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THE
Canadian Agriculturist,

AND

JOURNAL OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XI.

TORONTO, JULY, 1859.

No. 7.

HARVEST WORK.

We have nearly approached that interesting and important season of the Agricultural year,—the grain harvest,—round which so many pleasing and poetical associations combine, and in which, as the realization of the husbandman's labors, the hopes of all classes of the community for the restoration of the prosperity of the Province are mainly based. A few practical remarks in relation to this department of Agricultural labour, will not be considered as inopportune.

First, as to the proper time for cutting grain. In general farmers allow their grain to get too ripe before they begin their harvest operations; and the loss from this practice is, when all things are duly considered, much greater than most people imagine. It has been ascertained by the most careful experiments made in the field and in the laboratory, that wheat, for instance, yields the largest amount of the best quality of flour, when it is cut a few days before it is fully ripe; and the reason assigned is that the grain in ripening loses a certain amount of starch and sugar, which is converted into woody fibre, a substance comparatively innutritious. It has long been known to practical men that the grain when fully ripe is thicker in the bran and has a coarser surface or cuticle than when cut in a somewhat greenish state. Wheat, therefore, when dead ripe contains less flour and more bran, and the straw for the same reason is less nutritious as fodder. In this hot and forcing climate, where it is almost impossible to overtake harvest work when it is not commenced betimes, and much of the best grain is lost by shelling out in the field, it is a matter of great practical importance to determine the proper time for commencing harvest operations. If wheat be intended for seed, then the grain should be allowed to ripen fully before cutting, but for converting into flour, it is in the best condition for reaping as soon as the berries have fairly got out of the milky state and have attained to a moderate state of hardness, and the straw has assumed a yellowish colour. If wheat, however, be cut when too green, the grain will shrivel in harvesting, and the sample will be of less commercial value. On an extensive farm where several varieties of wheat are usually cultivated, and soils differ, it will seldom if ever happen that the whole will ripen precisely at the same time. By beginning, therefore, to cut the forwardest before it is fully ripe, with the present improved

appliances for facilitating harvest operations, the whole may, in general, be completed within the desired period.

The above observations more or less apply to the other cereals of the farm.—Barley and oats, for instance, are frequently allowed to stand so long before mowing that a large quantity of the heaviest grain is knocked out in the field, often to the amount sufficient for seeding the same, and sometimes a great deal more. It is, however, not economical to cut either barley or oats before the grain has fully advanced beyond the milky state, and has become tolerably plump, especially when required for seed; but if over ripeness is allowed to take place, not only is much of the best grain lost in the field, but the straw becomes of little value as fodder for cattle.

In the present season we have observed in many fields, owing to the late severe frosts, and other causes, that the growth of the grain is very unequal, which will doubtless be the case with its ripening. The best way will be to cut the whole as soon as the earlier portions become fully ripe, and not wait till the later grain attains that state; a proceeding that would be sure to involve serious loss. To get a field of grain to grow and ripen uniformly, is one of the principal achievements of improved modern agriculture, and an essential condition to a heavy crop and superior quality.

The operations of cutting, binding, and shocking, are frequently performed in a careless and slovenly manner. Formerly, when our agriculture was in a cruder state and the price of grain very low, the manner of doing these things was not of so much consequence. But in our present altered circumstances, when our fields in the older settlements are getting clear of stumps and otherwise improved, with a constant demand for produce at enhanced rates, the operations of harvesting, as well as those of general tillage, should receive more attention to their various details, and as a whole have a higher finish. With our much improved reapers, rakes, &c., this can readily be done both expeditiously and profitably.

Farmers would frequently find it profitable to pay stricter attention to the binding and shocking of wheat, and indeed of other kinds of grain, than is commonly done. Much inconvenience and loss would by this means be obviated, and the work would have a more agreeable finish to the eye. Sheaves of course, ought to be bound so as to bear the necessary after-handling without coming undone; an effect which occasions both loss and inconvenience. When grain is cut comparatively green, and especially in showery seasons, sheaves should invariably be made small and not too tightly bound; and in such case more than ordinary attention should be paid to the shocking. The old country practice of "capping" the shock with two or three inverted sheaves might, in "catching" weather, be advantageously adopted with us, and much sprouted grain be thereby prevented. In the wet harvest of—if we mistake not—1855 we saw a number of harvest fields in the western parts of the Province, in a state of comparative security, by strict attention to good shocking and careful capping. But whatever precautionary measures may be adopted, after a succession of heavy rains, every shock should be examined the first fine day, and if need be, taken apart and thoroughly exposed to the action of wind and sun. In such seasons grain should be put loosely into the mow, and what would be better still, make it into small ricks in the open air. Much grain is absolutely spoiled by being put into barns in a damp state, whereas had it been put into ricks, the dry winds and first frosts would bring it into excellent condition for threshing. These few hints will suggest to the minds of our readers several matters of detail, which, in the aggregate are of much importance. And after using our best means, let us humbly trust that a beneficent Providence will "crown the year with His goodness," and peace and plenty dwell in the land.

IMPORTANCE OF THOROUGH TILLAGE.

One of the greatest and most common mistakes to which farmers are liable is the getting of more land under tillage than they have either the skill or capital to manage in the most profitable way. This is a mistake common to the cultivators of the soil all over the world. In some of the more advanced countries of Europe may sometimes be found a sufficient amount of enterprise and capital among individuals to manage economically and profitably large breadths of land; but even there, as a general thing, it will be found that farmers have quite as much land as they have the means of turning to a profitable account. The truth is, that the thorough development of the soil, in which consists the perfection of agriculture, involves an industrial pursuit of the highest order, necessarily requiring a large amount of capital, skill, and persevering industry. In this new western world these remarks are of peculiar significance, as the general tendency among farmers is not so much to farm well, as to farm extensively. It is true that when a man has to convert the wild forest into a farm, the operations cannot be of a very refined character, and the condition of the land for several years to come will necessarily be rough and unfinished. But in older settlements it would be better for farmers to think more of improved culture, and less of mere territorial possession. The practice which so extensively obtains of estimating the wheat crop of a farm by the number of acres under crop, rather than by the probable yield per acre, is an illustration of the principle which we are now animadverting upon; and which, in order to arrive at a practical system of good husbandry, must be kept within proper bounds. It is imperfect, slovenly cultivation, the neglect of manuring, of selecting pure seed, and judiciously changing the succession of crops, rather than any peculiarities either in the soil or climate, that render the crops of this North American continent so frequently fickle and diminutive. Better, far better leave a larger proportion of a farm in the state of pristine nature, and cultivate a lesser portion in a thorough and liberal manner. In this way the current expenses of a farm might often be even diminished, while its produce would sure to be increased. Upon this principle the agricultural wealth of Canada admits of a large augmentation. The following observations of Lord Bacon, addressed to a Prime Minister of England, we commend to the best attention of our readers:—"Of all sorts of thrift for the public good, I would, above all others, commend to your care the encouragement to be given to husbandry, and the improving of land for tillage. There is no such usury as this. The king cannot enlarge the bounds of these islands which make up his empire, the ocean being the unremovable wall which encloseth them; but he may enlarge and multiply the revenue thereof by this honest and harmless way of good husbandry."

MANAGEMENT OF ROOT CROPS.

As the Hay crop must necessarily be short in most parts of the Province, it behoves the farmer to extend the most liberal treatment to his roots, as the only practicable means now at his command, of meeting the deficiency. It is needless to insist on the necessity of supplying cattle, especially during our long and often severe winters, with a sufficient amount of nutritious food, as every one knows that such care and treatment are essential to success. Superior animals the improved breeds will very soon deteriorate, unless regularly supplied with the necessary quantity of wholesome fodder. And it has been found from

experience, that mixed cattle-food, such as consists of hay, straw, and the various kinds of roots, is much more economical and nutritious than any of the articles used separately. Hence the importance and reasonableness of drawing the attention of the farmer to the subject.

We should not greatly err, perhaps, if we were to say that the ordinary weight of roots per acre in this country, might be nearly or quite doubled by adopting a more thorough and liberal system of cultivation, which would by no means involve a like proportionate outlay. One acre deeply ploughed and well manured, carefully sown in drills, with proper subsequent cultivation during the early growth of the crop, will often produce as much as two or three acres treated in a slovenly and unskilful manner. It matters little what kind of root crop is cultivated, whether potatoes, turnips, cabbage, mangolds, carrots, &c., for the above observations, apply almost equally to them all.

At the present time, we learn—from the information that has reached us from different parts of the Province—that most of these kinds of crops are looking well, with the exception of early potatoes, which were in many places cut down by the severe frosts in the early part of June. What now remains to be done, is, to set out the plants at such distances in the rows as to allow sufficient room to grow, and for air and light freely to enter. Turnips, mangolds, &c., in a crowded state, never attain half size and feeding qualities; room, air and light, are as necessary to the healthy growth and maturity of vegetables as to animals; a truth very frequently lost sight of in practice. Next in importance is the frequent stirring of the soil, especially during the earlier periods of growth, by which weeds are not only exterminated, but the ground is brought into the most favorable condition, mechanically and chemically, for pushing on the crop. The frequent use of the horse hoe among drill crops, particularly in hot weather and during the periods of drought, is attended by the most beneficial effects. The more the surface is stirred in hot weather, the finer and deeper becomes the tilth, and the soil is thereby enabled to absorb a much larger amount of moisture from the atmosphere, and many important chemical changes are produced.—Among the best farmers in Britain, even wheat and other cereals are subjected to one or two hoeings either by hand or machines during the dry weather of spring and early summer; and the results are most satisfactory and profitable. We say then to our readers, spare no pains to thin out your plants to proper distances, and be liberal with the use of the horse-hoe, not only for the purpose of destroying weeds, but especially for deeply pulverizing the soil.

THE CROPS.

Of late we have experienced extremely sudden changes of temperature with occasional rain. The weather, on the whole, has been cold,—especially during the night,—the thermometer in several instances falling to within a few degrees of the freezing point. The ground, although moist, is not as yet sufficiently heated to push vegetation forward vigorously, and up to the present (July 8th) there are no symptoms of any decided change.

The frosts in the beginning of June destroyed the early wheat in several localities in the Western part of the Province, as we learn was the case in the States of Michigan, Wisconsin, Illinois, Ohio, &c.,—the injury, however, was not so extensive or severe as was at first anticipated. Spring grain is generally promising, and suffered much less. Spring wheat, which is extensively cultivated, has a healthy appearance, and will probably yield well, if it should escape the midge, which is doing considerable mischief in different localities.

among winter wheat, although, we trust, much less destructive than last year. Of rust, we hear but little or nothing. Much will of course depend upon the state of the weather for the next few weeks; and the country will await the result with more than ordinary anxiety. We fear, from comparing the different accounts, both public and private, which have reached us, that the probability is, that Canada will not reap an average crop of wheat; we hope, however, from present appearances, that it will not fall much below that point. Hay, in most sections of the Upper Province, will be short; but the deficiency will be partially met by turnips, mangels, carrots, &c., which promise well. From Europe the accounts of the grain crops are promising, and notwithstanding the war, prices were at last accounts receding. We append some remarks from an esteemed correspondent near Cobourg, under date of June 30th:—

“The wheat fly has been very busy in great numbers in our fall wheat, for about a month; they seem to be as numerous this year as ever. The frost did no harm to the grain crops around here, as far as I have seen, but injured the potatoes and corn; but they are fast recovering under the influences of the fine growing weather we have just now. Hay will be a very light crop—old meadow especially so. Spring wheat looks uncommonly well at present, and I hope it is far enough back to escape the dreaded fly. Should nothing unforeseen occur, our spring wheat crop will be abundant. The same may be said of Oats and Peas. Barley came away in most cases rather thin; but otherwise it looks well. Small seeds seem in most cases to do well this season. I have my mangel-wurtzels already thinned, and my turnips and carrots are not about ready for thinning. I trust we will have a good crop of roots to make up in some measure for our deficient hay crop.”

THE PROVINCIAL EXHIBITION.

It will be seen from the President's Circular, which appears in the present number, that the Local Committee at Kingston are using their utmost exertions to provide accommodation, of an ample and superior character, at the approaching exhibition; and they have consequently a just right to appeal to the general public to aid them in this great Provincial work, by sending animals, grains, manufacturing, mechanical and artistical productions, as *material* for the show. As the exhibition is equally open to the whole of Canada, and Kingston being conveniently situated in regard to the eastern section, we shall expect to see many visitors and competitors from the Lower Province, and we hereby extend them a cordial and respectful invitation. It would be most desirable that the Kingston gathering should be a pretty full exposition of the agricultural, horticultural, mechanical and artistical skill of *United Canada*, and we see nothing to prevent it. Every facility will also be afforded to our friends and neighbors of the great adjoining Republic, to come over and exhibit their various and best approved productions; so that notwithstanding the hard times, the Kingston exhibition, it may be fairly anticipated, will equal if not surpass, any of its predecessors. The buildings, stables, pens, &c., are both extensive, convenient, and permanent; and from the experience we have had of the Local Board of Management, we have every confidence that the whole preparations will be suitable and satisfactory; and it now only remains for the enterprising portion of the great Province, to say whether our next Provincial Show shall eclipse all that have preceded it. This can be done by Societies and individuals taking up the matter in time, and in an earnest, patriotic and practical spirit.

The Premiums we see, amount to nearly TWELVE THOUSAND DOLLARS!—The prize list appeared in our last number, and is being sent to Agricultural Societies, Mechanics' Institutes, &c., throughout the Province. Copies can always be obtained by addressing the Secretary of the Board in Toronto.

Complaints have hitherto been made that articles not manufactured in the Province have sometimes been entered by mistake, as home production, contrary to the seventh printed regulation. Every exertion will, for the future be made to carry out this rule in its integrity, as no article can be thereby allowed to compete in our own classes, *unless made in the Province.*

Foreign articles are invited for exhibition, and they will receive diplomas, or special prizes, according to their respective merits.

Correspondence.

PREMIUM AND SEED WHEAT.

NEWCASTLE, 6th June, 1859.

To the Board of Agriculture, Upper Canada.

GENTLEMEN,—Permit me through the *Agriculturist*, to address you upon a subject which I deem of vital importance to the Institution, as upon its management depends its success.

It is a matter of the gravest consideration to know whether the efforts of societies and individuals in promoting competition by the means of premiums, are proving beneficial or not for the purposes intended.

Close observation compels me to say that this is not always the case, and in that of Seed Fall Wheat most particularly so. When I say this I refer directly to the present management of this article by the Association.

Fall Wheat, I emphatically term the very marrow of the country, from and through it this colony as an agricultural one, has obtained the high celebrity which she now holds; the expositions of 1851 and 1855, can fully testify this. If we wish to retain this position, it behoves us one and all to be the more careful in properly nurturing it. Agriculturists of high reputation and gentlemen of philanthropic spirit have not lost sight of this particular.

When the Provincial Association was first formed, the article, Seed Wheat, stood as it now does, the most prominently forward. The Canada Company caught up this spirit, and their yearly munificent gift of \$100 clearly shews it; they knew that in their extensive settlements of the west, by the introduction of the best and most favourable kinds of seed, they were not only conferring a boon upon the farmers, but actually raising the value of their lands from 50 to 100 per cent thereby. The western portion of the country has gained the reputation of producing the best wheat, and consequently first class emigrants settled in these particular localities.

The result of high premiums brought about great competition. Farmers strained every nerve; the greatest skill was brought to bear to produce the best samples, and to such a high state of perfection was this attained, that the judges had the greatest difficulty in deciding which was most worthy, but to get over this difficulty the Association deemed it the most just way to measure and weigh the samples, the heaviest of course taking the first prize. In introducing this system they did not foresee the present results. It is against the system of weighing that I wish to draw your attention; an onlooker has sometimes better opportunities of observing than the officers of an institution, especially at a time when they are most busy, during the days of the exhibition. A superficial observer would consider this system of weighing the most just, but upon close inspection (and I have done so for the last 3 years) the system now employed will not carry out the original intention, the great aim of the Association, viz., to procure the very best seed. Some may incline to differ with me in this, but when I say that close observation and practical results are my guides, I can speak confidently, pointedly, I cannot say what instructions the judges of this article may have from the Association but I have observed the system they adopt. Measure in hand, they proceed from lot to lot, taking down the weight of each one, and when gone through with they sum up

and those samples which prove the heaviest carry off the prize; the kind of wheat, the beauty of the sample, its adaptedness for seed, its producing qualities for flour, and many other things which I might mention, are never taken into consideration. Weight is their guide, and that alone they go by. Some exhibitors more knowing than others (having gone through the fire) have turned their attention to produce this weight. The system employed (and I have it from the gentleman who was the successful competitor for 1856 and 1857) is to cut the wheat when it is just out of the milk, sufficiently so not to shrink. It is now well known that wheat in this state will weigh much heavier than if allowed to fully ripen, and what is the consequence? This wheat when sown again will not produce sufficiently to pay the expenses, for it has not arrived at its maturity, which should and must be before it answers the purpose designed by nature—seed. This is the case in all other plants and herbs, that they must be thoroughly ripe before they are fitted for seed, and how is, or how can wheat be an exception to this law of nature—the thing is impossible.

Another thing which is closely allied to this, is the kind of wheat. The great object of the farmer is to get seed which will yield the greatest quantity to the acre, and of such a kind that will command the highest price.

There are but two kinds of Fall Wheat which come in direct competition at the exhibition, the *Sole's White*, and the *Blue Stem*; the latter kind has taken the prize for the last three years, on the grounds of weighing heavier; it has certainly done so, and under the system which I have mentioned, *cutting it green*; but will it weigh as heavy as the other kind if allowed to stand until fully ripe, is a question in my mind; but whether or not is a matter of minor importance, as all wheat is sold by weight, not by measure, but allowing it this disadvantage, what others does it possess? Which of the two kinds yield the best. If the *Sole's* will produce to the acre upon the same field from one-eighth to one-fifth more, which of the two commands the highest price? The *Sole's*. Why? Because the miller can manufacture from 4 to 5 lbs more flour out of the bushel of 60 lbs; and which manufactures the best flour? The *Soles*: it is this kind that has raised the standard of the Canadian flour so high, both in the Home and American market. It was from this kind that the barrel of flour took the prize at the Exhibition in England in 1851; it was from this kind that the prizes have been awarded in the New York State Fair, Lower Canada, and our own Association, whenever it has competed, and that is for the past 10 years, at least. I have pointed out a system that if allowed to go on will prove utterly ruinous to the Association and to the country. To the Association, as there is a very great deal of dissatisfaction, and consequently a falling off of competition and membership. A number of competitors for the Canada Company's prize last year declared if the present system was still pursued they would not compete again, for they considered justice was not done them, and more especially those whose wheat was considered by onlookers and able judges far superior to that which took the prize; samples of which were taken by gentlemen both to the New York State Fair, and to Mark Lane, London, and declared to be beyond anything they had ever seen in the country. If every one were to adopt this system of cutting their wheat in a green state, we would shortly have nothing fit for seed.

I have stated what has come under my observation; hundreds of others know the same facts, and it is for the members of your Board to investigate this matter, and apply it as you deem best, it is quite easy to tell ripe grain and green. Take a berry of each and cut them through, the ripe one will appear as white as chalk, and shewing the thickness of the skin; the other will be all alike, of a blueish cast, and very transparent.

I am, Gentlemen,

Yours truly,

E. A. McNAUGHTON.

REMARKS.

No doubt but our correspondent's communication will receive that attention by the Board of Agriculture as the important object, which he seeks to secure, demands. We were not aware that the Judges of wheat at our Provincial Shows make weight *alone*, the condition on which they decide the premiums, and cannot help thinking that our correspondent has some misapprehension on this point. Mr. Widder, as the Chief Commissioner of the Canada Company, has intimated to the Board what he wishes and requires relative to this matter; that the wheat obtaining their munificent premium, should be of pure, uniform quality, and the best adapted, *as seed*, to the climate, soils, and markets of Canada. The Board will doubtless give such definite instructions to the judges, as will secure these important objects.—[EDITOR.

Agricultural Intelligence.

THE TURNIP FLY.

[The following notice of a paper read by Mr. Fisher Hobbs at a recent meeting of the Council of the Royal Agricultural Society of England, will be found to contain matter of interest and utility to many of the readers of this Journal.]

Mr. Fisher Hobbs, in accordance with the arrangement made at the last Council, favored the meeting with the following statement of his practical experience in preventing the ravages of the Turnip-fly:—

Having been requested at the last meeting of the Society to introduce to the notice of the members my experience of, and mode of treatment for preventing the ravages of the Turnip Fly, I readily consented to do so, with, however, the understanding that, what I had to say should be given more in a conversational form than as a paper prepared for the occasion. I was induced the more to respond to this invitation in the hope that it might act as something of an example for other members, and that the Weekly Council Meetings of the Society might become of some interest and service to us all, by affording the time and place for talking over subjects of passing importance to agriculturists generally. In introducing this subject I wish you particularly to understand that I have no new theory to expound, but merely to impress the result of my practice and the policy of carrying out certain principles which have long been known and admitted; but, I fear, not sufficiently observed. My remarks on the cultivation I should here state are intended to apply more to the Swede Turnip than to any other varieties which are generally grown after green crops, but the great work of destruction by the fly is applicable alike to both. As "prevention is better than cure" I shall commence with the preparation of the land, assuming that this has been thoroughly under-drained wherever requisite. 1st. I consider that autumnal cultivation is essentially necessary; first, by broadsharing for the destruction of weeds and insects, as well as for the aëration of the soil. 2d. That deep ploughing should follow, and subsoiling if required, and it is frequently my practice during the early part of winter to carry on to the land intended for a root crop the unfermented manure direct from the yards or sheds, and at once plough it in, and not a particle must be suffered to be seen on the surface; this I believe to be important, for if not attended to the undecayed portion of the manure becomes a receptacle, and subsequently a nursery for insects. 3d. That at the commencement of spring it is most desirable, as soon as the state of the land will permit, to apply the harrows and roll, especially the former. I believe that more good may be done towards the destruction of insects of various kinds at that period than at any other throughout the year. Afterwards scarify, harrow, and roll until the land is in a pulverised state, and for a fortnight or three weeks before the time for drilling let the land remain like a seed-bed, so as to attract moisture, to allow vegetation for the seeds of weeds and for insects to deposit their larvæ; this is frequently termed "purging" the land. I need not refer to the common mode of applying the fermented or partly rotted farm-yard manure for the Turnip crop, except to state that it ought at once to be ploughed in, and the seed deposited immediately. 4th. That at the time of drilling the seed it is best for the land to be ploughed (but some prefer scarifying only) and the seed to be immediately deposited. This is so important that I have frequently known total failures from the neglect of so doing. There is another point which I would strongly recommend, that is, in dry and sunny weather to plough and sow early in the morning and late in the afternoon, but never during the heat of the day. I know an instance where the most signal success has for several years attended this mode of operation, and where the manager has never failed to secure a plant, although he is one of the old school, and still sows the seed broadcast with his own hand. This can be confirmed by several large farmers in the neighbourhood, who, strange to say, notwithstanding the example thus placed before them, continue to incur an amount of loss from having to sow two or three times, simply from the obstinacy and prejudice with which they continue to adhere to the customary working hours for their horses and men. 5th. That at the time of depositing the seed it is my invariable practice to use some description of artificial manure, generally superphosphate of lime and likewise add about 30 bushels of ashes per acre, made from hedge trimmings;

weeds, &c., collected upon the land at different periods throughout the year. The roller may now be used with great advantage, before, and sometimes after drilling.—In dry weather I strongly recommend the application of the liquid manure drill. 6th. That before or immediately the young plants appear, the horse-hoe should be resorted to for the purpose of destroying the ova or larvæ of the insects to prevent their coming to maturity. When once the plant is well up the roller may sometimes be applied with much benefit as it tends still further to disturb the insect tribe, as well as to retain moisture for the young plant, and to consolidate the farm-yard manure where lately applied. At this period the plant requires frequent watching throughout the day, and if the enemy shows itself in any force set to work as quickly as possible to accomplish its annihilation. Having described to you briefly my mode of prevention, I will now proceed to give you the cure, which is simply by the application of one or more 'top-dressings.' I have tried various experiments, steeping the seed, and top-dressings for upwards of 30 years, but though sometimes successful I could not depend on any of them until I adopted my present system, and I think it is only fair that I should state that I derived the chief features as to the use of this top-dressing from my late bailiff Mr. O. Hawkins, who came to me some nine years since with an especial recommendation on this point; in fact, he himself engaged to secure the Turnip plant from the ravages of the fly, adding that he was willing to give up his situation immediately if he could not do so. I can only add that for eight years, during the whole time he was with me, he fulfilled all he promised in this respect. The following is Mr. Hawkins' recipe for a top-dressing:—1 bushel of white gas-ashes, fresh from the gas-house; 1 bushel of fresh lime from the kiln, 6 lbs. of sulphur, and 10 lbs. of soot, well mixed together and got to as fine a powder as possible, so that it may adhere to the young plant. The above is sufficient for 2 acres when drilled at 27 inches. It should be applied very early in the morning, when the dew is on the leaf—a broad-cast machine being the most expeditious mode of distributing it, or it may be sprinkled with the hand carefully over the rows. If the fly continues troublesome the process should be repeated; by this means 200 to 220 acres of Turnips, Swedes, and Rape have been grown on my farms annually, for eight or nine years without a rod of ground losing plants. The above is a strong dressing to be used when the fly is very numerous, and has never failed when applied at night. Numerous experiments have been tried, and amongst them I recommend the following in ordinary cases, and intend to use it during the present season if necessary:—14 lbs. of sulphur, 1 bushel of fresh lime, and 2 bushels of road scrapings per acre, mixed together for a few days before it is used, and applied at night, either by means of a small drill, or strewed along the rows by hand. I have known sulphur mixed with water applied in a liquid state by means of water-carts during the night and the horse-hoe immediately following the water-cart. This has succeeded admirably. In consequence of the dryness of the climate in my neighborhood (the rain-fall being on the average only about 16 inches annually) I usually sow on the flat; but the dressings above-named are equally applicable to crops sown on the ridge. I would strongly impress the necessity of frequently applying the horse-hoe. It is not my intention to enter upon the subject of the history, habits, and transformations of the various insects that infest the Turnip crop, but I would rather refer you to Curtis' excellent treatises on the subject, which appear in our journals. I think that these papers might be re-printed with great advantage in a cheap form in something of the same style of pamphlet as Mr. Miles' Essay on Horse-hoeing. I am quite sure there is no subject of which the farmer has so little scientific knowledge as entomology, nor is there one that has had less attention paid to it by the Society. In offering these rough notes to your notice I am fully aware of the little information I have given, and I wish you to understand that I feel I have only acted up to the principle which I have always endeavored to observe in the course of my agricultural career. I have ever been anxious to impart information as well as to acquire it. I have no secrets to keep, and in my opinion there ought to be none in farming. The system I here recommend is founded upon my own practice and experience, and for many years I have proved and in answer for its efficacy. I am induced from these results to conclude that by careful attention the Turnip plant may be as effectually and as certainly freed from the ravages of the fly as seed Wheat has been for upwards of the last 20 years from smut and other destructive fungi.

PROVINCIAL EXHIBITION OF 1859.

CIRCULAR FROM THE PRESIDENT.

To the President, Directors and Members of the several Agricultural and other Societies and to the Public generally :—

LADIES AND GENTLEMEN—The time for holding the Annual Provincial Exhibition being fixed for the four last days of September next, in Kingston, it is the duty of the President for the time being to follow the Custom of past years, by urging upon the notice of the community and particularly of those portions engaged in Agricultural and Mechanical pursuits, the propriety of aiding and promoting the objects for which the Provincial Agricultural Association was constituted—the encouragement of Agriculture, Arts, and Manufactures.

From the gradual progress perceptible each succeeding year, in every department of the Annual Exhibition, and the good effect produced from the extensive and interesting displays of the Industry and General Productions of the Province, it cannot fail in inciting us to use our best efforts to maintain the exalted position to which it has attained; and from the valuable assistance which it is expected will be rendered by the members of the Board of Arts and Manufactures at the Exhibition of 1859, in connection with the Board of Agriculture, we have an assurance of a still more interesting Exhibition in the Mechanical and Manufacturing Departments.

To the Agriculturist and Horticulturist no wider field for advantageous observation presents itself than the Provincial Exhibition Ground, stocked as it always is with Pure Bred Animals of every kind, and the choicest productions of the Field, the Garden and Orchard; as well as the many labor saving and useful Implements now found so necessary for various Agricultural and Horticultural purposes, and so admirably adapted to lessen toil and save expense.

To the Mechanic or Manufacturer, no better opportunity presents itself for the display of his skill, his talent and his enterprise than where honorable competition with his fellow Mechanic and Manufacturer from every section of the Province, is offered to each in his own particular line of business.

To the Artist and Man of Science, the sphere of study is by no means limited. Ample scope will be found for displaying the talents of the former as well as the scientific research of the latter.

To the Ladies, the Annual Exhibition owes much of its interesting features, as the thronging masses desirous of visiting the department under their special care abundantly testify. No failure of an amply display on their part both of the useful and ornamental is anticipated.

To the public generally, the Annual Exhibition presents a scene of deep interest, and well deserves the cordial support of all classes of society; and from the benefits it has produced hitherto, it is hoped that those engaged in its management will receive that encouragement and aid which are necessary to ensure a successful issue, and to make the Exhibition of 1859 what it is intended to be, a fair Exposition of the resources of Canada. As the benefits of membership in the Provincial Agricultural Association are not confined to the Western Section of the Province only, but extend to the United Province, a favorable opportunity is thus presented to our Lower Canadian friends, of which we trust they will avail themselves, by contributing largely from the productions of the Eastern Section of Canada, and thereby greatly increase the general interests of the Exhibition.

In order to ensure the protection of costly articles, and valuable animals, that may be brought to the Exhibition, spacious waterproof buildings, stalls, and pens, are now being erected within the grounds, capable of affording accommodation hitherto unequalled, to all classes of exhibitors.

The steamboats and railroads will, during the Show week, charge half fare; and the Wharfers of Kingston, with their usual liberality, will allow all articles and animals intended for Exhibition, to be landed and re-shipped free of charge.

WILLIAM FERGUSON,
President Prov. Agr'l Association.

Kingston, 22nd June, 1859.

PLOWING BY STEAM.

Illinois appears to be taking the lead of all the other States in agricultural progressiveness. A prize of \$6,500 has been placed at the disposal of its State Agricultural Society for the best steam plow, and, from a circular sent us, we learn that a company has been formed in the city of Chicago, with a capital of \$50,000, for introducing into practical use the traction locomotive rotary tiller of Thomas Kiddy.

This subject is by no means a new one, although but little attention has been given to it until within two or three years past. We will endeavor to present some information showing what has already been done by others, so that the ground may be better understood than it now is.

England has been the experimental farm for steam plowing, efforts having been made twenty-seven years ago to reclaim and cultivate Chat Moss by steam machinery. An engine, stationed at one end of a plot of land, was employed to drag plows through the soil by means of ropes passing over the drum of a windlass. With some modifications of machinery, this system appears to have been the most successful that has yet been attempted. The person who has done most to render plowing by steam, in England, as economical in cultivating land as animal power, is Mr. John Fowler, an agricultural engineer, who has expended no less than \$100,000 for this purpose. He employs a portable engine on wheels, stations it at one end or headland of a field; then at the other end he puts up a frame called an anchor, on which there is a drum, and the distance between this anchor and the engine is the length of the furrow to be turned over; and endless wire rope extends from a windlass on the engine around the drum on the anchor frame, and to this rope is attached a frame carrying six plow-shares,—the one placed a little behind the other,—and these turn over six furrows at once. The engine winds the wire rope on one end of its windlass while it is given off at the other, and the plows are then dragged forward towards the anchor, and when they arrive at this point they are reversed, the anchor frame moved a little forward at one headland, while the engine moves itself forward for the next six furrows, and the six plows are then dragged back, turning over six other furrows in returning. The engine and anchor frame are thus moved at intervals on the headlands, in parallel lines, but are stationary while the plows are working. This system is very simple, and no power is expended, as in a locomotive steam plow, by dragging the engine through the soft soil. It is stated that the anchor frame can be shifted and the plows reversed at the end, turning nearly as fast as a team of horses can be turned. By the same method of operating the engine and windlass, other implements for cutting up the soil have been tried as substitutes for the plow, such as rotary cultivators, resembling a series of revolving scrapers for plunging into and stirring up the soil. Mr. J. Smith, of Wolston, England, has employed this method for five years with great success, and has found it best to apply it in the fall. It brings all the weeds and sods to the surface, exposes their roots to the frosts of winter, and kills them; and it is recorded that stiff clay soils, by this process of cultivation, have become mellow and easily worked.

Another system of plowing, different in principle, was illustrated on page 401, Vol. VI. of the *Scientific American*, and consisted of a locomotive, and having broad-faced wheels, which moved over the field to be plowed, drawing a transverse frame, in which were a series of revolving plows on an endless chain. As the plows operated at right angles to the forward motion of the wheels, the action of this plow was very defective. Another plow, upon the same principle of operation by a locomotive engine, was illustrated on page 297, Vol. VII., of the *Scientific American*. It carried five rotary cultivators, and its action impressed us favorably, but it has not been able to contend with Fowler's, which has taken nearly all the steam plow prizes offered by the agricultural societies in Great Britain. A locomotive steam plow, with a broad spiral cultivator dragging behind the engine, has also been tried in England, but with no success.

Little has been done in our own country in the way of steam-ploughing in comparison with the efforts made in Great Britain; still, we have made a beginning, and this is cheering.

In 1855, Obed Hussey, of Baltimore, the well-known inventor of the mowing machine constructed a steam plow, and tested it in October, 1856, as described on page 341, Vol. XII., of the *Scientific American*; but since that period we have not heard that it has ever been used, nor the reason why. On the 10th of November, 1858, the steam plow

of Mr. Fawkes was exhibited and tested before the State Agricultural Society of Illinois, and although statements were then made that it had been very successful, it does not appear to have satisfied the farmers of the "Prairie State;" hence the prize we have mentioned, which is once more offered by the State Agricultural Society. Mr. Kiddy's steam plow, to which we have alluded, is a locomotive that carries its own endless railroad to prevent sinking into the soil, and thus it is intended to save the power that would otherwise be expended to drag itself. It is, in principle, similar to that illustrated on page 353, Vol. III., of the *Scientific American*, and which, in England, is called "Boydell's traction system." Its tillers are not common plowshares, but double vertical revolving screw cutters for cutting and stirring up the soil, and they appear well adapted for this purpose. Every American steam plow that has yet been brought before the public embraces the locomotive principle of the engine moving over the entire field, dragging a set of plows, which is quite different in its nature from Fowler's, the one which has been most successful in Europe. The engine used for operating a steam plow should also be capable of being applied to threshing, grinding, and other operations of a farm, as none of our farmers can well afford to keep an engine for ploughing exclusively. In hilly countries the steam plough will never be able to supplant horses; but in such a State as Illinois, where the farms are very large, the soil mellow, and the fields nearly level, and where fuel is abundant, the steam plow appears to be invited to success.—*Scientific American*.

THE TASTE OF BUTTER.

The following are passages on this subject extracted from previous volumes of the *Agricultural Gazette* :—

1. I have found chloride of lime very effectual to remove from butter the taste of Turnips, or any other bad flavor. A drachm of it to every expected pound of butter put into the water of the second washing, after it is taken out of the churn, and the butter well but rapidly kneaded in it.

2. Do not feed your animals with Turnips until they have been previously milked, by which means the animal has 12 hours to get rid of the flavor of the vegetable. Good hay must also be given in sufficient quantity. I need not add great cleanliness not only in the cow-house but in the dairy. No stale pieces of Turnip should on any account be allowed to remain in the manger, which should be cleaned out before feeding. If your correspondent does not feed largely, perhaps peeling the Turnips might answer the purpose; for it is principally in the skin that the strong smell resides. I question much if saltpetre answers any purpose in freeing the cream of the strong taste imparted by Turnips.

3. We have obtained answers from Warwickshire, Cheshire, Gloucestershire, and Devonshire. Some of them suppose the annual occurrence of the nuisance to be due to the growth of some ill-tasted weed at that time; others appear to have had no experience of the evil complained of; the only one who speaks positively says:—"The cause of the unpleasant taste in your correspondent 'R.'s' butter is wild Garlic, or what in Devonshire is known by the name of Ramsey [Ramson], which is often found here in rich pastures. The leaf is much like the Lily of the Valley, and bears a white flower. The reason of its not affecting the butter after the middle of June is, that it is then in flower, when the cows will not eat it. The best way is to dig it up early in May, or now, if not covered with Grass." The following is from Cheshire:—"I have not met with any case similar to the one you speak of respecting butter, although I have heard of instances in some parts of North Wales, where the butter is not so good flavoured at certain seasons of the year, and the cause was attributed to ill-flavoured plants making their appearance at those times, more especially the wild Onion. The herbage, certainly, has a great deal to do with the flavour of butter and cheese, and I find that Red Clover even affects it; in this county there is nothing to equal old pastures for the dairy. Perhaps if the farmers in Warwickshire would examine their land carefully they might be able to discover the real cause." We had cows on grass last year, and their cream and butter had the acrid taste that you complain of. We had about a dessert-spoonful of saltpetre dissolved in water, and put into every gallon of milk before it was churned, and a small bit of common salt was put into the milk-pan when the mil-

was brought in from the cows. The cream was put to stand in boiling water for half an hour, and frequently stirred while the water cooled before it was churned. Ultimately we had good butter, but certainly not till after this season of the year had passed. So that probably the improvement was attributable, not to our treatment, but to the natural alteration of the pasture, which is full of buttercups at this season.

4. As soon as the milk is brought into the dairy (warm from the cows), pour into it in the proportion of half a pint of boiling water to a gallon of milk; cover it over with a cloth, four times doubled, for half an hour; then strain and pour into it milk dishes to stand for cream. N. B. I have never known this receipt fail, unless the dairy-maid put a wooden cover over the milk-pail instead of a cloth, which absorbs the steam, and entirely removes any unpleasant taste, even when the cows are fed on yellow turnips and straw, which makes the butter require no coloring of carrot, and have the appearance of summer butter.

5. There is a paragraph in your paper headed "Butter-making," in which the writer condemns the use of turnips for feeding cows, as giving the butter and cream a bad taste, and expresses his surprise that there should not be any method to prevent it. I occupied a farm of 500 acres, and kept a large dairy of cows, and never had the taste of turnips in the butter, by applying hot water and steam, at different times, to the milk and cream, which entirely took away all flavor of the turnip. We generally made from 1d. to 2d. per lb. of our butter more than market price. Should any gentleman wish to know what our process was, I should be most happy to give him any information that he may require. Our system has been carried out for forty years, and has never been known to fail where properly attended to.

6. The popular remedy in these parts is, to put a small quantity of pounded nitre in the pail before going to milk, which answers well enough so far as the milk is concerned; but its influence can hardly be said to extend to the cheese and butter. The writer has heard it stated that nitre would meet the evil in the cheese and butter as well as in the milk, if it were only used in sufficient quantity; but then, many are of opinion that the use of nitre to the extent necessary for effectually correcting the evil in cheese, or in butter when kept for some time, would give to the dairy produce medicinal properties, of a kind not altogether agreeable; be that as it may, the point is an important one, and such as might with very great propriety be brought under the notice of some of the leading chemists of the day. As you expressed a wish to know how the flavor of turnips was got rid of in the butter which I sent you, and which was made from the milk of cows fed, morning and evening, on Swedes, I beg to inform you and your readers that the only precaution adopted is that the cream, before being placed in the churn, should stand in a room with a fire, and raised to the temperature of 65° Fahrenheit. This prevents a tedious operation in churning, and, with ordinary cleanliness in the dairy, butter so made will never taste of turnips. This is the whole mystery of destroying the flavor of turnips in butter; an experience of a dozen years in a large dairy may be relied on.

7. If you collect so many gallons of cream before churning, then put that number of half pints of vinegar into the jar to begin with, and churn when the usual quantity is collected. "Quercus" is the authority for this. He had "it from a friend of his who supplies a large quantity of butter of the best quality to one of the crack shops at the west end."

8. Make a strong solution of nitre, and add a dessert spoonful of it to every two-gallons of milk as it is brought in from the cow.

9. The simplest and most convenient preventive against turnipy taint, and one to the efficacy of which I can speak from daily experience, is to let your cows have their feed of turnips immediately after being milked, and at no other time.

10. "S. R. S." asks for the cause of his butter being bad both in texture and taste; cows fed on Mangel Wurzel and Beans, with scrupulous cleanliness in dairy utensils, but cream churned only once a week. My cows were fed last winter on Mangel Wurzel cut into shreds with a (Moody, Frome) turnip-cutter, and mixed with hay and straw chaff; butter made twice a week. The butter was good in flavor, but crumbled. In the spring I was able to add Rape to the above food, the butter immediately changed to a good texture, and improved in flavor; this change I attribute to the oily nature of the plant Rape. I have this winter used oil-cake crushed, giving 2 quarts a day to each cow, 3 perhaps would not be amiss, with Mangel Wurzel, some few Swedes, and a sprinkling at times of Carrots, all cut up, being well cleared from dirt, and mixed with chaff. Butter is good both in texture and flavor, but I think it should be made winter and summer twice a week. I have used beans, but find them neither so good nor so cheap as cake.

THE CROPS.—The reports of the state of the crops in different parts of the country are very varied. While some accounts state the damage done to the wheat by the June frosts to be very great, and we know as a fact that some fields have been considered quite worthless by their owners and have been cut down,—other accounts represent the crops as luxuriant and promising in the highest degree. On the whole we may anticipate that the injury from this cause will not very greatly depreciate the value of the general return. Potatoes are said to be making great headway and other Spring crops have, generally speaking, a promising appearance. Hay will be nearly throughout the country an exceedingly short crop. Farmers will require all the roots and other forage crops which they can yet produce to help their cattle through next winter.

The *Toronto Colonist* is informed by an old and most respectable farmer, that many years ago a frost occurred similar to that of the past month. The wheat crop was then despaired of in many places, and farmers proceeded to cut it down and plough up the ground, as we are aware has been done lately. Others, however, who acted more cautiously, found that although the main stems of the wheat were killed, their place was fully supplied afterwards by the side shoots, which came forward somewhat later, but still in time to save the crop. The nutriment due to the first stem was thrown back to their successors, which "stooled out" healthily in consequence, and more than an average crop was obtained.

DRAINAGE.—The Municipal Council of the Township of Chatham, have set a good example to other localities similarly situated. They have become so well convinced of the importance to the Agricultural interests of the township, and also of the health of the inhabitants, of the general drainage of the land, that they have passed a By-law, rendering it compulsory upon persons occupying property upon the streams or water courses in the township, to keep them free from fallen timber and brushwood or other obstructions, by which the attempts at drainage of other parties might be frustrated.—The By-law also provides for the levying of a rate to pay for the clearance of the streams running through unoccupied lands. In a very level township like Chatham, a measure of this sort, providing for the clearance of the natural ducts for the surplus water, will be of great service.

REMEDY FOR THE WHEAT FLY.—Mr. Peter Travis, of Grimsby, has just informed the writer that in his neighborhood the farmers are busily employed in destroying the *Midge* by the following effectual process! Take candle-wick, make an inch rope of it, of the length between the furrows of the field, saturate it with Spirits of Turpentine, fasten a half pound weight or thereabouts to the centre—a man at each end drags the rope across the heads of the wheat. As fast as the rope dries saturate a-fresh, it does not want to be too wet; after two or three days go over the field again the reverse way, a gallon will easily do a ten-acre field. The cords once saturated will about go across the field before requiring it again. It kills vast numbers of them. It has been tried here two seasons and found effectual.—*Hamilton Spectator*.

Parties who have tried the above remedy state that it is necessary to be cautious, and not use too much of the turpentine, or the wheat itself will be killed as well as the fly. A slight wetting of the rope is sufficient.

GRUBS IN SHEEP.—A writer in the *Michigan Farmer* says this is a perfect cure for grubs in the head of sheep: "Take one quart of whiskey and two ounces of yellow snuff, mix and warm to blood heat. Let one man hold the sheep and another take a small syringe and discharge about a teaspoonful of the mixture into each nostril. It is a certain cure. My father met with quite a loss in his flock; he tried this remedy, found it satisfactory, and never lost another sheep."

A NEW ENEMY IN THE CORN FIELDS.—The corn fields in some parts of Illinois are being daily damaged by rats. The corn cribs being empty, and very little to be found in the barn yards, the rats have betaken themselves in large bodies to the fields, where they dig below the stalks and eat the kernels, thus ruining large tracts of growing corn. Large numbers have been killed, one farmer having slaughtered 1100, and another 200.

HOW TO USE A HORSE.

It is not, after all, every one who owns a horse that knows how to use him; whether for his own pleasure or the horse's, which is, in other words, the owner's best advantage. Nor is it very easy to lay down rules how a horse should be used, considering the many different purposes for which horses are kept, the different natures and constitutions of the animals, and the different circumstances of their owners.

Horses may, in general, be divided into two classes—those kept for work, and those kept for pleasure. In the former class may be included farm-horses, stage, coach, and omnibus horses, team-horses, employed in the transportation of goods, and moving heavy and bulky masses, carmen's horses,—and lastly, the road horses of all professional men, who, like lawyers, doctors of medicine, and the like, are compelled to drive or ride many hours *per diem*, regularly, in the performance of their business.

In the latter class may be included race-horses, match-trotters, private gentleman's saddle-horses, carriage-horses, or roadsters, and many other animals belonging to business men, which being employed during half the time or more in actual service, are used during spare hours on the road, for purposes of amusement.

With regard to the first class of these horses, the exigencies of the business to which they are applied are, for the most part, such as to supersede and override all rules. In some cases the natural hours of the day and night have to be reversed, and the animals are called upon to do their work by night, and to rest and feed by day. Under these circumstances, it may be laid down as an immutable law, that at whatever hour the horses are to be worked, they must have full time, beforehand, to digest their food and water; they must be carefully cleaned, and made comfortable; they must have sufficient intervals for halting and baiting on the road, must be cleaned and well fed during the intervals of work, and must have ample time for undisturbed repose. The distance which horses in perfect condition can go upon the road, varies greatly with the powers of the animal, the degree of pains bestowed upon him, the skill of his driver, and the amount of his load, as well as the state of the roads. But it may be taken as a rule, that strong, able horses, of moderate speed, can travel forty miles a day, with a moderate load, without distress, for many days in succession. It may be observed, that it is the better way to start at an easy pace when on a journey, to increase it slightly in the middle of the day, and again to relax it before coming in at night, in order to allow the animals to enter their stables cool, in good order, and ready, after a short rest and cleaning, to feed with an appetite.

It may also be observed, in this point of view, that it is a mistake to fancy that horses are benefitted by being driven or ridden very slowly when they have a long distance to perform. If a horse has to get over forty miles in a day, the roads being good, the temperature of the day pleasant, and the load not excessive, he will do it with more ease and less inconvenience to himself, going at the rate of seven or eight miles the hour, and doing the whole distance in five or six hours, with a single stoppage in the middle of the day, to feed and rest, than if he be kept pottering along at the rate of four or five miles, and be kept out of his stable, hungry and thirsty, and leg-weary to boot, for a longer time.

Farm-horses, whose work is necessarily slow and continuous, lasting ordinarily from sunrise to sunset, with the exception of a mid-day halt for baiting, are under different circumstances. Their work being always slow, and rarely, if ever, severe, at the moment, or toilsome, except from its long duration, they need not be subject to the same condition as fast-working horses, of being fed long before they are put to work, and allowed to evacuate their bowels thoroughly before being harnessed. They may, therefore, be fed and watered at the last moment, and put to slow work immediately, and will rarely take harm from travelling on full stomachs. In the same manner, when they are loosed at noon-day, being rarely overheated, after a slight rest and a slighter rubbing down—which, by the way, they rarely receive—they may take their mid-day feed without delay, and without fear of evil consequences. In the like manner may be treated carmen's horses, and team horses, the labor of which is heavy and continuous rather than rapid. All horses, however, whatever the work to which they are applied, should have ample time to rest at night, and should be thoroughly rubbed down, dried, clothed, and made comfortable, before feeding them and closing the stables for the night,—and the more so, the more trying the day's work.

With regard to pleasure horses, which are usually in the stables, more or less, twenty hours out of every twenty-four, which are only taken out for the gratification of the owner at such times as it suits his humor or necessity, they should never be taken out or driven fast on full stomachs; which can be always avoided by letting the groom know, in case that they will be required at an unusual hour or for unusual work—when he can adapt his feeding hours to the circumstances of the case.

When harnessed and ready for a start, the driver should mount his seat quietly, gather his reins, and get his horses under way, slowly but gradually, by speaking or chirruping to them; never starting them with a jerk, or striking them with a whip,—allowing them to increase their pace by degrees to the speed required, instead of forcing it on a sudden.

It is far better for horses, to drive them steadily at a regular pace, even if it be ten or twelve miles an hour, than to send them along by fits and starts—now spinning them over the road at sixteen or eighteen miles, now plodding along at six or seven; and of two pairs of horses, driven the same distance, after the two different methods, that which is driven evenly will, at the end of the day, be comparatively fresh and comfortable, while the other will be jaded and worn out.

In regard to punishment, the less that is administered the better. A sluggish or lazy horse must, it is true, be kept up to his collar and made to do his share of the work, or the free-goer will be worn out before the day is half done; and for this the whip must be occasionally used. Even good and free-going horses will occasionally be seized with fits of indolence, at moments, induced perhaps by the weather, and it may be necessary to stimulate them in such cases. Again, at times when roads are bad, when time presses, and certain distances must be accomplished within certain times, recourse must be had to punishment; as it must occasionally, also, in cases where the animals are vicious or refractory, and where the master must show himself the master. Still, as a general rule, punishment should be the last resort. It should never be attempted with a tired, a jaded, or an exhausted horse; for to apply it in such cases is an utter barbarity; little or no immediate advantage is gained to the driver, while it may probably result in the loss of an excellent animal. It is common to see horses punished for stumbling, punished for starting; and whenever a new horse, which one may chance to be trying, starts off into a gallop after committing either of these offences, one may be sure that he is an habitual starter or stumbler, and that he has frequently undergone chastisement for them, and undergone it in vain. It is altogether an error to punish for either starting or stumbling; the one is the effect of fear, which cannot be cured by the whip; the other, in most cases, of malformation or of tenderness in the foot, which certainly cannot be treated successfully by chastisement, which, in fact, aggravates and confirms, instead of alleviating or curing.

Instead of driving at an equal pace, we would not, of course, be understood to mean that horses should be driven at the same gait and speed over all roads, and over grounds of all natures. Far from it. A good driver will, while going, always, at the rate of ten miles—we will say—an hour, never, perhaps, have his horses going at exactly the same rate for any two consecutive twenty minutes. Over a dead level, the hardest of all things except a long continuous ascent of miles, he will spare his horses. Over a rolling road, he will hold them hard in hand as he crosses the top and descends the first steep pitch of a descent; will swing them down the remainder at a pace which will jump them across the intervening flat, and carry them half way up the succeeding hill; and will catch them in hand again and hold them hard over the top, as we have shown before.

Horses in work should be watered about once, with not to exceed two quarts, after every ten miles, or every hour, if one be travelling fast; and if travelling far, they should be well fed once in the middle of their journey. This point, however, has been discussed already under the head of feeding.

In closing, we would say, always remember, in using a horse, that it cannot be done with too much coolness, too much gentleness, too much discretion, or too much kindness.

There is no better beast in the world than a horse, nor any one which, though often most cruelly misused by man, so well deserves, and so amply, by his services, repays the best usage.—*Herbert's Hints to Horse-Keepers.*

Miscellaneous.

SPARE THE OWLS AND SAVE YOUR WHEAT.—The following letter in favor of the Barn Owl, recently appeared in the *London Times*.—

Sir,—In your impression of the 9th inst., I saw a sensible letter headed “An Owl’s Larder,” from Mr. Ellis, of Leicestershire, who, I make no doubt, is a benign gentleman, from his advocating the cause of a valuable and much persecuted bird, viz.: the white or barn owl. Many sportsmen give an indiscriminate order to their keepers to destroy all vermin but the fox, and among them (in many cases in the ignorance of both) the poor owl is ranked. The consequence is, in some districts they are nearly extinct, and where this is the case the stacks and barns swarm with mice. Last summer I witnessed the getting in of a small stack of wheat in Shropshire, which the owner supposed would yield enough for his family, of wife and three servants, for eight or nine months. All that he got from it fit to send to the mill was four and a half bushels. Four hundred mice were killed, and as many more we suppose, escaped. These animals, as well as young rats, require vegetation and water. At dusk they come out, and out at the same time comes the owl. No doubt they were created by an all-wise Providence to keep these vermin under, as the rook is for the destruction of the wire-worm, and the toad for slugs. If it were not so we should be eaten up.—They know by instinct how to go about their calling better than we do. If the rook and owl do pilfer a little at times when pinched by hunger, the laborer must have his hire; and with all our sagacity we cannot master them like they can. The cat kills more game in a season than the owl in his lifetime, and the farmer with salt and chemicals, which cost him a good deal of money, cannot keep the wire-worm out of his land. In former days, in the country, they had the “owlet” hole in their barns as regularly as the pitching hole, for his ingress and egress, many of which I find are stopped up. During five summers in the vicinity I have mentioned, I have only seen one owl skimming the meadows at nightfall. This year an unfortunate one flew over the cricket ground at dusk one evening, when the first thing that occurred to a young sportsman was to fetch his gun and shoot him. This is being worse than people we call barbarians, for in India they religiously, and by law, protect two useful birds—the Brahmin kite and the adjutant. In Barbary the stock is safe, where they say. “On the houses they choose for their nest no evil cometh.”

THE POWER OF HUNGER.—It is hunger which brings stalwart navvies together in orderly gangs to cut paths through mountains, to throw bridges across rivers, to intersect the land with the great iron ways which bring city into daily communication with city. Hunger is the overseer of those men erecting palaces, prison-houses, barracks, villas. Hunger sits at the loom, which, with stealthy power, is weaving the wondrous fabrics of cotton and silk. Hunger labours at the furnace and the plough, coercing the native indolence of man into strenuous and incessant activity. Let food be abundant and easy of access, and civilization becomes impossible; for our higher efforts are dependent on our lower impulses in an indissoluble manner. “Nothing but the necessities of food will force man to labour, which he hates, and will always avoid when possible.—*Blackwood*.”

THE PROPERTY OF LIFE.—Every man, woman, and child has a property in life.—What is the value of this property? Mr. Charles M. Willich has established an extremely easy rule for expressing this value—this “Expectation of Life” at any age from five to sixty. His formula stands thus:— $e = \frac{2}{3}(80 - a)$; or in plain words, the expectation of life is equal to two-thirds of the difference between the age of the party and eighty. Thus, say a man is now twenty years old. Between that age and eighty there are sixty years. Two-thirds of sixty are forty—and this is the sum of his expectation of life. If a man be now sixty, he will have an expectation of nearly fourteen years more. By the same rule, a child of five has a lien on life for fifty years. Every one can apply the rule to his own age. Mr. Willich’s hypothesis may be as easily remembered as that by De Moivre in the last century, which has now become obsolete, from the greater accuracy of mortality tables. The results obtained by the new law correspond very closely with those from Dr. Farr’s English life table, constructed with great care from an immense mass of returns.—*Athenaeum*.

THE WILLOW.

"Tongues in trees—books in the running brooks."—*Shakespeare.*

The willow grows beside the river
And the boughs hang o'er its flow,
Till the green leaves, as they quiver,
Kiss the waves that run below.

The river whispers to the willow
With a sad, mysterious tone,
As the bubbles of each billow
Gurgling break on bank and stone."

What saith the river, as it glistens
In the sun-glints through the tree,
While the bough stoops down and listens
To its plaintive melody?

"Like my waters, life is flying—
Brightest joys have shortest stay—
As my waves speed onward sighing,
With thy kisses far away :

"Human hopes are like the bubbles
Sworn and glittering on my tide,
Till the rocks, like earthly troubles,
Meet and wreck them as they glide."

High o'er willow—high o'er river,
Soars a lark in airy rings,
While his voice thrills to the quiver
Of his sun-illuminated wings.

And the ether-vault is risen
With this glad song, as he flies—
"Seek, like me, thy joys in heaven,
And thy hopes within the skies."

—*Dublin University Magazine.*

THE ENGLISH RACE HORSE.—In Great Britain from the highly cultivated knowledge of the mechanical structure of living bodies, with the junction of best shapes—although, but for racing, this knowledge would have been comparatively in its infancy—the horse has arrived at the highest state of perfection of which his nature is capable; and in whatever country and in whatever climate, his racing powers are put to the test, he has scarcely found a rival, excepting under very disadvantageous circumstances. It is true his *lasting* qualities were doubted, and he was challenged to rebut the charge, and the following was the result:—On the 4th of August, 1825, two second rate English racers, Sharper and Mina, contended against the most celebrated Cossack horses from the Don, the Blak Sea and the Ural, in a race the cruel length of 47 miles. At starting Sharper and Mina ran away with their riders more than a mile, and up a steep hill, when the latter horse broke down and pulled up. Half the distance was run in an hour and forty minutes. In the last half only one of the Cossack horses was able to contend with Sharper, who, notwithstanding that every foul advantage was taken by *changing* the weight, and dragging along his opponent by a rope, won his race in gallant style, performing the distance in two hours and forty-eight minutes. At starting, the English horses carried three stone more weight than the Cossacks; and, during the latter half of the race, the one Cossack who remained in it was ridden by a mere child.—Every trial over the desert, no matter what the distance, during 1826-55, between English and eastern horses, has been attended with precisely the same results.—*From the Encyclopædia Britannica (New Edition.)*

THE UNDEVELOPED NORTHWEST.—At a meeting of the Chamber of Commerce of St. Paul, Minnesota, held recently, a geographical report was made upon the Red River and Saskatchewan country, with a view to the development of navigation on the great rivers there abounding. The report appears to have been carefully drawn up from trustworthy sources. The Red River is said to have a depth of six feet for a considerable distance above the mouth of the Cheyenne, and below that nine to twelve feet down to Red River Lake, and thence to Winnipeg, sixteen feet. The current is moderate, being only about two miles an hour of its upper tributaries; the Cheyenne is navigable 100 miles, and the Ashboine probably 100 miles. The Red River is navigable 775 miles, and to its tributaries about 350, making over 900 miles of navigable water in this valley alone. Lake Winnipeg is about 250 miles in length. The Saskatchewan is navigable upward of 700 miles in a direct line, but, by the course of the stream, nearly twice that distance. The Bow River, or South Branch of the Saskatchewan, is also a large stream, navigable for a considerable distance. It is mentioned as a singular fact that the sources of Fraser River are separated from those of Peace River by only 317 yards, the first running into the Pacific, and the latter north-eastward into Mackenzie's River; and that a canal crossing this Isthmus would unite the waters running to the Arctic Ocean with those flowing into Puget Sound. The area reached by the navigation of the rivers above named is estimated at 400,000 square miles of fertile soil, favorable climate, useful minerals and fur-bearing and food-yielding animals.

The report goes into a particular description of the face of the country and its adaptability to cultivation, speaking with great enthusiasm of the Red River Valley; and then proceeds to describe the country further north—the Seikirk settlements, the Cumberland, Saskatchewan and Athabaska districts. It is proposed to take a small steamboat across the Isthmus, between Big Stone and Traverse Lakes, and descend the Sioux Wood River to the Red River, as soon as possible in the spring, and establish navigation on that stream immediately. It is deemed a matter of great importance to the people of St. Paul, and they are dragged to obtain the establishment of a mail route in that direction to Puget Sound. A company has been organized in Canada to carry out a similar project, having a capital of \$100,000. They are to construct postage roads between Lake Superior and Red River, in all 140 miles, to place four small steamers on the reaches along Rainy River and the Lake of the Woods, one on the Red River, and another on the Saskatchewan. Should the Minnesota movement go ahead, there will be a sharp competition between these two companies for the first harvest of the new country. The meeting concluded by offering a bonus of \$1,000 to any one who would pay a steamboat of a hundred tons on the Red River and run her during the navigable season of the present year, commencing on or before the 1st of June.

HOW TO DO UP SHIRT BOSOMS.—We have often been requested by lady correspondents to state by what process the gloss on new linens, shirt bosoms, &c., is produced, and in order to gratify them, we subjoin the following recipe:—"Take two ounces of fine gum arabic powder—put it in a pitcher and pour on a pint or more of boiling water, according to the degree of strength you desire—and then having covered it let it stand all night—in the morning pour it carefully from the dregs into a clean bottle, cork and keep it for use. A table spoonful of gum water stirred in a pint of starch made in the usual manner, will give to lawn either white or printed, a look of newness when nothing else can restore them after they have been washed.—*Exchange.*

ADDITIONAL SLEEPING ROOM IN COTTAGES.——"How are we to deal with the cottage already built? By turning the day down-stairs room to account. But how is this to be done? Sailors talk of the comfort of their hammocks. Every one who has been over a ship, knows how little room they take, and how easily they are stowed away.—The hint has not been lost on the managers of our prisons and reformatories. Go into a cell; the first question asked is, where does its occupier sleep? You are shown something like a bag, hanging by straps, from two staples in the wall, with two similar staples or hooks on the wall opposite. Two of the straps are unhooked, the cot or hammock unfolded, and stretched across to the opposite staples, and in less than half a minute, a sleeping-place, with blankets, sheets, &c., is spread before you. The bed thus provided, is used by the officers as well as the prisoners, both men and women, and is spoken of as most comfortable." Applying this invention to the day-room of cottages seems a cheap and obvious means, almost universally applicable, of providing cottages with an additional sleeping-room. As the outer-door generally opens into this room of the cottage, it is more easily ventilated than any other, and would, therefore

probably prove its most wholesome dormitory. The only obstacle to the introduction of the cot or hammock into cottages is, that there may at first be some difficulty in making cottage walls available as hold-fasts for the staples, which in prisons are built into the walls. A few trials and a little ingenuity will soon discover cheap and effectual expedients, according to the peculiarities of different dwellings. Some experiments have already been made to provide fastenings on the walls of an ordinary room, which may be seen at the Boy's Refuge, recently opened at 44, Euston-road, near King's Cross. The cots and hammocks have been found to answer perfectly, and are preferred by the boys to the iron bedsteads previously used. Some of the hands in "the Home" are now employed in making cots and hammocks, which the managers will undertake to supply at a moderate price to any persons who may be desirous of trying them in cottages. The writer believes that the "Labourer's Friend" will contribute not a little to one of the good works which its pages are designed to promote, by recommending its readers to examine for themselves the experiment that has been made at this home.—CLERICUS, in the "Labourer's Friend" Magazine.

THE GROWTH OF LONDON.—London has grown like a mighty tree, by extension rather than by the internal aggregation of constituent parts; and while foreign cities, girded round by walls, have grown denser, and have risen vertically, London has extended its boundaries freely all around, and covers now 78,029 acres—31,576 hectares—121 square miles—a square of eleven miles to the side. The population in this area amounted in the year 1801 to 958,863, and in 1851 to 2,362,236. The London of 1858 is equal to three Londons of 1801.—*Registrar General's Report for 1858.*

THE HUMAN BODY.—It is calculated that there are no less than twenty-eight miles of tubing on the surface of the human body, from which the water will escape as insensible perspiration; and although the amount of water which is thus evaporated from the surface must necessarily vary with the clothing, the activity, and even the peculiar constitution of the individual, an average estimate has been attained, which shows that from two to three pounds of water are daily evaporated from the skin. From the lungs it is ascertained that every minute we throw off from four to seven grains of water, from the skin eleven grains. To these must be added the quantity abstracted by the kidneys, a variable but important element in the sum. It may not at first be clear to the reader why an abstraction of water daily should profoundly affect the organism unless an equivalent be restored. What can it matter that the body should lose a little water as vapour? Is water an essential part of the body? Is it indispensable to life? Not only is water an essential part of the body, it might be called the most essential, if pre-eminence could be given where all are indispensable. In quantity water has a preponderance over all other constituents—it forms 70 per cent of the whole weight! There is not a single tissue in the body—not even that of the bone, not even the enamel of the teeth—into the composition of which water does not enter as a necessary ingredient. In some of the tissues, and those the most active, it forms the chief ingredient. In the nervous tissue 800 parts out of every thousand are of water; in the lungs 830; in the pancreas 871; in the retina no less than 927.

ANTICIPATING EVILS.—Enjoy the present, whatsoever it may be, and be not solicitous for the future; for if you take your foot from the present standing, and thrust it forward towards to-morrow's event, you are in a restless condition; it is like refusing to quench your present thirst by fearing you shall want drink the next day. If it be well to-day, it is madness to make the present miserable by fearing it may be ill to-morrow—when your belly is full of to-day's dinner, to fear you shall want the next day's supper; for it may be you shall not, and then to what purpose was this day's affliction? But if to-morrow you shall want, your sorrow will come time enough, though you do not hasten it; let your trouble tarry till its day comes. But if it chance to be ill to-day, do not increase it by the cares of to-morrow. Enjoy the blessings of this day, if God send them, and the evils of it bear patiently and sweetly; for this day is only ours—we are dead to yesterday, and we are not yet born to the morrow. He, therefore, that enjoys the present if it be good, enjoys as much as is possible; and if only that day's trouble leans upon him, it is singular and finite. "Sufficient to the day," said Christ, "is the evil thereof;" sufficient, but not intolerable. But if we look abroad, and bring into one day's thoughts the evil of many, certain and uncertain, what will be and what will never be, our load will be as intolerable as it is unreasonable.—*Jeremy Taylor.*

MACHINE FOR MAKING HORSESHOES.—An ingenious machine for this purpose has been erected at Chillington Ironworks, in this town, by the inventor and proprietor, Mr. Henry Burden, of Troy, in the State of New York, and the proprietor of an ironworks in that town. Mr. Burton is a native of Dumblane, in Scotland, and from his early youth showed considerable aptitude for mechanical pursuits. From an account published of his career in the *New American Cyclopædia*, it appears that he is the author of numerous valuable inventions, including a machine for making the double-headed spike, used extensively on the American railways; and a self-acting machine for reducing puddlers' b. lls into blooms, which is being largely used in that country.—As early as 1835 he took out a patent for a machine for making horseshoes, which he improved upon in 1843, and this was turned to practical account by the production of a considerable number of horseshoes. The present machine, however, which was patented in 1857, is entirely different from the former ones, and is a very remarkable piece of mechanism. In the previous machines the piece of iron bar of which the shoe was to be made was rolled into shape before being bent, and the pressure of the rollers being in the direction of its length, the bar, when it was pressed, was naturally rather extended in length than width, and the widening which is required at the crown of the shoe was not properly effected. By the present plan the bar, after being heated, enters the machine by a feeding apparatus, a piece of the required length is cut off, and, by a stroke from a piece of steel, shaped like the inside of a horseshoe, is bent, and falls upon a die on a wheel beneath, corresponding to one on a cylinder above, and thus acquires by pressure the desired shape, two lateral strikers at the same moment hitting the extremities, or heels, of the shoe, and driving them inwards into the required shape. Thence it passes between another pair of dies, where it is stamped, and by an ingenious arrangement is flattened from the curled shape which the wheel gives it as it falls at the mouth of the machine. The shoes thus made are remarkable for their exactness in shape and in the position of the holes, a most important point with regard to the safety of horses' feet; and they can be produced, when the machine is in proper order, at the rate of 60 per minute, which is more than two men can forge in a day, and the superiority over shoes forged by hand is very striking. As the bar is bent before being pressed in the die, the pressure at the crown is in the direction of the width, and hence the widening is readily affected. The machine is secured by patent in this and in most of the countries of Europe. It has been erected at Wolverhampton as a central and suitable place of inspection both for this country and for any persons on the continent who may desire to purchase it, the inventor desiring to sell his patent rights in Europe. The United States Government purchase the shoes thus made, for the supply of the cavalry of the States.—*Wolverhampton Chronicle*.

COAL IN THE UNITED STATES.—An edition of Professor Henry D. Rogers's "Geology of Pennsylvania" has been issued in London, and has excited much comment in the English journals. The statements of Professor Rogers in regard to the enormous coal fields of the United States excite much surprise, and lead to many speculations concerning their possible development. The coal districts of Great Britain appear as mere specks when compared with those of America. The coal fields of Great Britain, in figures, amount to 5400 square miles; those of Europe are only 8964 square miles; while those of the United States, in the aggregate, comprise no less than 196,850 square miles; added to which the British Provinces of North America contain 7530 square miles. One of the English papers says:—"When we reflect upon what has been achieved by the produce of the coal fields of Britain, and then endeavor to anticipate the mining of the vast fields of the United States upon an extensive scale, we are led to forecast a future of almost boundless enterprise for that wonderful country." The following illustrations will convey some idea to the reader of the amount of coal there exists in Europe and America. We need not fear any scarcity for thousands of years. Averaging the total thickness of the workable coal in Great Britain at thirty-five feet, we have a total of workable coal equal to 190,000,000,000 tons. In the same way, estimating the total area of the *productive* coal fields of North America as 200,000 square miles (that is inclusive of the British Provinces), and averaging the thickness of good workable coal at 20 feet, we gain a result of 4,000,000,000,000. Or, to make these results the more appreciable: if we take the amount of workable coal in Belgium as 1, then that in the British Islands is rather more than 5, that in all Europe 8 3-4, and that in all the coal fields of North America is 111. This method of ratio is more intelligible than that of relative superficial magnitudes,—and we at once perceive that the United States possesses more than *twenty-two times* the amount of coal in the mines of Great Britain!

AN ADVENTURE OF RUSSIA TRAVEL.—Nothing could exceed the magnificent wildness of the scene which here burst upon the astonished gazer! The full moon, whose coming had been for some time announced by the pale yellow beams which illuminated the horizon to our right, rendering every twig and spray on the pointed tips of the black-green firs distinctly visible, had now risen above the horizon, and though, from the deep shade of our dark avenue, she was herself still hidden from our view, yet her silver light gleamed over the entire forest valley, which, in the form of an amphitheatre, lay far below us, extending to the very verge of the horizon all round, and producing an effect of grandeur and magnificence indescribable. As the "Queen of Night" advanced in her starlit path, our avenue next came in for its share of illumination. On one side, the trees, and even the recesses of the forest, for a considerable distance, were lighted up as brilliantly as at noonday, while the opposite side was steeped in shade black as midnight. But a new and very disagreeable feature attended the presence of the moon, which was nothing more or less than the howling of the wolves. All parts of the forest reverberated with their monotonous and horrid outcry, from our own immediate vicinity to the most distant part of the valley we had left. While none of them made their appearance, we walked on, supposing our numbers would protect us from anything like an attack; but when, at length, several of them leisurely crossed our path—strolling from one side of the forest to the other—we deemed it prudent to retrace our steps, the speed of our retreat being considerably accelerated by the knowledge that many a fiery glance was upon us, for the glare of their fiery lenses gleamed out from their dark haunts among the trees, like cats' eyes in the dark. The carriage remained where we had left it, the wheels being imbedded to the axle-trees in the rich soft soil, of which the entire region around was chiefly composed. There was, therefore, no help for it but to do what should have been done at first, viz., unload it. In a few minutes the ground was strewed with imperials and packages; a few gay touches of picturesque costume alone were wanting to imagine a Spanish or Italian diligence robbery scene. We entertained little dread of brigands, however; our only fear was the wolves. After an hour's tugging and pushing, the unwieldy family coach at length surmounted the hill, and, the imperials and packages being reinstated, all jogged on at a snail's pace for several versts, when a soil of fine heavy sand succeeding, we were worse off than ever.—*Six Years' Travels in Russia.*

TABLE MOUNTAIN, THE WATER RESERVOIR OF CAPE TOWN.—Table Mountain is the terminus of a ridge of high land, which almost covers the promontory of the Cape of Good Hope. Its face towards the north-west, immediately behind Cape Town, is all but perpendicular, nearly 4,000 feet in height. When a cold south-east wind blows over this ridge, and comes to the edge of the cliff, it meets the warm air, saturated with moisture, which is constantly rising from Table Bay and the Basin in which Cape Town is situated, and immediately condenses this vapour first into a cloud, and then into rain, which falls on the mountain edge and on the *débris* immediately below it. This cloud, to observers in the bay or in Cape Town, appears to be moving forward with a curling motion, precisely as though it were pouring over the mountain, with this peculiarity, that it rarely advances far from the cliff, or descends below a certain point, where it meets the upward current of warm air, which again absorbs the dense vapour to be again cooled, and then deposited as mist or rains, so that what appears to be a heavy cloud, driven over the mountain by the south-east wind, is a beautiful contrivance of nature for the supply of Cape Town and the shipping resorting to it with the purest and most delicious water, for the water issuing from the *débris* at the foot of this mountain, resting as it does on granite, is the only source from which all the water for the supply of the 30,000 people living below it is obtained. It is most curious to see this cloud during perfectly fine weather, and when no other cloud is visible for days and weeks, constantly hovering over the mountain, and as regularly depositing its water for the large population dependent upon it.—*Mr. William Hawes, in the Society of Arts.*

A correspondent of the *London Literary Gazette*, alluded to the numerous cases of death from accidental poisoning:—"I venture to affirm there is scarce even a cottage in this country that does not contain an invaluable, certain, immediate remedy for such events, nothing more than a dessert spoonful of made mustard, mixed in a tumbler of warm water, and drink immediately. It acts as an emetic, is always ready, and may be used in any case where one is required. By making use of this simple antidote, you may be the means of saving many a fellow-creature from an untimely end."

A LINCOLN RAM.—This magnum bonum sheep was bred by Mr. John Stokes, of Caldecott, Rutland, and was exhibited at Peterborough, in October, 1857, when, as a three-shearer, £70 was offered for him. Then and there the following lines were written upon him:—

He has a long thin head, a smart and lively eye,
 With a beautiful bosom, and very large thigh;
 He is good in his hips, with a gigantic loin,
 Wide in the breast, and immense in the chine;
 He's fine in the bone, and light in the jaw,
 And in his whole body I can't find a flaw;
 He is light in the *garbage*, and good in the rump;
 He is deep-clifted through, and without any hump;
 Fourteen pounds of wool's yearly shorn from his skin;
 He is a Bakewell without, and a Chandler within.

The above lines will bear investigation; there were the sheep to prove them. Mr. Stokes has bred a great deal from the far-famed flocks of Messrs. Kirkhams.

SAMUEL ARNSBY.

Millfield, Peterborough
 April 13th, 1859.

Mark Lane Express.)

SINGING SHELLS.—Mr. Taylor, a tourist, when at Bathcualoa, in Ceylon, on going at night on a lake, near the fort, was struck by a loud musical noise proceeding from the bottom of the water. It was caused by multitudes of some animals inhabiting shells—at least, the natives call them “singing shells.” The sounds are like those of an accordeon, or æolian harp, &c., vibrating notes, and pitched in different keys. A snail, abundant in Corfu, if irritated by a touch with a piece of straw, will emit a distinctly audible sound in a querulous tone, and which it frequently repeats if touched.

TO DRESS A PARTRIDGE IN A HURRY.—Expedition is the maxim of all sylvan cookery, and as plucking the feathers of a partridge would be too great a tax on the time and patience of the *voyageur*, the method most in vogue is to run your hunting knife round his throat and ankles and down his breast, when taking a leg in each hand, and pressing your thumb into his back, you pop him out of his skin, as you would a pea from its pod. Then make a spread eagle of him on a forked twig, the other extremity of which is thrust into the ground, and after wrapping a rasher of bacon around his neck and under his wings, as ladies wear a scarf, you incline him to the fire, turning the spit upon the ground, and you will have a result such as Soyer might be proud of. When your other avocations will not afford time even for the skinning process, an alternative mode is to make a paste of ashes and water, and roll up your bird therein, with the feathers, and all the appurtenances thereof, and thrust the performance into the fire. In due time, on breaking the cemented shell, which is like a sugared almond, the feathers, skin, &c., adhere to it, and then you have the pure kernel of poultry within.—*Curiosities of food.*

THE ENDURANCE OF HORSES.—Some curious experiments have been made at the Veterinary school at Alfort (just outside Paris) by order of the Minister of War, to ascertain the endurance of horses, as in a besieged town, for example: It appears that a horse will live on water alone five and twenty days; seventeen days without eating or drinking; only five days if fed but unwatered; ten days if fed and insufficiently watered. A horse kept without water for three days drank 104 pounds of water in three minutes. It was found, too, that a horse taken after being fed and kept in the active exercise of the “squadron school,” completely digested its “feed” in three hours; in the same time at the “conscript's school,” its food was two-thirds digested; and if kept perfectly quiet in the stable, indigestion was scarcely commenced in three hours.

BATS AND SWALLOWS.—It is curious, by the way, to mark the analogy that exists between the swallows and bats. Each of these groups loves the air, and is mostly seen on the wing. Their food consists of the flying insects, which they chase by their exquisite command of wing; and it will be noticed that, as soon as the swallows retire to rest at dusk, after clearing the air of the diurnal insects, the bats issue from their homes, and take up the work, performing the same task with the insects of night, as the birds with those of day. Then, as the dawn breaks, out comes the swallows again, and so they fulfil their alternate duties.—*Routledge's Illustrated Natural History, by Wood.*

SALT FOR HORSES' FEET.—Common salt absorbs moisture from the atmosphere, hence it has been in some instances applied with great success for keeping the hard-bound hoofs of horses moist. The hoofs of some horses become dry and oftentimes crack, thereby rendering them lame, if the horses are driven on hard roads. By bathing the hoof and fetlock joint with a salt brine three times a day, lameness from the above cause will be avoided. It is a common practice with some blacksmiths to rasp cracked hoofs in order to render them more tough, but brine is far superior to rasping for effecting this object.—*Scientific American*.

SWILL MILK.—Some interesting facts are brought out by the Report of Doctors Reid, Doremus, and Percy, of New York, in regard to the nature of swill milk. These facts indicate that it is decidedly unwholesome. Chemical examination shows that the butter and sugar are largely decreased, while the casein (curd) and saline matters are largely increased: that the butter is deficient in the peculiar phosphoric compound which is appropriate to the brain and nervous system: that the swill milk "is different in its component parts from country milk, and that the globules which should be contained in it are diseased, dead, and broken down, even before it leaves the udder of the cow, and that the majority of the butter globules are coated with a viscid substance, a product of their decomposition, which renders them cohesive and different from those in healthy milk. The report admits that—"Chemical analysis can at present do but little towards detecting the peculiar changes that take place in the milk of woman when she is angry or frightened, or why that change should make the child sick, nor does it tell why thunder should turn milk sour," but it is contended, and no doubt with propriety, that analysis does point out with certainty, that "milk or blood in the natural state contains certain well-defined elements, and any deviation from that state renders those fluids unhealthy, and unfit for sustaining life."

Editorial Notices, &c.

THE SCIENTIFIC AMERICAN.—The publishers of this widely circulated and popular illustrated weekly journal of mechanics and science, announce that it will be enlarged on the 1st of July, and otherwise greatly improved, containing sixteen pages instead of eight, the present size, which will make it the largest and cheapest scientific journal in the world; it is the only journal of its class that has ever succeeded on this continent, and maintains a character for authority in all matters of mechanics, science and arts, which is not excelled by any other journal published in America or in Europe. Although the publishers will incur an increased expense of \$3,000 a year by this enlargement, they have determined not to raise the price of subscription, relying upon their friends to indemnify them in this increased expenditure, by a corresponding increase of subscribers. Terms \$2 a year, or 10 copies for \$15. Canadian subscribers have to remit twenty-six cents extra on each year's subscription, to prepay postage. Canadian money will be taken at par for subscriptions.

The *Scientific American* contains a bi-weekly list of all Patents granted from the Patent Office, and the most reliable information in regard to new inventions, machinery, all branches of manufacturing processes, agricultural implements, engineering, mill-wrighting, iron manufacture, chemistry; in fact almost every industrial pursuit receives more or less attention in its columns. Each number contains several illustrations of patented machines, &c., comprising about *Six hundred original Engravings* in the annual volume! As a family paper, it has no superior for *real practical utility*, since in its columns will be found *useful practical recipes*; reports of the markets, and much valuable information on domestic subjects generally. In our present number will be found an article on Steam Ploughing, taken from a recent number of this excellent periodical, which our agricultural as well as mechanical readers, will perceive embraces the improvements that are every day making in this most important art.

Specimen copies of the paper with a pamphlet of information to inventors, furnished gratis, by mail, on application to the publishers, Munn & Co., No. 37, Park Row, New York.

MOWING AND REAPING MACHINES.—We are requested to ask attention to Mr. H. A. Massey's advertisement, on the cover. Mr. Massey has frequently been a successful competitor at the Provincial Exhibitions, and we believe his machines have given satisfaction to those who have tried them.