not be suffered to dry, as they would not vegetate after drying, but as soon as they are collected they should be packed in the damp beech leaves and kept where they will be exposed to the frost. They will then vegetate as quickly as oats if sowed in the spring. T. S.

The Editors of the Albany Cultivator will please to accept our thanks for the package of their valuable papers, which they have so kindly furnished us with. We will make the best use possible of the valuable information which the columns of the Cultivator ever contain—by extracting that which is adopted to our climate and circumstances, and publishing it in the Colonial Farmer, for the benefit of Nova-Scotia Farmers.

THE MARKET.

During the past month the average price of beef has been 30s @ 40s ℔ 100 lbs.; Mutton, 4d @ 6d ℔ lb.; Butter, 10d @ 1s, by the firkin; some small lots have sold at 13d; Hay, £5 10 @ £6. Market dull. R. N.

CHAPTER OF FACTS.

Mathematics and Physics.—If the square of the diameter of the circle be multiplied by .7854 the product is the area. If the diameter of a sphere be cubed and multiplied by .6236, the product is the solidity; and the square of the diameter multiplied by 3.14159 is the surface of the sphere.

To find the contents of a cask, add double the square of the bung diameter to the square of the head diameter, and multiply this sum by the head of the cask; then divide the product by 1077 for all gallons of 280 cubic inches each, or by 882 for wine gallons of 231 cubic inches each.

Quincunx is one at each of four corners, and one in the middle.

The convexity of the earth interposes to prevent the sight of distant bodies. Thus, at 600 yards, one inch would be concealed, or an object one inch high would not be seen in a straight line; at 900 yards, two inches; at 1400 yards, five inches; at one mile, eight inches; three miles, six feet; four miles, ten feet; five miles, sixteen feet; six miles, twenty-four feet; ten miles, 66 feet; 12 miles, 95 feet; 13 miles, 112 feet, and 14 miles, 130 feet.

The mechanical powers may be reduced to three, but they are usually expressed at six—the level, the wheel and axle, the pulley, the inclined plane, the screw and the wedge.

In a single moveable pulley, the power gained is doubled. In a contined combination, the power is twice the number of pullies, less 1.

In levers, the power is reciprocally as the lengths are each side the fulcrum or centre of motion, as illustrated in the steelyards

The power gained in the wheel and axle is at the radius of the wheel to that of the axle.

The power gained by an inclined plane is as the length to the height.

The power of the wedge is generally as the length to the thickness of the back.

The power of the screw is as the circumference to the distance of the thread, or as 6,2832 to that distance.

Resistance is an affair of experiment, sometimes a third and at other times less.

The friction of cylinders or wheels is as the pressure, and inversely as the diameter

The least friction is when polished iron moves on brass.

The area of a circle is the product of the diamter and circumferencee, divided by 4.

A fall of one tenth of an inch per mile, will produce a motion in rivers. The greatest velocity is at the surface and in the middle, and the least at the bottom and sides. But as the velocity increases, the action on the sides and bottom increases also.

Eclipses return in the very same order every 18 years and 11 days, supposing four leap years in the interval, and if five, then every ten days. Other cycles of motion, however vary the phenomenon or measure The moon's shadow is less than 170 miles broad; but the eclipse, in degree, for 2000 miles.

A pump ten feet above a well, with seven inches bore will discharge seventy gallons a minute; and at 30 feet 4 inces, 23 gallons.

The specific gravity of water, being 1000; that of alcohol, pure 0.829; beer, 1.034; cider, 1,018; milk, 1.032; oil, linseed, 0 94; vinegar, 1.025; sea-water, 1.026; bone, ox, 1.666; brass, 7.824; brick, 2; cork, .24; gold, 19.2587; granite, 2.728; iron, bar, 7.68; lead, 11.352; lignumvitæ, 1.33; mahogany, 1.06; marble 2.716; mercury, 12.58; oak, 1.17; platina, 20.722; silver, 10.474; slate-clay, 2.67; tin, 10.717, lime-stone, 1.386; elm, 9.771; honey, 1.45.—*Treasury of Knowledge.*

Broken Wind Horses—A great number of dissections have proved that the cause of this disease is a rupture of the air vessels in the lungs. The dificulty of breathing which some persons experience after unusual or prolonged effort, would seem to arise from the same cause, and there is some reason to think that the disease may be herditary. This is an important suggestion, so far as the human race is concerned.

" Dr. Jackson found that of 28 persons affected with this rupture of the air cells, 18 were the offspring of parents (father or mother,) affected with the same disease, and several of them had died from this cause. In some instaces the brothers and sisters of these persons were similarly affected. On the other hand of 50 persons unaffected with the disease, three only were the offspring of parents who had suffered from it; whence it follows that rupture of the air cells of the lungs is frequently a heriditary disease; a fact important to man and horse, at all events to the breeder of the latter.—*Medico Chirurgical Rev.*

Old Lime Plaster on Wheat.—A writer in the Farmer's Gazette says he sowed two pieces of spring wheat after brining and rolling the seed in slacked lime. On one of these fields he sowed or spread a number of loads of old plaster from the walls of old houses, and harrowed it in with the seed. Both fields were entirely free from smut, which that year was generally rumous to wheat, but the wheat of the field where no lime was used, (except for rolling the seed,) was badly shrunk; while that which grew on the field well sprinkled with old plaster, was *good, sound, plump* wheat.

Sheep with Foul Noses.—The American Farmer says:—Make a small mop or swab, by wrapping a rag about the end of a stick—dip this in tar, taking up as much as will adhere to it—roll this in salt and then thrusting it into the sheep's mouth, hold it there till he is forced to withdraw and swallow the tar and the salt, and your sheep will soon get good health and clean noses.

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