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THE

Canadian Agriculturist,

OR

JRNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

L. XIV. TORONTO, OCTOBER 16, 1862. No. 20.

Management of Dairy Stock.

ch of the profit of a dairy cow depends on entiful supply at all times of nutritious . The variety in the quantity of milk they is principally owing to the difference in utritive quality of the food they receive. , it is well known, receiving food poor in ental matter. fall away in milk. Add to the ire properties of their food, and they diately increase their flow. The quantity lk, then, does not depend on giving a par- kind of food, but on giving a quantity to the support of the natural waste of the , and a remainder to be converted into milk. ers err very much when they undertake to more cattle than they have means to sus- in the best condition, especially in winter. esult is, their cows come out of the stable e Spring weak and feeble, and struggle gh half the summer before they are in a ion to yield milk in quantity more than to paying expenses. Dairy cows should times be in good condition. They should e their food at regular intervals; their milk l be drawn at stated hours, and by quiet gen- kers; and they should be treated at all with the greatest kindness. In short every in the power of the dairy farmer should d to insure their tranquility.

sh treatment also exacts a very injurious on the milk, rendering it less buttery, re liable to acidity. Respiration is a species of combustion. At every breath, we inhale oxygen of the atmosphere, which unites with and consumes the fatty matter of the food. When cows are worried or driven too rapidly, they breathe more frequently, inhale more oxygen, and more of the buttery portion of their food is consumed, leaving less to be converted into milk. Warmth is a substitute, to a certain extent, for food. Hence the importance, in cold weather, of tight building s avoiding cold draughts, with proper attention, however, to effective ventilation. Impure air acts as injuriously on the animal frame as impure or insufficient food. Cows, when warm and comfortable, will consume proportionately less food, and it is well known to all experienced dairymen, that their cows yield more milk in warm pleasant days, or when they have the run of warm well sheltered pasture, than on cold rainy days, or when they run in cold bleak pastures. When cold they inhale more oxygen; the result is a combustion of more of the carbon or oily part of the food, and less remains to supply the lacteal vessels with rich milk.

Draining and Ashes.

EDITORS OF THE AGRICULTURIST,—In my former letter to you, which you noticed in the *Agriculturist* of the 1st inst., making inquiries respecting irrigation, where I said, "How near together should the drains be where I could not make them more than 16 or 18 inches deep?" You have mistaken my meaning, I ought to have

said underdrains. I had an idea that that part of the ground might be made dry by putting underdrains pretty near to each other, and thus compensate for the want of depth, and I wanted information as to how near they ought to be in order thus to compensate. Would it be any use attempting to underdrain it at all? It is nearly level and lies next the creek, and the flag limestone is very little higher than the bottom of the creek, so that there would be no chance of the water sinking down through any openings that might be in the rock. If the drains were made whenever there would be a flood in the creek the water would go up the drains. Most of the ground appears dry on the top, but it don't grow very much; it is in pasture: another part is in meadow, and lies a little higher, I am making a few underdrains in a part of it, but I cannot get them deeper than about 20 to 33 inches. I intend to try the water on it this Fall.

I am clearing a piece of new land for turnips, to be followed with spring wheat, and grass for the meadow or pasture till the stumps are rotten; is it better to sell the ashes, or spread them on the ground where they are, or rake them up to apply to old cleared land? If the latter be best, to what crops would it be best to apply them? and how,—mixed with other substances or by themselves? Although the season is over for this year for sowing, yet your answers would be borne in mind by all interested in the subject.

I am, yours &c.,

J. W.

Cambray, 22nd Sept, 1862.

REMARKS.

Drains that for want of outfall cannot be made deeper than 16 or 18 inches will require to be near each other; say from 20 to 30 feet according to the nature of the soil and general character of the land. At the above depths drains would be liable to injury by ordinary cultivation, but if well made might be quite secure in pasture. Where stone is of easy access, five or six inches of broken stone placed immediately over the conduit of the drain will be found beneficial. We would suggest to our correspondent the desirableness of having a few surface drains at regular intervals in addition to the underdrains, so as to prevent the accumulation of surface water in spring, when the underdrains cannot fully act till the frost is sufficiently out of the ground.

With reference to the selling of ashes much of course depends on the price they will fetch. As a general rule we think farmers had better apply them to their older lands, which have been deprived by frequent cropping of the ingredients which wood ashes possess, and whic are essential to the healthy growth and maturit of plants. Ashes may be beneficially sow broadcast on meadow or pasture, or mixed wit the compost heap and applied to any of th cultivated crops of the farm. We shall be ha py to hear from our correspondent again on th results of his irrigation.

The Field Bean and Rotation of Crops.

THE EDITORS OF THE AGRICULTURIST.—Ca you favour me with some information abo beans. If it be the case, as I am told, that th common bean does not pod in this Province, you think any of those kinds that are larg imported into England from climates much be ter than Canada, such as Egypt, Sicily, Brazi &c., would answer. By a short experience farming I find I want a drill crop to found rotation upon, and as turnips, except to a limit extent, are out of the question, I have thought I could find a suitable bean it would come in a substitute for a more elegible green cro Indian corn has been suggested to me for th purpose instead, but from its requiring the sam food as the other cereals, it appears to be o jectionable. I do not see much said in t Journal about rotation of crops, a subject, jud ing from the little attention paid to it in gene practice, might I think be profitably impress upon the mind of the farmer.

I would like much to know from some of t more intelligent agriculturists of the Provi what kind of rotation they find best, the subj is of so much consequence that a thorough d cussion of it would prove highly instructi A short experience tells me that our great w is manure, both in quantity and quality, and, order to obviate the evil in some measure, course must be had to a scientific and judici arrangement of the crops, and the applicatio what manure we have at the best time and the most proper mode. This latter subj seems at present to be engaging much of attention of the agricultural chemists in Eur and as we in the wilds of Canada have not advantages of reading the important arti which are appearing in the various agricult journals of the three kingdoms, we must l to the conducts of this journal and similiar p published on this continent for an accoun the fast progress which is going on in agr ture in the old world, for there the greates mount of mind is engaged and the most im tant results are effected.

"NOR. WEST.

October, 1862.

REMARKS.—The common field or horse b cannot, it would seem, be profitably culti

in Western Canada. It is raised, however, to some extent in the Lower Province, and also in Nova Scotia and Prince Edward Island, we believe, but with what success we do not know. We have tried, on a small scale, several varieties of the bean from different parts of Europe, including the southern portion, and also Egypt, but the results were not encouraging. Our soil, however, was too dry and sandy for the bean, which succeeds best in Europe, on heavy, moist land. In Canada our summer heat seems to come on too suddenly and intensely for this class of plants; the blossoms prematurely fall off, and consequently do not fructify. This is more or less the case with the broad or Windsor bean, cultivated in gardens, where, under the best advantages of soil and treatment, it is rarely a certain or productive crop. If any of our readers have had experience in the matters referred to by our correspondent we shall be happy to be made acquainted with the results. The question of Rotation is indeed of great importance, and we purpose hereafter to treat it with considerable fullness.

New York State Agricultural Show.

The annual Exhibition of this important society took place at Rochester the first week in October, and we are happy to say, considering the disadvantages of bad weather and the unsettled state of the country, was a decided success. A considerable number of Canadians was present, including Mr. Burnham, Cobourg, the President elect of the Provincial Association, Mr. R. L. Denison, Treasurer, Hon. D. Christie, &c. We find that Mr. George Miller, and other Canadian breeders, carried off several first class prizes. The number of entries was somewhat below the average, but the quality of the stock, particularly sheep,—notwithstanding the absence of some of the best herds of the State, was decidedly good. The locality of Rochester unquestionably among the very best for holding the State Fair. The *Rural New Yorker* thus sums up:—

> The twenty second Annual Exhibition of the N. Y. State Agricultural Society was held during one of the most unpropitious weeks of the season—the morning of every day of the Fair (and even of the day preceding its opening) being stormy or portentous of rain, just the weather or indication, to keep people at home. The sun was visible but a few hours from Monday morning until the close of the Fair on Friday, and more or less rain fell on every day of the exhibition. And yet the Fair was a grand success—an unparalleled triumph, in all respects, considering the unfavorable weather and condition of the country. The result is the more gratifying from the fact that many had predicted a failure, even with fair weather, and had seriously urged a postponement. Under the circumstances the Agricultural Society and People of the Empire State may well send cordial greeting to brother Producers and Unionists of the Loyal States, and also cite Secessionists everywhere to the result—as evidence that New York can not only do its full share towards suppressing the rebellion, but also exhibit undiminished zeal and energy in maintaining and advancing her Home Interests. Had the weather been favourable we doubt not the Fair would have proved the most successful, *in every respect*, ever held in the State—and that is equivalent to saying in the Union. The simple fact that the receipts were abot $11,000—some 3,000 more than last year—tells the whole story as to the location of the Fair and the effects of the war upon the material interests of the State."

In fruits and flowers this exhibition far exceeded any of its predecessors, arising no doubt from the peculiar advantages of the locality, and the great abundance of the season. The vegetable department appears to have been comparatively neglected, a serious imperfection, which our New York friends should, as they readily can, correct for the future. The arrangements for the fruit were somewhat novel, and appear to have been both convenient and attractive. We subjoin from the *Rural* a description:—

> The fruits and flowers were exhibited in a fine oval tent, 85 feet in width by 110 in length. About twenty feet at one end was left for entrance and exit, and from this a table four and a half feet in width extended entirely around, making some 300 feet in length, containing about 1400 square feet, and this was devoted to fruit entirely. Fifteen feet inside of this was another table of the same width forming an oval, designed for flowers. This table was covered with moist sand four inches deep, and over this was placed sheets of moss, covering the whole surface. In this was placed cut flowers, so that there was no necessity for vials, which are constantly falling over, and are always a

great annoyance. Plants will keep well in sand and moss any reasonable time, and a slight sprinkling may be given if the weather should prove dry and warm. As guards around these tables a neat rustic fence was made of white cedar poles, with necessary gates for exhibitors, &c. This left a space in the center about forty by sixty feet, in which were the two masts or poles that sustained the top of the tent. These masts were covered with bark, so as to give them the appearance of trees, and pots of climbing plants in flower sunk at the base, while their branches extended nearly to the top. At the base of these poles octagon stands were made for the display of pot plants, covered with moss, and when filled with plants, produced a very fine effect. In the centre of the oval was a large bed of *Cannas* and *Celadiums*, and nothing in the whole exhibition was more admired than the splendid foliage of these plants. This bed was raised something like a fort, and surrounded with moss-covered rocks selected from the river bank. Scattered around where a few fine plants, such as the *Sago*, *Palm*, *Century Plant*, *Euphorbia*, &c., the pots and boxes concealed by rocks and moss. The turf was short and of good color, and the whole appearance was that of a fine lawn.

We are glad to learn that the able and courteous Secretary, B. P. Johnson, Esq., had returned from his visit and duties connected with the great International Exhibition in good health and spirits, full of hope and generous feelings both as regards the old world and the new. Although, as under the circumstances was to be expected, the amount of the United States contributions to that magnificent display of the world's art and industry, has been comparatively small, it must be gratifying to her enterprising and intelligent citizens that their importance and particular value have been appreciated in an unmistakeable manner. Let us hope, ere another New York State Show occurs, that swords will be transformed into ploughshares! We gladly make room for the following lecture and discussion in connection with the State Fair.

INSECTS INJURIOUS TO AGRICULTURE.—*The Gaain Aphis, Wheat Midge &c.*.

Dr. Asa Fitch, Entomogist of the State Agricultural Society, opened the discussion by reading the following Essay on the Grain Aphis.

Mr. Chairman and Gentlemen,—I am requested to preface the discussion, this evening, by presenting to the audience some account of the Grain Aphis—an insect new to us in America, and which during the past and the present year, has been more prominent in the public regard than any other insect.

In the grain fields of Europe this grain aphis has existed from time immemorial. It was scientifically named and described eighty-one years ago, by the distinguished German entomologist, Fabricius, who met with it in fields of oats, and therefore named it the *Aphis Avenæ*, or the oat aphis, he being unaware that it occurred equally common upon other kinds of grain also.

But our European accounts of it are quite meager and imperfect. About all that we gather from them is, that it is an insect which shows itself upon the grain about the time of harvest, and that in some instances it has been known to be so multiplied, in particular places, as to literally swarm upon and cover the heads of the grain in many of the fields.

These few general facts, are all the information which the world has hitherto had of this insect. What becomes of it during the remainder of the year, where, and in what condition it lurks after harvest time, and until harvest time again approaches, had never been investigated. It was remaining for us in this country to trace out its abiding place and habits during the autumn, winter, and spring, and thus complete its history the year round, as we have been able to do within the past eighteen months—under the instructions of this Society, and under the auspices of the State of New York.

In this country, this grain aphis has never been observed, and it was not known that we had such an insect here, until last year, when it suddenly appeared in excessive numbers over all the New England States, and the State of New York, except here in its western section, and also in the adjoining districts of Canada and of Pennsylvania. Throughout all this vast extent of country every grain field was invaded by it; many of these fields were thronged and a portion of them were literally covered and smothered by this insect.

This year it has moved westward, making its appearance in the same manner all over Western New York, Canada West, Northern Ohio, and at least a portion of Michigan as judge, from the numerous letters which have been sent me with grain-heads containing the insect, and from the notices of it in the public prints—whilst at the East, where it was so numerous last year, it has measurably disappeared this year, so that, except in a few localities, it would not have been noticed by not every body been so eagerly searching for it.

But though this insect has only been no-

ed in this country the past and the present years, we do not suppose it has newly arrived upon this Continent. It has no doubt been present in our grain fields heretofore; but in such limited numbers, and so scattered about upon the growing grain, that it failed to be observed. It is seventeen years ago that I began to examine the wheat midge, and in looking at that and other insects upon the wheat. I recollet I have occasionly seen this aphis. But as only two or three individuals of this kind were to be found at a time, I supposed it to be of no importance, and thus gave no attention to it, until it began to appear in such abundance the past year.

Although it is a common habit of plant lice to become extremely numerous, at times, upon the particular kinds of vegetation which they respectively infest, we meet with no recorded instance in which one of these insects has been known to become so suddenly and excessively multiplied over such a vast extent of territory as has happened in our country with this grain aphis the past and present years.

I suppose almost every person in this audience has seen these insects, crowded together upon the heads of wheat, oats, barley or rye, and has observed that they are a kind of plant-louse, similar to what we frequently see upon the leaves of cabbages in our gardens, and on the apple, the cherry, and other trees, As it resembles these common and well-known insects so closely in its form, its motions, and habits, it will not be necessary for me to give any particular description of it.

With regard to the mode in which it injures the grain, I would observe that it has a slender, sharp-pointed bill or trunk, which it holds under its breast when this implement is not in use. With this it punctures the leaves and stalks of the grain and sucks their juices. It therefore has no occasion to leave the particular plant on which it is born, as it always has an ample store of nourishment directly under its feet. Hence, it has no use for wings to carry it, like other insects, from place to place in search of food. It needs wings for only one purpose, namely, to enable it to emigrate to fields of grain which are unoccupied, in order to start colonies in them. Only a small portion of these insects, therefore, acquire wings; and these fly away from the winter grain to plant their race upon the spring-sowed wheat and oats.

The latter part of June, when the grain has advanced so that the heads or ears begin to put forth, two most remarkable changes occur in this insect, whereby it appears to become another creature, a different species, in the middle of summer from that which is seen in the spring and autumn.

One of these changes is in its habits. Before the heads appear, it lives singly, scattered about upon the leaves and stalks of the grain, and the young lice, as fast as they are born, leave their parents and wander away. But no sooner are the heads protruded from their sheaths preparatory to blooming and growing the kernels of the grain, than this aphis wholly forsakes all the other parts of the plant and becomes congregated upon the heads—evidently because the juices which the plant elaborates for the growth of its flowers and seeds are much more nutritious, more dainty and palatable to these insects, than are the juices which circulate in the leaves and stalks. They here fix themselves upon the base of the chaffs which envelope the kernels, and inserting their beaks, they suck out the juices which should go, first, to grow the flowers, and after that to fill and perfect the kernels. And now, the young lice which are born, instead of scattering themselves and travelling away, settle down closely around their parent, crowding as compactly together as they can stow themselves. Thus it comes to pass, that when these insects are numerous, as we have recently had them, in many of our grain fields, scarcely an ear can be found which has not a cluster of these lice around the base of almost every kernel, all with their tiny bills inserted therein, pumping out the juices which should go to swell and perfect the seed. Thus, this grain aphis from being a solitary insect, wandering about singly upon the leaves and stalks, becomes a gregarious insect, clustered together in flocks, and remaining fixed and stationary upan the lower or butt ends of the kernels.

At the same time, another change, equally remarkable, takes place in *the color* of these insects. So long as they nourish thsmselves on the course juices of the stalks and leaves, their bodies are all of a grass-green color. But when they come to feed on the more delicate juices of the flowers, they begin to bear young of an orange color. One of the grass-green insects having stationed herself at the base of a kernel, the next day, in the group of little ones around her, a yellow one will occur, all the others being green like their parent. A day or two later, as the nourishment she derived from the leaves becomes more dissipated from her body and replaced by that now obtained from the kernels, half the young she produces will be of this yellow color. And still later, all the young are yellow, no green ones being any longer born. And the older ones after a time dying and disappearing, all these insects some weeks before harvest time, become changed to a yellow color, their hue inclining more to red in some and to yellow in others.

It is truly curious that this green insect, thus, on coming to feed on the juices which

grow the flowers, begins to produce young of a gray yellow color similar to that of the flowers.

By depriving the kernels of a portion of the milky juice which should go to swell and mature them, this insect causes the ripened grain to be more or less shrunken and light of weight.

Rye, however, grows so rapidly and ripens so early, that it outstrips this aphis in its increase, and thus sustains no material injury from it. Winter wheat, ripening more slowly, experiences more injury. But the crops which ripen latest, and when this aphis has become multiplied to the greatest extent, namely, spring wheat and oats, become the most thronged and sustain the greatest injury.

Let us next inquire how it is that this insect is able to become so suddenly and so excessively multiplied as we have had it, in the Eastern part of our State last year, and here in its Western part this year.

I may observe that a hundred years ago it was a current opinion among men of science, that certain insects and other creatures pertaining to the lower orders of the animal kingdom were generated spontaneously. But, more recently, when these instances of supposed spontaneous generation came to be closely investigated, one after another of them were found not to be such. So that at this day the scientific world wholly discards the theory that there is or can be any such thing as spontaneous generation. All living things descend from parents; and it is by a pairing of the sexes that young are produced and that each species is continued in existence—some classes of animals bringing forth their young alive, others laying eggs from which their young hatch.

Insects are of this latter kind. They are all produced from eggs. But in the generation of the plant lice, we meet with one of the most remarkable anomalies which we anywhere find in the works of nature. These insects bring forth their young alive, at one time, and they lay eggs at another time. All the plant lice which we see upon our fruit trees during the summer are females, and these do not produce eggs, but living young, which nature in a few days, and (wonderful to tell!) they are fertile without any intercourse of the sexes. It is only when cold weather and frosty nights arrive, that males are produced. The insects then pair, and the females thereupon lay eggs. These eggs remain through the winter, to be hatched by the warmth of the following spring. The young from these eggs grow up and commence bearing living young, no males and no eggs being produced, except as the closing act of their operations in autumn.

Such are the general facts with regard to the generation of the insects of this aphis group. And I had supposed it would be the same with this grain aphis. Some of you may have been present and heard the remarks which I made on this subject at our Fair at Watertown a year ago. I stated that the eggs of this insect would probably be found late in autumn, scattered about upon the leaves of the sowed wheat and rye—which eggs would hatch with the warmth of the following spring, to start the insect upon the grain again this year. But when frosty nights arrived last autumn, and when the aphis on the apple trees was found paired, and the females were busy depositing their eggs, to my surprise, nothing of this kind occurred with this aphis upon the grain. The mature lice continued to produce young ones, until they and their young became congealed upon the leaves of the young grain by the advancing cold of the season. And in this state they were buried beneath the snows of winter, and with the warmth of the ensuing spring they were thawed, and returned to life again.

To be better assured upon the subject, I placed some of these insects on grain growing in flower-pots and kept during the winter in a warm room. In this situation they continued alive and continued to bear young through the whole winter season.

Thus I have watched this grain aphis for a year round so closely, that I am perfectly assured no eggs were laid and no males were produced. Occasionally an individual was noticed, varying somewhat from the others, and which I have therefore suspected might be a male; but, on imprisoning such specimens in vials over night I have invariably found young lice with them next morning.

When, and under what circumstances males occur, is yet remaining to be discovered. At present it seems as though these insects might go on forever, producing young, without any intercourse of the sexes.

Finally, with regard to the fecundity of these insects, I would state that those which have no wings, and which remain on the stalks of grain on which they are born, are much more prolific than those which have wings and wander abroad. By enclosing them separately in vials, I found the winged females quite uniformly gave birth to two young lice in a single night, whilst the wingless ones produced four in the same time. We frequently see young lice produced in the day time, but fewer appear to be born then than during the night. The winged ones are also much slower in coming to maturity. I placed several young lice the morning after they were born upon some grain growing in a flower-pot, and on the third morning afterwards I found four little ones around each of them, showing that the wingless ones come to maturity in three days. It will thus be seen with what prodigious rapidity these creatures multiply. They almost double their numbers daily. A single one producing four young daily, and these becoming equally prolific when they are three days old,

her descendants in twenty days if all alive, will number upwards of two millions. This will serve to explain to us how it is that this insect becomes so excessively numerous upon the grain at harvest time as we have seen it.

As they multiply so rapidly, it is evident no vegetation which they infest would escape destruction from these plant lice, if nature had not herself provided most efficient means for checking and subduing them. We accordingly find that these insects are preyed upon and consumed by other insects, to a greater extent than are any other kinds of injurious insects wherewith we are molested. There are whole groups and tribes of predaceous insects which subsist exclusively upon the plant lice of different kinds.

A tribe of very small Ichneumon flies, named Aphidius, are parasitic destroyers of these insects—puncturing and thrusting an egg into the body of the aphis, from which hatches a minute worm which feeds within the aphis till it kills it. I have found two species of these parasities destroying the grain aphis.

Another most efficient destroyer is the Lady Bug or Coccinella, of which there are numerous species all of which are continually searching plant lice to feed upon, these being the sole nourishment of the lady bug, both in its larva and its perfect state.

In addition to these are the Synphus flies, the golden-eyed flies, and the laced-wing flies, all mortal enemies to the different kinds of Aphis.

By such means is it that these plant lice upon the grain as on other vegetation, are usually but a transitory evil—these their foes and destroyers, always gathering around them wherever they become numerous, and multiplying until they overbalance and subdue them.

Some one asked for a description of the Lady Bug. Dr. Fitch described it as follows:—It is about the size and shape of half of a small pea, of a yellowish red color, with round black spots upon it.

Question.—Is it poisonous to animals?

Dr Fitch knew a single instance when swine had been pastured in a field where the lady bug was numerous. All of the herd were taken sick and some of them died. The swine were removed from the field to another, and such as were so removed recovered. Dr. F. said that it was possible that the swine were poisoned by large quantities of the lady bug; for if it is taken on the fingers and crushed, an acrid juice is emitted, which is doubtless poisonous, inasmuch as it is the insect's only means of defence. He had thought it possible that this particular herd of swine might have been poisoned by it.

Question.—Is there any prospect of the Aphis becoming a permanent pest in the country?

Answer.—I think not. Its enemies are too numerous for that. Not more than a single year at a time, will they be likely to ravage in a single locality. As before said, they seem to be emigrating Westward.

Question.—Is the midge a permanent pest; is it plenty here at all seasons?

Answer.—There is no doubt that the midge is plenty in all parts of the country. The character of the season governs its ravages. If the latter part of June is wet, look out for the midge; if dry, there is no danger. In dry weather it cannot subsist on the uplands; it returns to the lowlands.

T. C. Peters—We are fast reaching the maximum of former years, in the amount of wheat sown in Western New York, and it is an important matter to us to know how to avoid the ravages of the midge. Do you recommend thorough culture?

Dr. Fitch—Strong growing wheat will produce despite the midge. Yes, I do recommend thorough culture as one of the preventives of the ravages of the midge; also of the Hessian fly and other insects.

Question—What is the effect of the work of the Aphis upon the grain—upon the kernel?

Answer—The insect extracts the juices from the plant, which aid in developing and maturing the kernel. This diminishes the size of the grain—sometimes virtually destroying it, for the substance is almost gone.

Mr. Geddes, of Onondaga, does not agree with Dr. Fitch concerning his theory, with reference to the existence of the midge. He doubts if the midge exist in as great numbers one year as another, or if they are present at all; for prior to the last six years he had failed to get a crop of wheat for some years on their account; while the past six years he had grown it successfully. His success, he thinks, is not due to dry Junes, but to the fact that the midge had disappeared. He doubts, too, if his success is due to superior culture; for he used to summer fallow all his land; now he turns it over and seeds after barley, and oats &c. &c.

T. C. Peters—So far as white wheat is concerned, the theory of the effect of the season upon the ravages of the midge upon it, is correct. But the Mediterranean is the only variety that can be grown now safely. He thinks the white wheat has very much degenerated.

Other gentlemen present coincided with him in this matter and united in asserting that the best mode of redeeming white wheat was to change the seed. It was further agreed that the Mediterranean had greatly improved by cultivation—that it was "bleaching out."

Mr. Bishop, of Wyoming, asked if early or late sowing had not had to do with checking the ravages of the Aphis?

Dr. Fitch replied, yes. Its ravages are greatest on the late sown wheat. Late sowing is not advised, if the object is to avoid its ravages. The same remark applies conversely to the midge. It does not so seriously affect the late, as the early sown wheat.

Pres't Cornell—Have you observed the Ap his in the ground around the roots of the barley?

Dr. F. had so discovered it.

Mr. Geddes—Why is it that the midge should have appeared one year, and not doubled the second and tripled the third, &c., &c. He thought the midge was disappearing.

Dr. Fitch said there were two successive years when the midge disappeared, and then the third year appeared again, and was very destructive. He does not think it was because the midge passed away from the country, but because the season was not favorable to its development—or at least not favorable to its operations on wheat—it passed to some other grain.

At this point there was a rambling conversational discussion upon the relative value of different varities of wheat. Much of this the reporter was unable to hear. But he heard enough to establish the fact that there were many present who believed the Mediterranean the safest and best wheat to sow; that it was improving in character, while the white wheat of the Genesee Valley was deteriorating. A few claimed that better flour could be made from the Mediterranean than from any other wheat.

Fat versus Lean; or the Obese System of Feeding Cattle.

In this article we propose offering a few desultory observations on the question, Has the obese system of fattening cattle, as practiced for upwards of half a century, and which is still the fashion, a tendency to increase the normal proportions of fat, but decrease that of lean, and without increasing the carcase-weight of animals? Speaking from memory, the object of the Smithfield Cattle Club is *"To produce the greatest possible amount of meat of the best quality at the lowest price."* Such being their proposition, the remarks we are about to make will show, that by encouraging the production of an excess of fat, the greater portion of which goes to the tallow-chandler, the lean meat, available for the food of man, has been decreased below the normal standard, both as to weight and quality. And if we shall succeed in proving this, the reader will readily perceive that the Smithfield Cattle Club are not performing the functions for which they were constituted. The Royal Agricultural Society of England, the Highland Society, and the other societies, both for breeding and fat stock, are in a similar position, the general practice pursued having a tendency to increase fat, but decrease the weight and quality of lean.

It may be as well in this place to mention, that our object is to induce the Smithfield Club, and other fat-stock Clubs and Societies, to take the necessary practical steps for encouraging the opposite practice, viz., the growth of rich juicy lean meat in greater abundance, with no more fat than is necessary for health and domestic economy. In other words, LEAN *versus* FAT; *or the natural system of feeding cattle.* But to the solution of this latter problem we shall have to return in a subsequent article. For the present we have enough on hand to dispose of the opposite problem at the head of our paper, viz., FAT *versus* LEAN; or the OBESE SYSTEM OF FEEDING CATTLE.

What is fat? The printer has one answer to this interrogatory and the farmer has another; but we shall have to take up the question in a somewhat different light from either, with a view to determine the function fat performs in the animal economy, and the purpose it serves in the dietary of man and cattle.

Although considerable attention has already been paid to the chemistry of animal fats, as of the ox, sheep, and pig, yet much remains to be done to supply the growing demands of physiology. These fats are regarded as having a true saline composition, consisting of stearic, margeric, and oleic acids, and a common base glycerine, thus forming stearine, margarine, and oleine. But it is a well-known fact, that each of the above fats, viz., ox-fat, mutton-suet, and hog's-lard, is associated with other proximate principles, and that a knowledge of these would be of more importance to the physiologist and farmer, and also to the physician, than a knowledge of those usually specified by chemists. Thus "mutton-suet consists of stearine, margarine, oleine, hircine, and hircic acid" (Reveira,) and most probably other flavouring matters than the latter two, as the taste of the suet is always more or less affected by the quality of the food on which the sheep had been fed. Thus the suet of the sheep fed on rich down or hill pasture is finely flavoured, while that fed on oil-cake is the reverse. Similar diversities in the quality of food produce corresponding effects upon the taste and flavour of ox fat and hog's-lard.

"The fat, considered physiologically," says Dewglison, "has for its function to protect the organs, maintain their temperature, and to serve for nutrition in case of need, as is observed in torpid animals." According to this writer, its functions is thus of a threefold character. In a normal state of health and weight, for example—first, so much fat is necessary to protect the organs; and, secondly, so much is required to keep up the temperature of the body.—For both these purposes a daily consumption of fatty matter may take place, and such will be procured directly from the food if it contains so much. But, in the third place, when the food contains more fat forming elements than are required for the above two purposes, a reserve of fat is stored up in the adipose tissue to supply the demands of the system in the emergency of none being obtained from food, as in the case of hybernation, when animals sleep during winter in a torpid state; or

in the case of fasting during seasons of scarcity, as in winter in this country, and in periods of drought experienced by the fat-tailed sheep and humped-ox of East Africa, where we see nature making ample provision for peculiar exigencies of this kind.

In the case of fat-tailed sheep and hybernating animals, the accumulation of fat is natural; so that the normal health is not injuriously interfered with. But the reader must be well aware that unnatural practices are resorted to, in order to produce an accumulation of fat in our domesticated animals—as in the cramming of geese, blinding quadrupeds, &c., &c., when an abnormal state of health is experienced in various forms; as, for example, of obesity, rot, &c., &c., &c. It is to the principles involved in the abnormal cases that our observations will be chiefly confined, viz., to an excess of unhealthy fat, a decrease of lean, and an excess of water and bad fat, as in the fatty stage of sheep rot, &c., &c.

In the process of fattening geese (to obtain the *foie gras* of the French) by cramming with fatty food, in that of fattening women for harems in Turkey on *flour and honey*, in sewing up the eyes of the cattle in the East, or in fattening them in dark warm places and on improper food in this country, similar principles are involved. Sleep, or a state of the system similar to it, for instance, is induced. The number of respirations in a given time is thus lowered, and consequently the consumption of fat-forming element. The active functions thus concentrate their energies, as it were, almost wholly to the formation of fat of an inferior quality. And as the rule holds good in this as in all other mechanical questions, it consequently follows that nervous and muscular action cannot take place but at the expense of matter. Now, in the case before us, the expense of matter is reduced to its natural minimum; thus leaving a much greater surplus than in ordinary cases to be stored up in the adipose tissue. And more than even this surplus goes to increase the weight of the carcase; for in cases of obesity the excretory functions seldom remove the whole of the refuse of the system that does take place; so that this has also to be added to the coarse fat, to swell the total weight of inferior meat sent to the shambles.

In the forcing system of oilcake-feeding cattle for the shambles now generally pursued, the above principles are carried out, although not perhaps to the same extent as in cramming geese or in fattening some special animals for Christmas fat-stock shows In the former case, however, the principle is as objectionable as in the latter, for a very large proportion of the heavy meat about this season is by far too fat, even after the butcher has pared off tubfuls of rough fat for the tallow-chandler; while the fat that goes with the lean is of a very inferior quality, being often unfit for human food. Turnips and oilcake are not the natural feeding materials of our cattle; and when animals are allowed, and even induced to eat large allowances of either, the appetite being depraved or voracious, but especially of the latter, oilcake for oxen and sheep, and barley-meal for pigs, &c., &c., under confinement, and with a limited amount of light and fresh air, sleep is induced; while the same abstraction of certain functions, and contraction of others, take place, in order to liberate the blood of fat-forming element, and to deposit it in layers and patches separately from the lean, as in the case of geese, Turkish women, or other examples of obesity. In the case of breeding stock it is much worse than this, obesity having a stronger tendency to become hereditary in the breed. So that the obese system as exhibited at and encouraged by the summer meetings of the Royal Agricultural Society is tenfold more objectionable than it is at our Christmas fat-stock shows; for when obesity becomes hereditary in breeding stock, it is hardly possible to prevent even milch cows from becoming too fat when full fed, whileif they or their offspring are stinted in their daily allowance, skin and lung diseases are the inevitable results.

This extra-fat system is, in the second place, diametrically opposed to the growth of lean meat. The sleepy dulness and peculiar state of the nervous system generally attending the deposition of extra quantities of fat under obesity, in any of its stages, not only prevents the development of muscle or lean meat, but even has a tendency to produce atrophy, or wasting of the lean. Indeed it always does so, when animals are allowed to lie too much with overloaded stomachs. And such is the extent of atrophy produced in some animals that, when they continue to lie upon one side for a length of time they frequently become unable to rise and stand upon their feet. The details of the physiological *rationale* of this we must postpone to another article. At present it will be sufficient if we merely mention that this waste indirectly arises from the want of the necessary amount of exercise, light, and pure air, with a proper supply of natural food to maintain the equilibrium of live muscle. The lean of meat undergoes changes in the animal economy, to which the fat is not subject. The latter is deposited in small vesicles, or sacs, there to remain in store until required for use when the supplies from without (in the food) begin to fail; but the former is subject to a continuous pulling-down and building-up, or reparative, process; and unless both these processes take place in a proper manner, the healthy development of lean meat cannot take place. The blood, (both venous and arterial), lymph, and juice of the flesh must also be in a normal state of richness and purity. Now in the case of obesity under this example, where the excess of water is removed from the system, in contradistinction to

the next, or third, example, where an excess of water, along with an excess of fat, is formed, the aoove conditions necessary to the healthy development of lean meat are not present, but the contrary; for the blood, lymph, juice of the flesh, and the pulling-uown and building-up process of the tissues, are all in an abnormal state, being more favourable to atrophy than to growth of tissue and the filling up the flesh with rich juice. Under such circumstances, it is not, therefore, surprising that extra-fat animals are devoid of muscular energy, and unable to endure fatigue; for all those muscles engaged in their locomotion are reduced in tone and strength to what they were at a previous period, when carrying less superfluous fat. The extra weight of fat is sometimes erroneously said to be the cause of this muscular debility; and no doubt, to a certain extent it is so, while it at the same time unfits animals from walking long distances, owing to the manner in which it affects respiration. But this is not the real cause, for the heaviest animal does not always experience the greatest amount of muscular debility. On the contrary, it will be found, when practically examined, that muscles have actually lost volume and contractile force, being thus less able to perform their respective functions.

In the third example, water accumulates in the system as well as fat. The fatty period of sheep-rot is a familiar instance of this kind; but an extreme one Amongst the extra fat stock exhibited at our fat shows, and also at our weekly markets, there are numerous examples of this kind. The colour of the meat depends something upon how the animal "dies," technically speaking; but generally it has a florid red and watery appearance. The per centage of water may not perhaps much exceed what was found in the lean of beef, by Brande 74, Schlossberger and Berzelius 77; in mutton 71, by Brande. But the juice of the flesh is thin, being deficient of osmazome, albumen, and other elements, that give it consistency and richness of flavour; consequently, although it may be tender, it is soft, watery, and insipid, requiring lots of artificial sauce and condiments to season it in the cooking and eating. The blood and lymph are in a similar state of tenuity. When the several fluids lose their normal state of equilibrium, endosmoses and exosmoses take place, as seen in the advanced stages of sheep-rot.

This abnormal condition is evidently a species of disease, and when animals labour under it, they have a very dull and languid appearance, while their meat is very unwholesome, and unfit to be used as food. Obese barley-meal fed pork may be white, and so may the fat of the ox and sheep; but this is only an evidence of its unwholesome character, for meat deprived of its colouring matter is indigestible.

We have thus arrived at not a very favourable conclusion relative to the quality of the extra fat meat now exhibited at our Christmas fat stock shows, and of the breeding stock exhibited at our summer meetings. In short, the forcing system of feeding cattle is objectionable. Had the animals shown in Baker Street, for example, at Christmas, 1861, been slaughtered on the spot, and their carcases exhibited, as they generally have by this time been by the butchers who bought them, would not the exhibitors have been ashamed of the quality of the meat? And would not the vast concourse of visitors have turned up their noses at the smell, and ridiculed the very idea of using for twelve months consecutively no other quality of animal food? And, if an affirmative answer must be given to questions so plain, the conclusion, as to the general principles which such a practice of fattening and breeding stock involves, need not be repeated in this place. Many important advances have been made in every branch of applied Science since our Agricultural Societies and Clubs first entered upon the discharge of their respective functions, and we hope they will, during the current season enter upon one of international significance with an honourable sense of the fresh duties which the progress of things thus calls upon them to perform. During the past half century we have learned to grow fat in overflowing abundance; but, unfortunately at a very heavy sacrifice of lean meat, and even of the quality of the fat itself. This reduction in the growth of lean has, of course, greatly increased the proportion of fat; for, had the growth of the former kept pace with that of the latter, then there would have been but small reason for complaint. And, besides this, a great waste of the most valuable elements of food takes place under the obese system of feeding cattle; but to this we must return.—*Farmer's Magazine.* W. B.

Directions for the Cultivation of Flax.

The Jacques Cartier Agricultural Society of Canada East, have issued the following directions for the cultivation of flax:—

Soil.—The best land for flax is a dark coloured loam with a clay subsoil: it will grow on almost any soil, but such as contain a large portion of vegetable matter in the composition are undoubtedly the most proper for flax; but whatever be the kind of soil, it ought to be in neither too poor nor too rich but what is called in good condition.

The place of flax in the rotation of crops. If the crop is to be allowed to ripen its seed it should be considered as a grain or exhausting crop, and as a green crop when the plant is pulled green: if intended to ripen its seed it should follow potatoes, turnips, or some other green crop; if to be pulled green, should then be sown upon land from which one crop of grain only has been taken aft

having been several years in pasture; in either case this will cause no derangement on a farm where a six or seven years' rotation is practised in the first case, grass seed should be sown with the flax and in the second should take the place of a green crop, and may be followed by barley or wheat, if allowed a slight dressing or manure after removing the flax.

Preparation of the Soil.—In all cases the land should be deeply ploughed in autumn into ridges ten or twelve feet wide, well water-furrowed; this done in the proper season, in a proper manner, the frost of the winter will put the land in a finer state of pulverization than any other implement man can employ; the land should be well harrowed before the seed is sown, then cover the seed by passing the harrow a couple of times over it, water-furrow the land, and remove all stones which remain on the surface; this finishes the seed process.

Time of Sowing.—From the 10th to the 20th of May is the best time in this locality; if sown earlier, the seeds of annual weeds will spring up with the flax, and will either injure the crop, or cause more labour in weeding it, whereas if sown about the middle of May, a great number of the seeds of weeds will have already germinated, which the process of seeding will kill, and, consequently save labour in weeding.

The Quantity of Seed.—This will depend upon the intention of the crop; when a crop of seed is intended to be taken, thin sowing is preferable, but it is a mistake to sow thin when flax is to be taken for the crop; it will grow coarse and less productive; from a bushel and a half to a bushel and three quarters should be sown per acre.

The Choice of Seed.—It should be weighty, of a bright brownish colour, and slippery to the feel in putting the hand among the seed.

The Manner of Sowing.—It is always sown broadcast, but if seed is the main object, drilling may be adopted.

After Culture.—This consists chiefly in weeding, but sometimes should commence with rolling the surface when the soil is very dry, the season advanced, or the earth very light and porous. The weeding, if required, should be done when the crop is about four or five inches high; there is no danger of injuring the plants by walking over them to pull out any weed that may have grown up with them, or even by turning a flock of sheep amongst it, as the sheep will not taste the young flax plants, and a fine dewy night will put all wrongs right; the rest, until harvest, is in the hand of a beneficient Providence, who alone can bring to a successful issue the work of our hands.

Harvesting the Crop.—The flax crop is taken by pulling; this should never be done before it comes into flower, when fibre is the sole object; or before seed in the pod acquires a brownish colour, when fibre and seed jointly are required.

Rippling.—This is the next operation, and may be quickly done by presenting the seed end of the flax to the cylinder of a threshing mill, withdrawing the stalks, and binding them in bundles for the purpose of steeping. The best water for steeping flax, is clear, soft, and in standing pools; the time it should remain in the water will depend upon the nature and temperature of it; the most certain rule by which to judge when flax is sufficiently watered is when the reed becomes brittle, and the bark separates easily from it; it must then be taken out of the water and spread very thinly on the ground in regular rows; when it has become perfectly dry, it may then be bound up in bundles and either carried to the scutching mill, or stored away under cover, where it may remain for years without injury to the fibre, if kept dry. The other processes to which flax is subjected before it is converted into thread or linen, belong rather to the manufacturer than to the farmer.

Short-Horn Breeding.

We have frequently in these notes had occasion to speak of the principle of selection exhibited in mixed blood, or in other words, the combination of good families of all sorts, as lying at the very root of sound breeding, and as being its real purpose; we have also stated, as a fact at once arising out of this fundamental law and proving, that what is expressively denominated "distinct blood," of which the shorthorns of Bates and Booth are signal but not exclusive examples, is the result of persevering selection, which ever has been and ever will be associated with the cultivation of the finest animals. "Distinct blood" is selected blood which has become distinguished in the hands of certain successful breeders. "Anybody" (as it was observed in these columns a few weeks ago) "may be a *follower* of a distinguished breeder; but to be a successful *imitator* of him not only implies a recognition of *the great principle of selection* by which all eminent breeders have invariably shaped their course, but involves the necessity of occasionally deviating from the most satisfactory practices; just as *they* deviated; in order either to maintain what has been accomplished, or to accomplish and secure something still better. It is thus that our leading shorthorn breeders, without exception, acted, *in their best days.* Careful selections and thoughtful combinations of materials that seemed worthy, whatever their source, preceded success, and were among the chief conditions of it." The history of Killerby and Warlaby confirms the general practice. We propose, on the pre-

sent occasion, to trace that history, with as much particularity and attention as time and space will permit, with reference to selection as the chief means of attaining excellence; and shall avail ourselves of an early opportunity to enter upon a similar engagement with respect to the blood of the Kirklevington short-horns. Neither Mr. John nor Mr. Richard Booth achieved renown by ways that are inaccessible to other breeders, nor did either of them achieve renown by methods that are not deserving of universal imitation. The servile submission of will and judgment of the authority of a name and the imperious demand of fashion, by which the fitful and frivolous career of some of their admirers has been more or less characterised, is not to be charged against *them*. They adopted the labors of predecessors and contemporaries, cheerfully and freely; but they adopted them at the same time deliberately and independently, using them, not as denoting finality, but as conducing instrumentally to unattained results. They were no snappers up of unconsidered animals. The bait of a pedigree *etpræterea nihil* failed to catch them. Something more than other men's leavings, or the sweepings of weeded herds, was demanded by these august exemplars of a noble science. They looked before and after; they examined, considered, compared, *selected;* and their careful and patient operations issued in effects which have been long before us, stamped with the approbation not of a nation only, but of the world. In prosecuting our proposed inquiry we assume at the outset that the Warlaby and Killerby blood is properly designated *now* by the term "distinct;" the main question to which we invite the attention of the reader being, not so much the character of Booth blood, which we are glad to admit is as fine as blood well can be, but in what way this blood arrived at its present state.

So far back as about the year 1810, upwards of fifty years ago, we find Mr. Thomas Booth, the father of the late John Booth, of Killerby, and Mr. Richard Booth, of Warlaby, using, in addition to his own bulls, sires from the Collings, Charles and Robert; and among the *principal* bulls *used as crosses within the last fifty two years, but not bred by the Booths* (that is, by Mr. Thos. Booth, the father, or Messrs. John and Richard Booth, the sons), are Albion (14), bred by Mr. C. Colling; Pilot (496), bred by Mr. R. Colling; Rubens (5027), bred by Mr. J. Colling White House; Remus (550), bred by Mr. Wright; Stephen (1456), bred by Mr. Charge; Matchem (2281), bred by Mr. Mason; Lord Lieutenant (4260), bred by Mr. Raine; Mussulman (4525), bred by Col. Cradock, and afterwards the property of Mr. Lax; Lord Stanley 4269), bred by Lord Carlisle; Exquisite (8048), bred by Earl Spencer; and Water King (11,024), bred by Mr Torr. Among the bulls which cannot with propriety be called principal bulls, but were abundantly used, though not bred by the Booths, are sir Alexander (591), bred by Mr. J. C. Maynard; Scipio (1421), bred by Mr. Donkin; Ambo (1636), breeder's name not recorded, but his dam was bred by Mr. Poole; Francisco (2032) and Velocipede (5552), bred by Mr. J. C. Maynard; and Burley (766), bred by the same gentlemen, and out of and by a son of Venilia by Mr. Bates's Enchanter.

These details are far from being supplied in a spirit at all depreciatory of the Messrs. Booth. On the contrary, they are offered as affording very strong proofs of their sagacity and wisdom, and as a precedent which cannot be followed without immense advantage to all who adopt it. We have omitted several bulls intentionally, and some are, no doubt, omitted inadvertently; but this list, defective as it is, is sufficiently complete to assure the reader that the practice of the Booths convincingly illustrates the principle of selection, and establishes the general propositions we have advanced in its favour. It does not, of course, follow from the fact of so many *bulls* from various quarters having been used that a great variety of *blood* has been resorted to, for the several sires might have been related by affinities more or less near; but a somewhat cruel examination of the composition of the pedigrees of the bulls whose services were engaged at Killerby and Warlaby shows that such was not the case, and that not only were many bulls used, but much blood of a diversified character was sought and *adopted*. We do not ask which of these crosses the Messrs. Booth liked best, or whether they ever regretted having adopted any of them: our present business being chiefly to set before the reader some evidence bearing upon the allegation, that the Booths, in attaining reputation, in no wise discarded the principle and practice of mixing blood from different sources and of different strains. More recently, the *principle* upon which Mr. Booth has proceeded, in resorting to a new cross, has evidently been to adopt a cross nearly allied to his own blood, thus avoiding abruptness of transition whilst he obtained the impulse of a fresh element. In two of the latest of the Warlaby crosses with other blood, the Water King and Lord Stanley crosses, this is strikingly apparent. Water King was out of a pure Bates cow, and by Baron Warlaby, a pure Booth bull; and the granddam of Lord Stanley was Lady Sarah, bred by Mr. Richard Booth, and own sister to Isabella by Pilot.

So far, then, from the Booths forming any exception to the principle of *selection* they are very prominent examples of it, and we may add, of its beneficial tendencies. It was during the time when this principle most largely prevailed with them their best families were consolidated. The partial reader may acknowledge the general truth of our observations, but may meet them by alleging that Mr. Booth's short-horns being now perfect, the necessity for occasionally re

sorting to other blood is removed. We should dispute, upon physiological data, the inference thus imagined; for we believe the conclusion which cannot fail to be deduced from such data is altogether in an opposite direction, and enforces most distinctly the indispensability of forming new alliances in blood, if the health and strength and *fertility* of the old stock is to be perpetuated. Excessive in-and-in breeding obtains almost unavoidably in the early stages of the improvement of a species, and contributes greatly to the *speedy* attainment of that purpose, by condensing and intensifying in one animal properties that are desirable; but it by no means follows that what answered at one end of a process will answer equally well at the other; and we believe the concurrent testimony of the chief physiologists is hostile to the practice. Since Mr. Richard Booth has succeeded in letting his bulls for great prices, and the discriminative expression "Booth blood" has come to be affixed to the blood of the Warlaby animals, the habit of drawing upon other herds for new crosses has been discontinued, and the Warlaby herd is maintained entirely by sires bred upon the premises. Mr. Booth still adopts the system of selection, but not in the same way in which he adopted it when engaged in building up his reputation. His selections are no longer from the herds of other breeders, but from his own. He selects, apparently with thought and care, from his numerous bulls those which may seem to him best calculated to propagate the characteristic qualities of this far-famed shorthorns: but it is said to be evident to almost everybody who considers the subject, not excluding the warmest admirers of Warlaby blood, that a policy of this sort contains within it the seeds of self-destruction: that it is merely a question of time; that it is the beginning of the end; and that, sooner or later the end will come. Such a result must be held to be *inevitable*, if it is according to the laws of nature that a persevering adherence to the same strain of blood without interruption impairs the energy and power which are absolutely indispensable *to perpetuate with regularity an improved species.—Bell's Messenger.*

Steam Cultivation at Woolston,

On Friday last we paid our annual visit to Woolston, to see the results of steam cultivation, and to mark its progress in that chosen spot of its inauguration. Like all true pilgrims to the object of our study, we are happy to record that cultivation by steam is is not only a grand recognized fact in that now renowned locality, but that it is gradually extending itself into a wider area, and is promising to become as general as horse and hand power in the tillage of the soil. We find, in short, that steam is no longer an auxiliary to horse culture, but that horses are the auxiliary to that power. To show this we will just take a glance at the Woolston Farm.

In unison with our usual details of this highly interesting farm, we will take the heavy land first. Field number 1—wheat stubble: The corn was just cleared away: the stubble was remarkably clean, and by its strength showed that the crop must have been very good. It is also right to state that this wheat had been sown broadcast, therefore it had never been hoed, nor any other costly operation bestowed upon it, to have produced the cleanly appearance which it presented. This field of stubble is sown with clover, and will require no operation this autumn. Field number 2 is beans, which is a fine, strong, and full-corned crop, and is estimated by Mr. Smith to produce forty-five bushels per acre. The men were cutting the beans, which enabled us to see the remarkably clean state the land was in. This will enable Mr. Smith to use his combined machine to cultivate and drill in the wheat at one operation. No horse labour will, therefore, be required here. Number 3 field is swedes—half a crop, the flies having destroyed the other half.—They have been horse-hoed four times, giving six days' employment to three horses. The land is clean, and will require no operation until the turnips are eaten off, and it is time to plant the barley in the spring. Field number 4 is barley, being cut; had been harrowed three times, giving two days' employment for horses; it is a fine, strong-strawed, and long-eared crop, and will produce, according to Mr. Smith's estimate, seven quarters per acre. This land, after the barley is carted, will be smashed up by steam, and cross-cultivated with horses, giving the three horses only two days' work.

We next come to the light land. Field number 1 is a fine healthy crop of beans, the stalks being from six to seven feet in height, and well corned. The produce from this field is estimated at not less than sixty bushels per acre. On looking under the beans we could quickly see that the land was perfectly clean, and that the combined machine could be easily used, cultivating the land and drilling the wheat at one operation; therefore, no horse labour would be required here. Number 2 is in roots—swedes and mangels. The latter is an average crop, Mr. Smith having had to sow his swedes a second time, the fly destroying the first plant. The roots have been horse-hoed four times, giving six days' employment to his horses during summer.—Number 3 was part oats and part wheat, both being carted; the oats were a fine crop, harrowed three times, giving one day's work for the three horses, and yielding at least ten

quarters per acre; and the wheat was an average crop, the wire worm having damaged a portion of it. The stubbles are very clean. One smashing and one cross cultivating, with he ridging and subsoiling, will be enough for the next root crop. Here we get two days' work with cross cultivating, four days' work with ridging, and four days' with subsoiling. Number 4 field is wheat stubble—very strong in the straw, and the crops taken from it will produce 50 bushels per acre.—The stubble is very clean, and when cleared off will be smashed up by steam and cross cultivated with horses, ready for beans in the spring. This will give two days' work to the horses. Number 5 field is a clover lea fed off; will be ploughed with horses for wheat, and will give 12 days' work for three horses. Number 6 field is barley; has been harrowed three times, giving two days' employment to three horses, the men cutting it. It is a very strong crop, the sheaves, where cut, lying thickly on the ground, and promises, according to Mr. Smith's estimate, a produce of 70 bushels per acre. There is a very good plant of clover upon it, and, therefore, it will require no operation this autumn.

In conclusion, we can state that the horse labour on the farm has been till the present time as follows: On number 3, heavy land, six days; on number 4, heavy land, two days; on number 2, light land, six days; on number 3, light land, one day; and on number 6, light land, two days. The work to be done this autumn will be—On number 4, heavy land, two days; on number 3, light land, ten days; on number 4, light land, 2 days; and on number 5, light land, twelve days, giving a total for the year, 43 days, with thee horses, on the Woolston Farm. Here we have steam versus horse power demonstrated in the culture of our heavy clay soils.—*Bell's Messenger.*

On the Feeding Value of Straw.

The wet weather which prevailed during the greater portion of the late hay-making season has, we fear, in many places greatly deteriorated that crop. In a recent ramble through the counties of Kildare, Carlow, and Wicklow, we saw but too plainly the ravages which the humid element had made on hundreds of portly cocks of hay. We were present at the sale by auction of the produce of a meadow of eight acres, which realized little more than 1s. 3d. per cwt. This is by no means a solitary example, as we have been informed by several auctioneers that large quantities of inferior hay have been disposed of this season at exceedingly low prices.

Very inferior hay is generally purchased by the hay dealars, and is mixed by them with a good article; and so skilfully, too, that the mixture of the good and bad is often sold at the price commanded by the good, when disposed of *per se*.

We are clearly of opinion that inferior, fibrous washed-out hay is dear almost at any price, and that the money paid for such an article would be much better expended if invested in oats and straw.

Very discrepant indeed are the opinions relative to the nutritive and the fertilizing value of straw. In Germany and many parts of Britain it is held in such high estimation as a manure that its sale is strictly prohibited in most cases. In our own country many farmers believe it to be almost valueless as a feeding substance, whilst others entertain a high opinion of its alimental value.

The result of the experiments of Lawes and Horsfall prove that straw chaff is, as an adjunctive article of food deserving of the farmer's attention. We think, too, they demonstrate very clearly the wastefulness of practice which prevails on so many farms of converting all the straw into litter, solely for the purpose of increasing the manure heap.

That straw, in a chopped, or what is still better, thoroughly bruised state, is a most useful feeding substance, the result of its chemical examination, and of actual feeding experiments with it, place beyond doubt; and as its price is comparatively low, it will be found a more economical feeding stuff than the wash-out coarse hay to which we have referred.

The analyses of hay which from time to time are published, exhibit every thing but uniformity. This arises from the complex and unconstant nature of the article, which, as is well known, is a variable mixture of various grasses and clovers.

Good hay, carefully saved, has, on an average the following composition:—

Water	15
Flesh-forming substances	8
Fat forming matters	44
Woody fibre	27
Ash (mineral matter)	6
	100

Coarse hay, which had been subjected to the influence of heavy and constantly recurring rain, will probably have the following composition:

Water	14
Flesh-forming substances	4
Fat-forming substances	37
Woody fibre	40
Ash	5
	100

The following table, compiled by Voelcker, exhibits the composition of the straw of the cereals; and by comparing the analyses set forth in it, with those above given, a tolerable accurate estimate, for practical purposes, of the

elative value of both classes of feeding substances may be realized.

	Wheat Straw.	Rye Straw.	Barley Straw.	Oat Straw.
Water.....	14.23	14.30	14.30	12.06
Flesh-formers	1 79	2.29	1.68	1.63
Fat-formers	31.06	31.15	39-98	37.86
Woody fibre.....	45.45	43.18	39.80	43.60
Ash.	7·37	3.08	4.24	4.85
	100.00	100.00	100.00	100.00

From these tables it will be seen that the only very important difference between hay and straw, is the high percentage of flesh-forming substances in the former. But it should be borne in mind, when comparing the relative value of the two articles, that the amount of flesh formers in a substance is no longer taken as the absolute criterion of its nutritive value. There is good reason to lead us to assume that all the fat-forming substances in the oil-cake given to animals are assimilated, whilst a large proportion of the nitrogenous or flesh-forming substances pass through the animal's body unaltered. This fact—for so we believe we may term it—is of importance to farmers who use their straw chiefly for cattle. The straw is sufficient in flesh-forming matters and abounds in fat-forming elements. In all oil-cake there is an excess of the flesh-forming substances. It is clear, then, that by a mixture of the two articles the "happy mean" would be attained.

Many of the best feeders in England employ large quantities of straw as food. It is stated that some of them adopt a peculiar and secret mode of preparing the substance, whereby its value is greatly enhanced. If we might venture an opinion on the subject, we would say that the "secret" consists in using only good straw, chopping it finely, and adding it in proper proportion to the other articles of the animal's diet.

As straw includes a considerable proportion of woody fibre, which is hardly if at all digestible, its mechanical preparation is a point of great importance. By chopping finely or thoroughly bruising the article, its fibrous structure is disintergrated in a degree proportionate to the amount of violence to which it is subjected. The nutritious particles are for the most part enveloped by the fibre, which to a great extent protects them from the action of the juices of the stomach. By breaking up the fibre the gastric juice is allowed to come in contact with the digestible portions of the straw; and, consequently, a larger amount of these substances is assimilated. Straw is one of those substances which may be cooked or fermented with advantage, as by either of these processes the fibrous matter is softened and broken up to such an extent as no longer to protect the albuminous, oily, gummy, and in other useful matters from the action of the solvents in the stomach—*Prof. Cameron, Editor of the Irish Agricultural Review.*

Steam Cultivation.

[We take the following notice from a recent number of the *Bucks Herald,* (English) Mr. Lewis Taylor, who seems to have taken up steam cultivation in England as an avocation, is brother to Mr. Edwin Taylor, lanscape gardaner, both of whom were late residents of this city. The progress of steam as a motive power in agricultural operations, if not rapid, is, at least, constantly progressing and increasingly satisfactory.—EDS.]

To the enterprise of Mr. Fowler, of the prebendal Farm, many persons in Aylesbury and the surrounding neighborhood—whose knowledge of the cultivation, or rather the turning up of the soil, by means of steam power, entirely rested upon what they heard and read—have this week had the opportunity of seeing for themselves the practical working of a system which there can be no doubt will, ere many years elapse, entirely revolutionise the most important of farming operations. On Mr. Fowler's farm "Howard's New Patent Double Action Steam Cultivator" has been at work for several days, accomplishing its task to the satisfaction and admiration of all who have been attracted to the spot. Mr. Lewis Taylor, the gentleman who owns the cultivator, and superintends the operations, with the most cheerful courtesy and kindness gives to the spectator any information as to the cost, capabilites, &c., of his beautfiul apparatus, answers any question which may be suggested by its working, and generally, after a short conversation, puts one quite *au fait* with the cultivation of the soil. It is not necessary that we should enter into a long and technical description of the working of the apparatus which constitutes either a steam plough or cultivator. This has been done repeatedly in our columns, but as this "New Patent Double Action Steam Cultivator" is upon a new principle, a few words are necessary. The desideratum in other cultivators (and this applies to steam ploughs as well) was the very thing which in this one is accomplished—namely, its double action, thereby giving increased facilities for easily working and saving time, considerable trouble, and some expense. It is a very neat and easily handled implement. It is made with a ribbed wrought-iron frame, combining great strength with comparatively little weight, and is fitted with five tines or legs, but can be used with four, three, two or one, according to the depth, the tenacity, and the heaviness of the soil. On Mr. Fowler's farm three tines are being used. The shares are made of various widths—from two up to ten inches—this too, as a matter of course, depending on the strength which in the judgment of a purchaser the implement

should have, and the amount of work it is expected to accomplish. The tines rock on the frame, so that the points, when working, are depressed, and the hinder ones slightly raised. The wheels are steered by the ploughman, who rides on the implement, alternately at each end, according to the direction in which he is proceeding. When a stoppage occurs, or should occur, either from the soil being extra hard or foul, the steerer can stop it instantly by giving a signal to the man attending the engine; it can then be drawn back and again driven at full speed. The "porters" upon which the wire rope runs in the line of the soil being turned up —or in other words, "the porters" which require constant shifting as the cultivator does its work—act very efficiently, and can be attended to by the most inexperienced boy. The anchors at each end of the line traversed by the implement require, of course, to be shifted each journey, and this too, is easily accomplished, and without more than a momentary stoppage. As a cultivator, the implement performs its work in first-rate style. The soil is as effectually as it is rapidly torn up and turned over, at a depth which can be varied according to circumstances from six to twelve inches. The whole apparatus —engine (which is a portable one, and of 10 horse-power), "porters," and implement—can be attended to by four men and two boys, and, eight acres per day can be easily accomplished, at a cost we believe, of 15s. per acre if the soil is once turned over, and 25s. per acre if twice or cross cultivated. From these figures farmers can make their own calculations as to the economy of the implement, and as to its efficiency they will, we think, be satisfied the moment they see it at work. As will be seen by an advertisement in another column, Mr. Taylor intends making Aylsbury his head quarters, so that the farmers of the Vale will have the opportunity of doing what Mr. Fowler is doing—practically testing the cheapness of steam cultivation.

The Autumnal Fallow.

In the subjoined article from the *Mark Lane Express*, written by a "Practical Farmer," will be found much that is applicable to our condition and wants in Canada. We have now, gang ploughs, horse-hoes, scarifiers, &c., well adapted for fall culture, opening up the soil to the influences of air, light and moisture, and for eradicating weeds. The latter is an object of paramount importance, as is well known to every practical agriculturist. The practice of autumn cultivation in some form or other has been steadily gaining ground at home for many years, and may now be said to form a distinctive feature of British Agriculture:—

Amongst the many modern improvements agricultural practice none has received more favor or become more general than autumn cultivation. Wherever we travel at the close September or the beginning of October, in the country, we find the practice universally adopted, and being carried out in a variety of modes In ordinary practice, the skeleton plough, ar broad share plough, and even the common plough, are brought into requisition; but the more modern course is to resort to the very many cultivators and scarifiers lately introduced the manufacturers of which are to numerous to mention: but the implements which have received most patronage are the "Bentall," the "Biddell," the "Clay," the "Carson," the "Coleman," the "Howards," the "Ransomes' —scarifiers and cultivators named after their respective makers—besides others of considerable note, and also many of local construction —in fact, any and every implement competent to break or "smash" up the soil.

The great benefits derived from autumnal cultivation are mainly the aeration of the soil the eradication of root weeds, the promoting of the growth of all annuals, and their subsequent destruction, the injury done to, and almost annihilation of the insect tribe, and the aid thus given to more speedy subsoil drainage—all very important, and demanding the prompt attention of every farmer. The aeration of the soil at this precise period is of much greater importance than is generally attributed to it. It is at this season that all vegetation has pretty nearly arrived at its full growth. The cereals, of course, all are ripe; and the decay of straw and stubble is very great. The green crops are also at their full growth, and decay in leaf is rapidly proceeding. The potato crops, clover leys, &c., are bare of leaf also. The foliage of the trees and hedgerows is all giving way; the ditches and ponds give out their odours, unmistakeably manifesting the decay of vegetable matter; the dews and fogs of autumn are many and heavy. All this combined must produce, eliminate, and diffuse a vast amount of vegetable effluvia, with which the atmosphere is, in my humble opinion, heavily charged, and which, to unscientific observers, is sufficiently proved by the malaria which commonly prevail at this season. Now the great thing is to break up, "smash up," and prepare the soil as minutely as posible, for the reception of these fertilizing vapours, this floating effluvia. If it is not thus broken up, the deposit by the night-dew is speedily taken up by the day's sun. and no benefit arises: it cannot penetrate the hardened soil. Bnt if it is properly prepared, these fertilising influences are received, and at once appropriated by the soil; and the advantage of an autumnal fallow. and in a great measure of a real or dead fallow, is ex-

-ienced; the old adage, "One autumn plough-
is worth two summer ones," is verified.
The eradication of root weeds is very impor-
nt, and in a fine autumn is often effected satis-
factorily. It is particularly requisite on lands not
uite prepare for wheat-seeding. The present
ason is a peculiarly favorable one, and no time
ould be lost. The land should be broken up
a considerable depth—at least, below the
ots of the weeds—by a competent imple-
en, and ought then to be well-worked by
rrows, rollers, &c. The weeds on some stiff
ils will dry up and die; but on the far greater
ariety of soils they should be collected,
ared up, and burnt, or be carried to a fold-
d for mixing and treading down with the
rmyard manure. In this way it is most ser-
iceable; but if burnt, it is almost valueless.
The promotion of the growth of annual seeds of
eds is another important consequence attend-
g autumn culture, as by the various processes
f cultivation they are brought into contact with
e soil, and made to vegetate. The young
ants are then easily destroyed by subsequent
ture. Another benefit is the wholesale de
truction of innumerable insects, slugs, worms,
gs, &c., &c., both in their larvæ state and at
ll growth. The repeated disturbance of some
f these insects has a marvellous effect. The
ale beetles of the wireworm tribe, by some
stinct or other means, know this, and will not
posit their eggs where such operations are
ing on. The chosen abodes of the various
bs, wireworms, &c., &c., are broken up, and
eat numbers become the prey of the feathered
ibe; others are exposed out of season, and
erefore die.
Another benefit is, that this pulverization con-
ilitates greatly to facilitate the passage of the
asonal rains through the soil into the subsoil
ins, thus giving it a quick riddance of super-
ous water, and at the same time procuring
more copious supply of ammonia from the
rs that fall. It is by the passing through of
water that the soil receives its chief supply
ammonia, which is so conducive to the full
velopment of the wheat plant, and conse-
ently it is one of the great acquisitions at-
ded by autumn fallowing. Taking then
o consideration these principal items of the
bject, it will, I trust, be manifest that au-
mnal fallows are of immense value, and can-
be too highly recommended.
The modes of cultivation are almost as vari-
as the soils cultivated. The greatest
quisition in modern times, for this purpose
the application of steam to cultivation. It
a wonderful improvement, and worthy of
ption wherever it can be carried on with-
obstructions from stones or roots; and it
arrived at that height or degree of perfec-
which renders it available to men of
derate means. The process can proceed
r almost any circumstances. No soon-
er is a field cleared than the steam-cultivator
may commence its operations, the horses of
the farm continuing the cartage; besides, it
requires so few hands, under its best phases,
that no difficulty can arise in that respect, and
no mode of cultivation yet practised can equal
it in the effective power and correct applica-
tion. The breaking or "smashing up" by it is
beyond the power of horses or animal life; the
depth reached is so great, the work done is so
regular, both in depth and fulness, and the
whole is in such a business like character,
that hitherto nothing has equalled it, not-
withstanding the great advance made in agri-
cultural mechanics as applied to cultivating
implements. Steam cultivation then will un-
doubtedly be invaluable for effecting the
autumnal fallow.

It would seem superfluous for me to point
out any course of management best adapted
to secure a good autumn fallow; but it must
be remembered that we do not always write to
experienced farmers, nor do we presume to
instruct them. Our aim is more to inform the
inexperienced and youthful farmer. We
would then say, that as soon as possible after
the crop is led or carried, the land should be
harrowed or well raked, in order to get off all
shaw and stubble likely to impede the work-
ing of implements. The scarifier should then
be passed through it at as great a depth as ap-
pears desirable, and in this way it should first
take the furrows lengthwise, and then take
the whole transversely across the field: by
this means the furrows get well broken up.
After an interval of a few days, a drag or
heavy harrow should follow the scarifier, to
be succeeded by light harrows and roller, to
pulverize thoroughly, that all may obtain a
thorough cleansing. The interval named is
to allow time while in its roughest state for
atmospheric influences to operate. When seed
time arrives, it should receive the ordinary
ploughing and subsequent management neces-
sary to complete a good seeding.

One other great, but collateral advantage
derived from this course is, that it will not
be requisite to drill in so much seed. The
slug and noxious insects being destroyed or
greatly thinned, the occupier may depend upon
securing a full plant, at least from their dep-
redations; besides, the land is in a far better
state for promoting the rapid growth of the
wheat plant. Moreover, it has been proved
to demonstration that a good or strong plant
from a thin seeding is more prolific than a
thick planting from thicker seeding. In my
own business, after these processes I do not
drill in more than from five to nine pecks of
wheat per acre, and the season must be bad
indeed that will induce me to drill so much
as nine pecks. I make six pecks suffice if all
is favourable. The state of the soil, the con-
dition in which I am able to get in the seed,

the state of the weather, and the time of year, all rule me, in their turn. The better the land works the more favourable the season, the less seed I drill; but *vice versa*, the more I drill, but never to exceed nine pecks per acre of good seed.

Pastures for Milch Cows.

In the last volume of the Transactions of the New York State Agricultural Society is an excellent paper on Dairy Farming from the pen of Mr. Willard of Herkimer County, from which we select the following:

Old pastures that have a fine thick herbage of several kinds of grasses adapted to the soil, and coming to maturity at different seasons, will generally be found to produce more milk and from which a richer, better flavored, and finer quality of butter and cheese are manufactured, than from the rank growth of grasses on newly seeded lands. Again, newly seeded lands will not bear that close cropping, nor will they endure drouth like permanent pastures.

Doubtless when the land has been underdrained, deeply subsoiled, enriched, and then seeded with a judicious admixture of grasses of the several species best adapted to the soil and climate, a permanent pasture of the best character may be soon obtained, and would amply pay all expenses for such cultivation. Yet few, comparatively, can be induced to enter upon this system of farming, and the next best course is to be considered.

In the treatment of old pasture lands injured from close cropping or other causes, but not wholly run out, it will generally be better not to break up, but to leave them for a part of the season to resuscitate, running a harrow over the ground in early spring, and sowing a mixture of timothy, blue grass, red top, the clovers, red and white, and orchard grass, making an application of plaster, pulverized bones, ashes, salt, or other stimulating fertilizers. Ashes, leached or otherwise, remove mosses and are a valuable application to grass lands.

There are pastures in Herkimer county which have not been broken for more than forty years —many that have never been plowed perhaps but once or twice, years ago, when the country was new, that are yielding an abundance of nutritious food, enduring year after year close cropping and drouth, without any perceptible injury or tendency to run out, and yet have received no top-dressings, beyond the usual application from time to time of gypsum. The grass of these lands spring up green and fresh, with a thick fine bottom, a marked contrast throughout the season to occasional patches on the same soil recently re-seeded Stock too, it will be observed, are to be more frequently found on these pastures, thus showing that the grass is sweeter or more nutritious than on the newly seeded parts.

To plow and cultivate such lands, would to destroy the original grasses, and after re-se ing, many years must intervene before the n grasses can obtain that firm possession of soil, and the enduring vigor and variety of old sod.

The reasons for the successful growth these natural grasses need not here be discus —the decomposition of leaves, wood roots, r other vegetable matter, for centuries, seems have accumulated a surface soil, capable supplying the best possible food for grow these plants in perfection, which, intermixed they are with artificial grasses, timothy, clo &c., form a more closely matted sward, a produce an herbage more nutritious, and b ter adapted to the animal system, than f from newly sown seeds on recently cultiva lands.

There are large tracts of country, the soil which is unsuited to hold the grasses of any proved kind, for any great length of time.

They are not natural to grass, and theref unreliable, and cannot be profitably emplo in stock farms. The character of the soi usually of a light texture, sandy or graveli they will require to be frequently plowed r re-seeded with clover, timothy, or other rapi maturing grasses, and for short periods n yield good crops. But such soils do not se to contain the elements necessary for the est lishment of permanent pastures and meado being more suited to the growing of grain other crops.

These lands stretch away through the mid western and southern States, leaving comp tively but narrow belts and patches of lan dapted to the dairy. So far, experience shown that the real dairy soils are very limi in extent, and this fact while it gives assura that the constantly increasing growth of country renders certain a constantly increa home demand for the products of the dairy, while the nature of the country itself precl any great or extended competition, should the same time stimulate those who have t so fortunate as to be in possesion of the fa ed soil, to bring it up to its highest capac and make their staple products of the best choicest quality.

As a top-dressing for grass lands, the a cation of gypsum, salt, ashes, bone-dust, li decomposed urine, well rotted manure app in fall, composts of manure, river mud, r scrapings, or muck; each and all have a mar influence in promoting the growth of grass.

A more general use of bone-dust, it w seem, should be adopted, in order to re back to the soil the phosphates which are nually taken from it in considerable quant by milch cows. So large an amount is t taken off in the milk of cows, and for the a at production of their young, that the us bone-dust on the older dairy farms, it is belie

soon become a necessity. Wherever em-
d as a top-dressing for grass lands, its re-
have been highly beneficial, and its applica-
on dairy farms should be as universal as
of gypsum.

Lower Canada Provincial Exhibition.

The Provincial Exhibition opened at Sher-
ke on Wednesday last. The day was as
as could be desired but as a *Provincial*
it can hardly be pronounced a great suc
. The leading feature was the cattle
particularly the working oxen. Several
judges from abroad said that the show of
was the best ever exhibited in the Pro-
e. The Townships have no occassion to
shamed of the specimens of cattle they had
the ground. Stanstead took the lead in cat-
their team of ten oxen was awarded the 1st
Compton the 2nd, and Ascot came in No.
These three teams of ten oxen each was a
worth looking at by a lover of good cat-

Of fat cattle there were not a large number,
me splendid animals. Samuel Towser, of
ec, exhibited a pair of fat oxen, girt 9ft.
7 h. high, and said to weigh over 6,000
he had also a fat cow, a perfect mass of
e measures 31 in., across the hips, girt 8
9 in. The oxen were recently sold for
. They are good samples of what can be
by high feeding, but we should fancy not
ch profit.

ere was a good display of sheep, the Lei-
s taking the lead.

e swine were not very numerous, but com-
some very handsome animals.

ere was a very good display of horses of
nds.

ax was perhaps the most important article
ited. There were several specimens of
otted, which was necessarily coarse; some
mens of steeped were much finer. There
a sample of flax rotted under the snow.
results are as satisfactory as steeping; this
le was exhibited by Mr. Knox, of Lachine.
e was a good sample shown by Mr. Boa,
the seed from it, showing that this crop
ield both seed and fibre of a fair quality at
me time. Mr. Boa also exhibited a sam-
of hemp in the stock, about 12 feet high,
a sample of the fibre made from it which
d as well as flax.

e implements and manufactures were not
numerous, among them were:—ploughs,
pans, fanning mills and cultivators, by
s Brooks, Lennoxville; cast steel and
ploughs, cultivators and harrows, by Jas.
rson, Montreal; Sugar boilers and ploughs,
Samuel Tuck, Sherbrooke, among them was
tiful finished breaking up plough. R.
, of Melbourne, exhibited an ingenious churn on the principle of the common dasher, moved up and down by a crank of a saw mill, also a farm gate hung upon rollers. C. R. Parks, of Waterville, a dasher churn moved by crank, which gives the dasher a twisting motion; Eadon, Wyatt & Co., of Montmorenci, a mangle for ironing clothes, carrying a pressure of 1,200 lbs.;—also a washing machine and mangle combined, also fanning mill and churn; M. Capel, of Ascot, a chain harrow or pulverizer, and a light adjusting harrow; Henry Rose, of Stanstead, Wood's mowing machine; Matthew Moody, of Terrebonne, a one and a two horse power thrashing machine, horse rake, clod crusher, and a combined reaping and mowing machine; St. Germain & Refus, of St. Hyacinthe, a horse rake; John Gilmall, Stanstead, a roller; C. P. Mallory, Huntingville, a large cylinder roller.

S. T. Rose, of Sherbrooke, exhibited a very beautiful side-board made of bird's eye maple, and chiffonnier of the same material, both of which for beauty of workmanship were much admired.

The total number of horses on the ground numbered 175; cattle 354; sheep 136; swine 40; agricultural implements 90; besides the products of the field.—*Montreal News.*

Facts from the Census for Upper Canada.

The quantity of butter made in 1861 amounted to 26,828,264 lbs., and of cheese to 2,687,172 lbs.

In 1851 there were 16,064,532 lbs. of butter, and 2,292,600 lbs. of cheese made, or

1861	26,828,264	lbs. butter.
1851	16,064,532	"
Increase in 1861	10,763,732	lbs. butter.
1861	2,688,172	lbs. cheese.
1851	2,293,600	"
Increase in 1861	394,572	lbs. cheese.

Beef in barrels:

1851	113,445	
1861	67,508	
Decrease in 1861	45,937	bbls. beef.

Pork in barrels:

1861	336,744	
1851	317,010	
Increase in 1861	19,734	bbls. pork.

The increase in barrelled beef and pork, and consequently in the export of these articles, is very small in ten years, and shows that in this branch of the provision trade Upper Canada has not made such progress by comparison with the years 1851 and 1861.

The exports from the Province of beef, pork

butter, and cheese, for the years 1859, 1860, and 1861, were as follows:

	1859.	1860.	1861.
Beef	3,235 cwt	1,546 cwt	1,598 cwt
Pork	36,984 "	63,109 "	81,032 "
Butter	3,750,296 lbs.	5,512,500 lbs.	7,275,426 lbs.
Cheese	323 cwt.	1,100 cwt.	2,628 cwt

The Fisheries of the Upper Province do not show that increase which might be expected from the valuable resources of the great lakes.

In 1851 there were 11,886 barrels of fish cured; in 1861, 10,013 barrels; 2517 quintals, and 175,744 lbs. of fresh fish sold.

In Michigan, which is the largest inland fish producing state, the value of white fish returned in 1860, amounting to $250,467. There is yet a vast field open for remunerative enterprise in the fisheries of Lakes Huron and Superior. The whole of the north shore of Lake Huron with its million islands will yet yield great wealth to the country from its clear and cold waters. The art of the preservation of fish is as yet unknown in Canada, or rather it is not practised. In Germany, France, and Britain, Pisciculture is now an acknowledged department of national importance. It would be a wise economy on the part of the Government to examine into the working of fishing regulations and Pisciculture now in operation in Europe. A few skilled emigrants from France, Germany, or Britain, would soon enable Cadadians to rejoice in the possession of the finest fresh-water fisheries in the world.—*Journal of Board of Arts and Manufactures.*

The Radish as a Field Crop.

"Once upon a time" the leaves of the radish were boiled and eaten, but in these days they are subjected to neither one nor the other of those processes. The root is, however, in its raw state, as all our readers are aware, one of the dainties of the table.

Many of those who devote themselves to the important study of dietetics consider the use of raw vegetables as objectionable; but, be their objections groundless or the reverse, it is certain that a vegetable which admits of being eaten raw with advantage must certainly be a good nutritious article of food when cooked. We once tried the experimant of eating matured radishes, not as salad, but cooked as any other boiled vegetable, and we found the flavour rather agreeable than otherwise. Boiled radishes, roots and tops, form excellent feeding for pigs —how could it be otherwise! for what is good food for the family of man must surely be a luxury for the swine tribe. Horses, too, we have known to eat radishes, as they would carrots, with avidity; and, indeed, we have no doubt but that these plants would be found on trial to be readily eaten by every kind of farm animal. But it may be asked why we recommend the use of radishes as food for man and his "su in creation" when there are so many articles in common use—potatoes, turnips, gels, *et hoc genus omne?* We will try to a satisfactory answer to this question.

Between the departure of the turnips an advent of the new grass there is a kind of cultural interregnum. We want a good tube bulbous, or tap-rooted plant to fill up this regnum, and such a plant we have to som tent in the radish. The root is certainly a one; but, then, it is so rapidly developed t good supply can be had thirty days afte sowing of the seed. Two crops may easi obtained from land under potatoes; one b the cops covered the ground in spring, an other in autumn, after the tubers have beer out. If the land be altogether devoted to ishes, four crops in the year is the least nu that may be reckoned upon, and if sprin late autumn be mild, six crops are not only sible, but highly probable.

The yield of radishes, when cultivated i garden, is about 2,500 plants per perch; a on an average each radish weighs about on a-half ounces, the weight per perch wil nearly 230 lb., which is at the rate of n nine tons per statute acre, of which one will be tops. These figures relate to the c cultivation of the plant, under the most fa able conditions of growth. We must not, t fore, expect to get so large a return if the be cultivated in the field; but keeping within bounds we may assume that a single crop of radishes yields:—

Of roots	5 tons.
Of tops and leaves	2½ "
Total	7½ tons.

Now, although we believe no loss woul incurred by devoting a portion of the farm s to the cultivation of the radish, still it is no object to recommend the appropriation of part of the farm to such a purpose. Wha want to bring under the notice of our read simply the desirability of cultivating a root which may be perfectly matured before time to sow turnips.

And now a word or two on the mode of tivating this plant, and we dismiss the subje present.

There are several varieties of the radish. long-white, white Russian, red necked white purple, are kinds adapted for spring. The nip-rooted radish, adapted for summer, com several varieties, of which the following ar principal:—Early white turnip, white tu purple turnip, pink turnip, and new yellow topped. The autumn and winter varieties brace the yellow turnip, white Spanish, ol brown, large purple, and winter Spanish. turnip-rooted, or Spanish kinds, alone shou grown in the field.

radish can be cultivated on any kind of soil, but it appears to delight in a light rous loam, containing a moderate amount ganic matter. Except for early and late an open situation is the most desirable.

seed may be sown either broadcast or in the latter is by far the preferable mode, the seed is large there is no difficulty in ular distribution. The seed is cheap; but hould not induce thick sowing, which, if ed, causes an excessive development of ps, and a consequent hardness and tough- of the roots. The seeds should be placed ter of an inch below the surface, and care be taken to protect them from the e, which, indeed, should not be applied at me of sowing. The drills for the spindle d kinds should be about three inches as- ; those for the turnip rooted, drills about inches apart.

en the seedlings exhibit half-a-dozen leaves they must be thinned; a space of three should intervene between the long-rooted , four for the turnip-rooted, and six for the sh and other large varieties. The latter are best adapted for high cultivation.

conclusion, we would suggest that this should at once get a fair trial as a stolen . If it succeeds as such, it will not be the gift of the gardener to the husbandman. not the red beet and the mangel-wurzel only known as the produce of the garden We commend, therefore, the radish as the attention of farmers in general, of farmers in particular, and cottars espe- —*Dublin Agricultural Review.*

Rot in Cattle.

We hear much about rot in sheep, and not about good cause. We know extensive dis- where a loss of 15 or 20 per cent. must been sustained this season. Ewes and are being sold now in apparently blooming ition, but in reality "rotten," and to keep on would only amount to the loss of the salvage procurable for their use. These re- concern more the English and the Irish the Scotch farmer; nevertheless, a season ncessant wet brings in its train disease of a dal kind; and though some parts are more ured than others, still, very generally distri- over the United Kingdom we notice the ts of an unusual period of constant rains. have had ample opportunities of late to see condition of stock in different parts of the ntry after three months' and more grazing. the most fertile districts of Scotland, and on rich grazing lands of England and Ireland, are many instances of animals not improv- in the least in condition since the 1st May. is also worthy of notice that any weakly or m stock, especially in ill drained districts, has suffered severely from the very miserable condition of grass. Wherever the mouth and foot disease has appeared—and where has it not? —the number of deaths has been unusually large, *in consequence of the starved condition of* all lean stock. It is well known that this disease is not a very deadly one, but we have to record losses of 5 and 10 per cent., and sometimes far more, amongst calves and year old's. There are parts where deaths have been fewer, but all know how low in condition cattle get with this disease; and where the grass has been bad, the chances have been small of restoring the animals even to the state in which they were before being placed on pasture land. But it is our object to-day to allude to a disease concerning which little has been said in this country, viz., rot in cattle. It is especially prevalent in low, damp, situations, and on the marshes scattered throughout the continent of Europe; and also in America herds of cattle are much injured by attacks of the rot.

It is the same malady as the "sheep rot," but sheep certainly suffer more certainly and more severely from feeding on damp plains than cattle. The low condition which we have said may be witnessed very generally amongst grazing cattle has been most favorable to the development of parasitic disease; and the fluke has perhaps been amongst the most busy of the destructive entozoa. A rough coat, dry skin, prominent ribs, sunken flanks, arched back, pallid membranes, all incidate an unhealthy state A small and frequent pulse, capricious appetite, yellowness of the eyes and mouth, coldness of the extremities, and the absence of symptoms of acute fever, establish, with the other signs mentioned, that the animal is suffering from that slow, lingering, and destructive disease, "rot." Swellings of the extremities, and especially an accumulation of fluid about the throat, supervene as the animal grows weaker and weaker. We have seen cattle with the worst symptoms of rot attacked by parasites which develop in the orbits, and may be seen rolling over the front of the eyeflall Lice and the parasitic fungi which frequently infect the skins of young cattle abound in rotten animals; and this season many cases have been complicated by the accumulation of strongyli in the lungs and wind-pipe.

The loss amongst cattle suffering from this disease is considerable, especially in consequence of the difficulty of feeding them even when the malady is mild. It is not so deadly as amongst sheep, and as amenable to treatment. Artificial food should be given freely with common salt and preparations of iron. No tonics are so effectual as the ferruginous compounds, and if parasites abound in the skin, it is indispensable to clean the latter thoroughly by repeated washings with soap and water, and the application of washes to destroy the animalcules.—*Scottish Farmer.*

Agricultural Intelligence.

Sale of Stock at Guelph.

On Wednesday last an important sale of stock took place on the farm of Mr. F. W. Stone, President of the Agricultural Association, Guelph. The attendance was not very large, and only a few stock-breeders from a distance were present. Mr. Stone's splendid stock of cattle was first offered, but as the bidding was far from spirited, only a portion of the lot was sold. Lady Cramer, a red and white cow, calved 24th July, 1850, was knocked down to Mr. Thomas, McCrae, for $100. Young Velvet, calved 11th June, 1853, was sold to Mr. F. Lowell, of Galt, for $180. Sanspareil, a two-year old heifer, was sold to the Hon. David Christie for $180. Sanspareil, 5th, calved 13th February 1860, was sold to Mr. Walter Raikes, of Barrie, for $180. Walter West bought Goldfinder, a yearling heifer, for $120, and Mrs Arthur Hogge, bought the second Duchess of Oxford, calved 12th December, 1860, for $205. Hon. David Christie bought Miss Margaret, calved 27th November, 1861, for $135. Only one aged bull was sold—President, to Mr. Jas. Carter, Puslinch, for $80. Royal Duke, calved 5th December, 1861, was sold to Mr. Thomas Clarke, Eramosa for $120. Mr. Arthur Hogge bought Earl of Gloucester, calved 15th December, 1861, for $100. The sheep did not go off well. A gentleman from Connecticut bought one Cotswold two shear ram for $45. A Leicester two shear ram was sold to Mr. James Cowan for the same sum. The others sold—6 or 7—were bought by persons in the district at prices averaging $15 each for Southdowns.—*Leader.*

The agricultural statistics of Ireland, just published for the current year, show a decrease in the live stock of the country since 1861 by nearly 10,000 horses, 220,000 cattle, and 100,000 sheep. Pigs have increased 50,000. The value of the live stock is on the whole less by £1,500,000. This is attributed to the distress consequent on scarcity, which has induced excessive sales. The average in grain of all kinds is less by 72,000, that in Potatoes alone being less by 116,000 acres.

Composition of Sea 'Weed.—Sea-weeds, in the condition of mixture generally, contain in 100 parts of ash, silicic acid 3.00, carbonic acid, 13.58, phosphoric acid 4.59, sulphuric acid 6,22, peroxide of iron 2.53, lime 18.15, magnesia 6.48, potash 12.77 chloride of potassium 9,10 solide of potassium 1.68, chloride of sodium 22.08.

Horticultural.

Hamilton Horticultural Society

The third and last Exhibition of the season of the Hamilton Horticultural Society, was held in the Mechanics' Institute on Friday the 19th. Seldom have we seen a finer display of fruit. The hot-house, and open air or hardy grapes were well worthy of the notice they received. The Black and Muscate Hamburgs, Muscate of Alexandria, and Bowood Muscate, Greely Frontignaro, Royal Muscadine, and Black St. Peter were all excellent. Amongst the hardy varieties Hartfords, Prolific, Clinton, Delaware, Concord, Diana, and Rebecca, all good specimens, and very creditable to the growers. The Peaches and Nectarines were beautiful. The early Crawford and Kensington, exhibited by Mr. F. Lowell, were the finest we have seen for a long time. Plums, Apples and Pears were all in abundance, also some Damsons, Quinces, Crabs Siberian mammoth and other Tomatoes, Melons scarlet and green fleshed, Water Melons, Citrons and Squashes of various kinds, Capsicums as large as pepper boxes and hot as fire.

Flora—in hot and Green-house plants was not so well represented as we have seen on former occasions at this time of the year. The hot and green-Houses of W. P. McLaren Esq. produced some Fuchsias. Fine plants of Cacteres reflexum, Bouvardia Hogarth, Bouvardia leiantha, a spendid plant of Stephanoth is bunda, and a fine lot of Cockscombs. There was a good display of cut flowers, comprising Dahlias, Phloxes, Asters, Hollyhocks, French and African Marigolds, Verbenas, Stocks. Two collections of native plants, one of 12 varieties by Mr. Fry, the other of 24 by Mr. Sanderson, junr. Bouquets for the ladies, and Bouquets by the ladies hand and table, of all shapes and sizes, made up of the prettiest flowers that could be got such as the Princes' Feather, Rue and lily Forget-me-not, and other sweet things, with Love-lies-bleeding; amongst the rest, one of native flowers by Mr. Sanderson, junr., was very much admired.

The *Vegetable* department was well represented, but not so largely as we have seen before at this time of the season. All the productions were good; Cabbages and Cauliflowers large and excellent, Brussels Sprouts, Carrots horn, orange and Altringham; Turnips, white and yellow, Corn sweet, Celery red and white Onions and Musselbough Leeks, Potatos, Parsnips, Salsifys, Scotch Kail and Mushrooms, with two large collections of vegetables, by Messrs. Taylor and Sinclair.

The amateurs came out well in all the departments.

In the afternoon an interesting ceremony took place in the presentation of two medals, one given by Adam Brown, Esq., President of the

...ly, to the Gentleman's Gardener who keeps ...arden and grounds in the best order, and ...lower-bed most tastefully arranged during ...eason; the other, by the Directors, to the ...st Gardener who, during the season, keeps ...rounds in the neatest order and best state ...ration. The first medal was a model of ...ty and good taste, bordered by the Maple ... and surmounted by a Beaver emblema... of Canada, with the insignia of Horticul... on the ribbon, the spade, hoe and rake. ...as manufactured by Millidge & Son, Princess ...et, Edinburgh, and bore the following in...ption: "Presented by Adam Brown, Esq., ...ident of the Hamilton Horticultural Society, ..., for the best kept and most tastefully ar...ed Garden and Grounds." "On the other side ...inscribed. "Gained by Hugh Shaw, Gardener ...Jason, Esq." The Directors' Medal was of ...d taste, and bore the following inscription: ...e Directors of the Hamilton Horticultural ...ety, 1862, to the Market Gardener who has ...his grounds in the best order during the ...on." On the other side. "Awarded to James ...ks."

The presentation was made by the President, ... appropriately addressed the successful com...tors, very specially remarking on the good ...ded by well organized systems. Messrs ...w and Wildes responded.

Such actions by a society are not only stimu...g, but also very beneficial to all parties. ...erefore hope that as a good beginning has ...n made by the Hamilton Horticulturists ...y will continue to bear i up, and that other ...eties will follow their example.

GEO. LAING.

Hamilton, 6th Oct., 1862.

Advice on Planting Fruit Trees.

As every season for setting out trees approach... many begin to turn their attention to the ...per selection of varieties to occupy their in...ded fruit-gardens. A few general hints may ...efore be useful at the present time, and serve ...an answer to the many inquiries which we re...ve on this subject.

There are two prominent objects with tree...nters, namely, raising fruit for market, and ...uring a family supply. The present snggges...ns refer more particularly to the latter, and ...shall endeavor to show in a general way how ...family may best attain this luxury at all sea..., or in other words, how the complete circle ...fruits may be obtained. It is however not ...rely a luxury—for nothing in the form of ... contributes better to the preservation of ...lth during the heat of summer and the ...anges of autumn, than a regular and constant ...pply of good well-ripened fruit, partaken in ...derate quantities. It also has economy to ...ommend it—because the table that is fur...shed with fresh or cooked fruit needs but little of the more costly provisions from the butcher's and confectioner's.

The first question that occurs with many, is, what fruits will give fresh fruits to the best advantage throughout the year, and the second is, how many trees and plants will be needed, and how much land for their successful growth. A third question is not unimportant, namely, how long after we have prepared the ground may we expect to obtain good crops.

To answer the first question, we would name *those sorts first that ripen earliest in summer.* These are all exclusively small fruits. The early strawberries take the lead in the list, giving in the Northern States ripe berries in the first two weeks of summer, but varying in season nearly one month with Northren New-York and Southern Pennsyvania. A locality well sheltered from winds, and where the sun's rays are not impeded, will ripen the berries some days sooner than a more exposed place. Unlike trees, there is no fear of losing the crop by the cold of winter—and if there is any danger of the plants being injured, this is easily removed by covering the plants with straw, or spreading a coating of evergreen boughs or leaves over them.

Next to strawberres, and within a few days of them are the early cherries—such sorts, for example, as the Early Purple Guigne, May Bigarreau, Belle d'Orleans, &c. We have nothing to compete at all with cherries and strawberries,—currants and raspberries, the next on the list, being several weeks behind them. The best varieties of these four, if planted in sufficient quantities and well cultivated, will give an admirable and delicious repast for every table for six weeks or more from the first until after the middle of summer.

About the usual "harvest time," some im portant additions are made in the larger fruits. The Primodian plum, the early apricots, and the earliest apples and pears then begin to ripen. These are again succeeded by the first peaches, and the many sorts of pears, apples, plums, &c., which continue to mature sucessively through the whole of autumn. The first half of autumn is marked by the most profuse abundance; as winter approaches, the number becomes smaller, and special care is needed to procure plenty of good winter pears, and with ordinary management very few are ever found towards spring. Well cultivated and *well ripened* hardy grapes, however, are very easily kept through winter, and these and winter apples may be best relied on at this season of the year. The only fruit that can be depended on for a good supply in spring until strawberries again appear, are winter apples; although such late pears as the Easter Beurre, may with extra pains be had at that time, but families with moderate incomes will hardly care to live on such luxuries as bring quickly in market three dollars a dozen, or twenty or thirty dollars per bushel.

In thus pointing out how the yearly circle can

be secured, we have omitted hot and cold house grapes, which of themselves have been made to give ripe crops every month in the year. The expenditure required for such a supply, like that of Easter Beurres in spring, is beyond the means of moderate families.

The next question is, how many trees and plants will be required to give the yearly supply, and how much land must they occupy. The simplest way to answer, will be to observe the usual amount yielded per acre, and reduce the amount to a family supply. Strawberries of the most productive varieties, such for example as the Wilson, Downer, and under the most favorable auspices, the Hovey and Triomphe de Gand, will yield 200 bushels per acre, if cultivated as well as good gardeners do the work. A family wants half a peck per day, for a month or more of time—equivalent to a bushel in eight days, or about six bushes for the season. One thirtieth part of an acre, or five square rods would be enough. Very few families provide so much as this, and very few have a quart or more of berries on each table. It will be observed that as the strawberry crop scarcely ever fails, such an estimate may be made with considerable accuracy. As soon as we come to *trees*, we are in great uncertainty, and a tree of Early Purple Guigne may give us two or three bushels, or not a tenth of this quantity. Where this fruit usually succeeds, two or three early trees will commonly afford all that a family may desire in connection with the strawberries—to be followed of course by succeeding kinds, such as Governor Wood, Coe's Transparent, Black Tartarian &c., and the best latter sorts If these are standard trees, each one will occupy at least a square rod or more of ground, and a dozen trees will need more than twice the land needed for the strawberries,—unless an equal number of *dwarf* cherries are chosen, which would require only about one-fourth the space. Raspberries yield half as good a crop as strawberries, and if each stool occupies four feet square, a rod will contain sixteen plants, and six square rods a hundred, which, if of such varieties as the Doolittle and Orange, will give a copious supply to a family. Currants will yield more; but as they continue longer, the same number, one hundred, may be planted, requiring one-fourth less ground, or three square rods. Two square-rods, planted with New Rochelle blackberries, or two dozen plants, kept in compact form by pinching in, will give a quart or two daily for several weeks, about midsummer. One-sixth of an acre of dwarf pears or a hundred trees, if properly selected and well managed, will afford yearly from fifty to a hundred bushels of fruit, after allowing for occasional death and replacement of trees. An equal supply of summer and autumn apples may be obtained from one-half this ground, if planted with dwarf apples, which are more certain to grow and flourish, and less liable to accidents. Slow-growing sorts may be worked on the Doucain stock, and the stronger growers on the paradise. This estimate is m actual experiment, extending through a n of years. Two dozen peach trees, kep cultivated and properly shortened-in, wil ample crops every favorable season, an not occupy when thus managed more than feet square each, or about one-tenth of an If dwarf apple trees are omitted, standar summer and autumn crops, will need four rods to a tree, and half a dozen trees or a at most, will give abundant supplies in years for an ordinary family. Twenty-fi fifty trees of winter and spring sorts will u afford plenty till the small fruits of summer their appearance.

To recapitulate—the following will be the required number, cost and area, in ta form:

1000 strawberry plants, on.....	5	square rods
10 cherry trees.....	10	do do
12 do dwarf.....	3	do do
100 raspberry bushes.....	6	do do
100 currant do	3	do do
24 New Rochelle Blackberry....	2	do do
100 dwarf pears.....	27	do do
50 do apples.....	14	do do
24 peach.....	16	do do
12 standard pears	12	do do
40 do apples.....	160	do do
	258	

To which may be added a dozen grapevine 5 rods. 263 rods are about an acre and thirds—two acres would be ample room. O ing the 40 standard apples, an acre would r than contain all. In every locality favorabl the growth of fruit, there is no way in whic equal amount of profit, wholesome food, an sirable luxury may be obtained from the s area.

But before going any further it is neces to discriminate between the effects of good bad cultivation. The results here pointed could not be obtained by neglect. Unless soil is kept clean and mellow; the small fr generally and the dwarf trees will be an u failure; and it would be better not to waste time and labor for setting them. Those cannot be induced to give proper attentio their trees, should plant the whole ground apple trees, some of which may possibly live bear, after a long and feeble growth. The gestions here made are for the purpose of sh ing what may be accomplished under good a agement, and with a view of furnishing, n mere occasional supply, but an abundance fresh fruit at all times. Intelligent cultiva will of course altar and modify these numb to suit their own local circumstances and p erences.

The third question may be briefly answe namely, how long after planting may we ob crops? Strawberries set in spring will some the same season, and profusely the sec year; dwarf pears, apples, and cherries, the th year and onwards, currants in a year or t with an increasing amount for several succe years, and raspberries and blackberries the

third year. Grapes and peach trees be- afford fruit in three years, and standard d pear trees in every four or five years, regular increase for many years subse- The time at which all fruit trees begin will be greatly controlled by the varie- locality, and treatment received.—*Cul-*

The Dairy.

How to make Good Butter.

ct from the report of the Committee on of the Franklin Co, (Mass.) Ag. Socie- e at their last winter meeting.

make the *best* of butter, requires many isites; but for all practical purposes, two ints cover the whole ground, viz., st, ; 2nd, Skill. If any dairy-woman ex- to make nice butter without the most us *neatness*, she will find herself greatly nted. From the moment when the rich ious fluid is first drawn from the cow's to the time when the butter is ready for e of the connoisseur, the least dirt, the ast or unpleasant flavour in the atmos- f the room, and the least speck of foreign of any kind, must be absolutely and per- kept from it, during all its stages of ture. In fact, neatness is the *sine qua* the butter-maker's art. As well may we that any of the laws that regulate the world will be reversed, as to suppose od butter can be made without the most us *neatness in every particular.*

econd indispensable qualification of the butter-maker, is SKILL—a word of quite e signification when applied to this sub- To acquire that skill requires a clear and inating judgment, a well educated and ced mind, and a minute and accurate ance of all the physical laws which regu- various conditions of the milk and the while undergoing the transformation into To be a successful butter-maker, there- quires no inconsiderable degree of edu- intellect, and ingenuity. Let us, then, this skill of the butter manufacture, and are its most important elements.

begin, then, we must first have good milk, have good milk, we must have good cows, have good cows, requires a selection of breeds and of the best milkers from the eeds, for that purpose. But that carries another department of agriculture, which e no time here to discuss.

ing, then, that we have good milk, the ing is to place it in shallow pans, (tin is preferred,) and in a degree of tempera- ber very warm nor very cold. About Fahrenheit is supposed to be the state of the air in which cream will rise most perfectly. And here let us remark, that every housewife who aims to make the *best* of butter, should have a thermometer constantly at hand, and should be a frequent observer of its condition.

If milk is kept in a temperature much below 62 degrees, the cream will not rise so rapidly and so perfectly. If kept in a state of the air much above 62 degrees, the milk will become acidulated too quickly, and the quality of the cream will thus be injured. Equalization of temperature and a free circulation of pure air, are among the important elements of the butter-maker's skill. The time requisite for cream to rise naturally and perfectly, varies with the temperature, from 24 to 40 hours. As soon as the cream has all risen to the surface, it should be separated from the milk, and with much care; for the less milk that is taken up with the cream, the better will be the butter.

Churning is the next operation, and it is one that determines in no small degree the quality of the butter. If cream is put into the churn in a state much colder than 62 degrees of the thermometer, it will require much more time and labour to convert it into butter, and the butter will never be of as good quality. Let the cream then be brought to an even temperature of 62 degrees, and the often laborious operation of churning, especially in the winter, will become comparatively easy. If the cream is much warmer than 62 degrees the butter will be too soft, too white, and in most particulars, quite poor.

As soon as there is a perfect separation of the particles of the cream which make the butter, from the more watery parts of the milk, let the butter be taken from the churn, and then comes the quite difficult and delicate operation of working over and salting it, both of which require great accuracy and judgment. For if the milk is left and mixed in with the butter, one thing is sure—the butter will never have that compact and smooth appearance that is one of the sure indications of good butter; and what is yet more important, butter left in that condition will not keep long without becoming musty or frowy. Every one then that aims at making the best of butter, must separate entirely the particles of milk from butter, immediately after churning. Washing the butter with cold water is practised by some, but the most skilful butter-makers complete the separation of the solid from the fluid portions by manipular labor alone.

The form in which butter is prepared for the table or for market, is one indication of the skill of the maker. Butter put up in small cakes of oval form, and stamped with a device of flowers, leaves or diamond figures, is the most beautiful, and seemingly adds to the good flavor of the article. In order to sell for the highest price

it should always be put up in that form, or in oblong pieces of about a pound each.

Such are the main requisites of the skilful manufacture of good butter, without which we venture to assert with great confidence, that the best of butter cannot be made.

Does any good housewife, when she has read this report, say "I knew all that before?" If she does, then we ask her with no small degree of assurance, Madam, *do you practice* all these rules for making good butter? If you do, why is it that so large a proportion of the butter that is sent to our markets is so very poor?

HENRY W. CUSHMAN, Chairman.

The Apiary.

The following remarks on *Foulbrood*, a not uncommon, and often fatal disease among Bees, are taken from "Western Editorial Notices," in the last number of the *Rural New Yorker*.

Bee-keepers, and among them the most eminent, unite in regarding and characterizing Foulbrood as the most grievous evil that affects the apiary. It is doubtless the case that most of your readers—especially such as keep bees, know the character of this dreaded disease among bees, but there may be some who do not.

Dzierzon says there are two kinds of Foulbrood. One is curable and rather innoxious; the other is pestilential and incurable. Both are contagious. The curable kind has this character. The unsealed larvæ die while yet lying coiled on the bottom of the cell, become putrid, and dry up on the bottom into a crust-like substance, which may be easily removed. Such of the brood in the cells intermixed with those diseased, as does not perish before capping, for the most part remains healthy and matures *in due time; though it is a fact that* exceptional instances of putrid nymphs in such capped cells are found.

The incurable foulbrood is said to be the converse of that described above. The brood does not perish until after it has been capped and begun to undergo its metamorphosis. The putrid mass is not then found at the bottom of the cell, but on the horizontal portion of the cell walls. It is brownish and viscid; and in consequence of the heat of the hive and the admission of the air through a small orifice in the sunken cap, it dries up as a hard black crust which the bees cannot detach, and which they can only remove by totally destroying the cell.

INDICATIONS OE ITS PRESENCE.

The author quoted above says, when among a healthy brood a few cells are found here and there, containing a smeary, viscid matter, or a grayish-brown or black, crust-like substance—the dried remains of larvæ or nymphs—it may be regarded as the unmistakeable evidence of the existence of foulbrood. If the larger *ber of cells are in this condition, this di* must have prevailed in the hive for some and have attained an aggravated stage. A agreeable fœtid odor issues from the entran the hive, where this is the case.

Colonies affected with this disease do not new comb in the spring, when other col are engaged in such labor, or do so only if are populous, and pasturage is abundant. combs be pressed asunder we shall see tha brood is not placed regularly and uniformly; on cutting out a piece of such comb, o proof of the existence of the disease wi found in the putrid matter contained in the

IT IS CONTAGIOUS.

Herein lies its danger; therefore this cau And I give this caution regardless of th terest c. any one who may have long-bitte any other kinds of bees to sell, and whose a may have been, or may be affected by this ease; or who may be near an apiary that has been affected. This caution is given especial reference to such cases. For all men know that this disease is contagious- it spreads from hive to hive, and from apia apiary; that, once having a foothold, it re it and extends its influence, if effectual n are not properly taken to eradicate it. brood is not only destroyed by this disease the cells are contaminated and the conte spreads rapidly thereafter. This disea known to exist in the Eastern States—is k to have destroyed many large and profi apiaries—is known to have increased the ris and diminished the number engaged in bee ing. In some localittes this husbandry has abandoned because of this disease.

The point is, then, that the bee-keepe the West are in danger of importing it their importations of Italian bee. For it is known that these bees, with formidable continue to be sent hither in large numbe the rate of five to eight dollars per queen. with each shipment is usually more or honey; and with the honey, if it happens from infected colonies, comes this foulbro sure as fate. Is it not a pretty large When it is asserted that the bee-keeper may vey it from hive to hive, it after perfor some operation on a diseased stock he pro to work at a healthy one, without first car washing his hands and such instrument may have been using, it is safe to distrust ever comes from apiaries that have been af with this disease.

It is proper for me to say, that I do not this caution for the purpose of injuring any business, nor with a view to build up any n class of men dealing in the long-billed b ferred to, but simply to urge that the most care be taken to prevent the introduction disease among the apiaries of the West.

has become too large an interest here to
to be shipwrecked by the carelessness
lessness of any man or body of men.
ause it brings to the Western husband-
nnually increasing. Let it be guarded
espect.
ay our Eastern brethren to be careful
er send in response to orders; and let
men know that they are ordering where
l get only what they want.
W TO GET RID OF THE DISEASE.
ter and bury the bees, and burn the hive
g the colony and its contents. as soon
eased is discovered. There are reme-
sures recommended to be taken; but
efficient and safe if as cheap as the

Wax and Honey.

prevalent opinion respecting the origin
e of wax and honey, as expressed in
ticles on bee-culture, and as implied in
tion of the terms as given by the dic-
, are essentially erroneous. The cur-
ession derived from these sources, is,
is contained in the honey or pollen, and
extracted by, some process in the sto-
the bee; while honey is supposed to be
m the nectar of flowers. Precisely the
of this is the fact.
x is a product elaborated by the bees.
experiment will suffice to demonstrate
sively. If bees be fed with a concen-
tion of loaf sugar and then confined
we shall, in the course of twenty-four
d between their abdominal rings thin
plates of wax, such as they use in
their combs. Now, probably no one
take to maintain that loaf sugar con-
It contains only the elementary in-
of that substance, carbonic acid, hydro-
oxgen—which become separated in
of the bee, and re-combined in differ-
ions and relations, thus resulting in
tion of wax.
otherwise in the case of honey. This
proper sense the product of the bees,
a substance collected by them from
less stores supplied by nature.
matter collected by the bees under-
hange before it is deposited in the cells.
r of flowers and freshly gathered
, in all their constituents and proper-
nd the same substance. Both have a
e and an aromatic flavor. If we sip
n the calyx of the honeysuckle, we
that it has precisely the taste of fresh-
honey. When I analysed the wax
ga thuya,) which exudes in large
the calyx of the flower, I found it
sed of sugar, gluten, and an aromatic
—which are the constituents of com-
in its pure state.

I fed a colony with a solution of sugar colored with indigo, scented with lavender, and diluted with milk. When the bees had carried this into the cells of a new comb, no difference could be perceived between the contents of the cells and those of the feeding-box—they had the same color, the same taste, and the same smell.

b. If honey or the nectar of flowers remain in the cells, it will in process of time undergo a change. But this change is produced spontaneously, and not by the intervention of the bees, except merely so far as the internal heat of the hive may tend to accelerate it. It results, first, from the gradual evaporation of the aqueous particles contained in the nectar of fresh honey, till a certain degree of consistence is attained; secondly, from the still more gradual dissipation and loss of its agreeable aroma; and, thirdly, from the ultimate conversion of the more saccharine cane sugar, which constitutes an ingredient of the nectar of flowers, into the more insipid grape sugar—a change which all honey undergoes with the lapse of time.

DONHOFF.

Miscellaneous.

BENEFIT OF BOOKS.—The great multiplication of books is sometimes spoken of as an evil, but this is true only in one sense—viz., so far as they are superficial or trashy. When there is a prevalent propensity to authorship, it is a natural incident that there will be a great deal of frivolous writing, or that the same ideas will be often reproduced. The effect of the periodical literature of the present day on the public mind is, in my judgment, not favorable to a muscular tone. Newspapers, litrerary magazines, and the like, must, in order to please popular taste, consist of light but various material. They are suggestive of many interesting inquiries; but this is of very little value to any but systematic thinkers; and generally the effect is only to distract the mind and impair a habit of consecutive thought. It is true that those who think much are also great readers, even of this fugitive sort of productions. This is partly for relaxation, but also for the new ideas which may be derived from a heterogeneous source, when there is a strong power of assimilation. Such reading may be compared to a conversation of the gossiping kind, which may be supposed to be of no great advantage; yet Sir Walter Scott said he never met with any man from whom he could not learn something in convesation. So of books: it has become almost a proverbial saying that there is none that does not contain something that is valuable. Macauley's History of England indicates an omniverous habit of mind; materials are turned to valuable account which we should hardly have supposed would have attracted the

attention of any one but a frivolous antiquarian: old songs, obsolete plays, pamphlets, newspapers, traditional proverbs—and these not hunted up merely for the occasion (for that would have been impossible), but constituting a familiar lore. The chief value of Plutarch's Lives I consider to be the affluence of anecdotes, apophthegms and slight incidents, which were contemned by stately historians, and which he was compelled to obtain by a process of filtration, involving research into a vast amount of gossiping productions, or what were so esteemed, and had not sufficient merit to reach us, except in the excerpts penned by this most erudite of ancient writers.—A. H. Dana.

Introduction of the Potato into the United States.—Messrs Editors—To answer the inquiry of "A Co. Gent," of New Britain; Ct., as it is put, would be to say that the potato was introduced into America by the Creator "in the beginning" as it is one of the indigenous productions of *South* America. But the question probably is, when it was introduced into the United States? Answering that question in full will also explain why it is called the Irish potato, as was perhaps the case years ago more than it is now with us, and still is at the South in distinction from the sweet potato.

The only authority I know of in relation to the matter is Belknap's History of New Hampshire, and as the book is not common, I will give, as briefly as possible, the substance of that historian, and if there is further or other information upon the matter, we shall be glad to receive it.

In 1719 a large number of emigrants came to this country from the north of Ireland and settled a township which they called Londonderry. They were called Irish, and there was no little antipathy felt toward them, which would have been very foolish even if they had been natives of Ireland, but they were from a colony of Scotch Presbyterians that had settled in the province of Ulster, Ireland, in the reign of King James I. They had a thirst for civil and religious liberty which their situation in Ulster did not satisfy, and nearly the whole colony removed to America. About one hundred and twenty families came. One hundred families came to Boston, and the rest landed on the coast of Maine. Of the former, about sixteen families were those who made the settlement of the town of Londonderry. The historian referred to says: "These people brought with them the necessary material for the manufacture of linen; and their spinning wheels, turned by the foot, were a novelty in the country. *They also introduced the culture of potatoes*, which were first planted in the garden of Nathaniel Walker of Andover. They were an industrious, frugal, and consequently thriving people." Hence these people being called Irish, the potatoes which they introduced were called Irish potatoes.—A. B. B., in *Country Gentleman*.

Scarcity of Pure Arabian Mares. Arabs' love for their mares, and the jealo with which such animals are treasured East, have formed the subjects of many teresting story. There is no difficulty in ing any number of Arab stallions, for ex of the very purest blood; but it is next possible to procure an Arabian mare o high reputation. A modern writer on t ject tells us that it is even considered ac sell one under any circumstances; and r of the resolute opposition to the practice, is related as having lately occurred in Cr where some Arabian dealers had sol horses, and in consequence of a heavy bri was induced to part with his mare. Some af er, when the dealers had already gone ward, the senior of his party was obser have returned to the city, a distance of hundred miles; he lurked about for some subsequently it was discovered that he quired for the stables where the mare wa she was found poisoned, and he had dis ed.

A Rain Glass.—The following may pended upon as a rain glass: I have use months. Get a common pickle bottle, se sold at any Italian warehouse; fill it w kind of water, to within two or three i the top; plunge the neck of an empty F oil flask into the pickle bottle. Before water will rise two or three inches in t of the inverted flask—often in three hours. If the weather is settled for fair ti will remain not more than half an inc for days, in the neck of the flask. It ne to foretell rain; and to-day, July 15, high as the rim of the pickle bottle, in t of the flask. It may stand in or out o in sun or shade, and the water neve changing so long as it can be seen. Mine is now green through long standin oil flask must be cleansed before the plunged into the water. Soda and war will cleanse it of oil.—Th mas Zuille Cottage, Kennington-cross.—*Athenæum*.

Marauding Cattle.—Cattle may t ted to do almost anything. A quiet be converted into a skillful jumper in season. The first requisite for such t short feed, resulting from over stockin second is low fences; and the third, crops of corn beyond these low fences. spring, grass is usually good, corn a crops are small and uninviting; but d midsummer periods, when the pasture up, the process often begins. One or are accidentally blown from the fence; and orderly animals stretch their hea reach a morsel of the tall grass; t down accidentally two or three more finally leap over. The owner drives

n as they have learned the difference be- delicious food on one side and short ons on the other, and puts up a rail. They already learned to leap a little, and the day they improve and go a rail higher. ther rail is added, and the process is repeat- till they become quite expert.—*Country eman.*

ABD-EL-KADER'S RULES FOR A HORSE.—The irg are the rules laid down by Abd el-Ka- r indicating the points of a horse of pure He ought to have three things long, short, three broad, three pure. The three are the ears, the forehead, and the fore-legs; three short are the bone of the tail, the gs, and the back; the three broad are rehead, the chest, and the quarters; and three pure are the skin, the eyes, and the He should have the withers high, the fine, not fleshy, the tail well furnished the root, the eye inclining as if to look at nose, the forelock full, the nostrils wide their ies entirely black (if partly white it is a of inferiority), the fetlocks small, the hoof d and hard, the frogs hard and dry. He ld be able to drink from a stream level the surface on which he stands without ing the forelegs. The colours most prized dark bay or chestnut (the latter esteemed test), brown or black. Black are, how- thought less safe on rocky ground; white considered soft. Roan, dun, and iron gray little esteemed. A blaze, if all down the is approved, so are three white legs; but les on this matter are very fanciful. All e doctrines are supported by an infinity proverbs, poetical quotations, and religious ms, but it will be seen that they accord ally with our own ideas. Much import- is attached to a well lying shoulder; and eadth of chest, both as a security against fering and as giving room for the lungs. A ical rule for recognising the development the forehead is to measure the distance from extremity of the bone of the tail, along the to the centre of the withers, then from along the neck and crest, down the face to upper lip. If the two measurements are the horse will prove good, but of middling . If the length is greater behind than be- the animal wants power. If it is greater re than behind, he is excellent, and the ence in measurement the greater his super- y. The count d'Aure, late chief of the l of cavalry, and now inspector-general of imperial studs, assures Gen. Daumas that has tested this rule in more than a hundred and found it unfailing.—*London Review.*

SIR ISAAC NEWTON AND HIS CATS.—A human weighing a general principle, must call before his mind all that is to be said for and it. And he may quite overlook some important reason, on one side or other. He may quite forget something so obvious and familiar, that a child might have remembered it. Or he may fail to discern that some consideration which mainly decides his judgment is open to a fatal objection which every one can see is fatal the instant it is stated. Was it not Sir Isaac Newton who had a pet cat and kitten? And did not these animals annoy him while busy in his study, by frequently expressing their desire to be let out and in. The happy thought struck him that he might save himself the trouble of often rising to open his study door for their passage by providing a way that should always be practicable for their exit or entrance. And accordingly the great man cut in his door a large hole for the cat to go out and in, and a small hole for the kitten. He failed to remember what the stupidest bumpkin would have remembered, that the large hole through which the cat passed might be made use of by the kitten too. And the illustrious philosopher discerned the error into which he had fallen, and the fatal objection to the principle on which he had acted, only when taught it by the logic of facts. Having provided the holes already mentioned, he waited with pride to see the creatures pass through them for the first time. And as they arose from the rug before the fire, where they had been lying, and evinced a disposition to roam to other scenes, the great mind stopped in some sublime calculation; the pen was laid down; and all but the greatest man watched them intently. They approached the door, and discerned the provision made for their comfort. The cat went through the door by the large hole provided for her, and instantly the kitten followed her *through the same hole!* How the great man must have felt his error. There was no resisting the objection to the course he had pursued, that was brought forward by the act of the kitten. And it appears almost certain that if Newton, before committing himself by action, had argued the case; if he had stated the arguments in favour of the two holes, and if he had heard the housemaid on the other side, the error would have been averted.—A. K. H. B. *in Good Words.*

THE GREAT GREY SHIRKE.—Fierce and powerful as this bird is, it holds the falcon in the greatest terror, and is gifted with so true an eye for its enemy, that it can perceive a falcon when at an immense distance. Taking advantage of this peculiarity, the fowlers who set their nets for falcons always take with them a grey shrike, and after setting their nets, fasten the string to which the bird is tied to a peg near the nets.—A little turf hut is built as a place of refuge for the shirke, and a small mound or hillock raised, on which it perches. The fowler then retires to his own little hut, places the strings which draw the net within reach of his bird,

and watches the shrike out of a small window which commands the mound where it is perched. Feeling secure that the shrike will not suffer a hawk to come within sight without giving notice, the fowler takes out his netting or other sedentary work. Hundreds of birds may pass over the net without the shirke giving the least alarm, but as soon as it can see a falcon, it flutters about, gets uneasy, and at last begins to kick and squall with terror. Roused by the sounds, the fowler jerks some strings communicating with perches on which living pigeons are perched, and the flutter thus occasioned attracts the falcon's attention, and induces him to stoop for a prey that appears so easy. As the foe approaches nearer, the shirke s terror increases, and as the falcon swoops at the pigeons, the shrike screams for fear and runs for shelter under the tiny hut. The movement is a signal for the fowler, who draws the strings of his net and then closes the falcon as he makes his dart on the pigeons.—*Routledge's Illustrated Natural History.*

Take Care of your Harness.—More damage is done to a harness during the rainy weather of early and late winter, than during all the rest of the year. Saturated with water covered with mud, and often frozen stiff, so as to almost break when bent, in necessary handling. Unusual care should be taken to keep it well oiled and hung up in proper shape when not in use. Thus treated, it will not only last many times longer, but look infinitely better than when neglected in the usual manner. As to the kind of oil we know nothing better than neat's foot or the daubing used by tanners. To give the black color characteristic of new leather, a little lamp black may be added, without detriment, though it is better not to use this second going over. Before putting on the oil, however, there are two important considerations which must be observed—cleanliness and dampness. The necessity of the first is obvious, and the last is not less important, since the oil cannot penetrate the leather and make it soft and pliable if put on when it is dry and hard. One of the best ways to give the leather the required degree of moisture is to wrap up the several parts of the harness in wet cloths previous to oiling. But this trouble is unecessary where washing has been resorted to for cleaning, as the oil may be applied before the leather is entirely dry. The oil should be rubbed in briskly with a brush or cloth, so as to ensure its absorption. Varnish should never be used as it closes the pores and renders the penetration of the oil more difficult. Vegetable oils are hardening in their effects and should never be used for that reason. Finally let the application of oil be as frequent as needed, not once a year as is the rule with some, or almost never, as is the practice of many.

Evil not a necessity.—As surely as God is good, so surely there is no such thing as necessary evil. For by the religious mind, sickness and pain, and death are not to be accounted evils. Moral evils are of your own making and undoubtedly, the greater part of them might be prevented. Deformities of mind, as of body will sometimes occur. Some voluntary cases always there will always be, whom no foster kindness and no parental care can preserve from self-destruction; but, if any are lost for want of care and culture, there is a sin of omission in the society to which they belong.—*Robert Southey.*

Editorial Notices, &c.

Death of the Hon. Adam Fergusson.

It is our painful duty to record the death of this estimable gentleman and distinguished agriculturist, which took place suddenly, September 24th, at his residence, Woodhill, near Hamilton. For the last two years Mr. Fergusson was unable to take any active part in public life in consequence of an attack of paralysis, but he was not incapacitated from inspecting the operations of his farm, and in what he always took a particular liking in, the progress of his live stock, and the quiet enjoyment of the company of a friend.

Mr. Fergusson was a native of Scotland and descended from a family of great respectability and influence. He studied for the law in the University of Edinburgh, and became a writer to the signet. Having however a strong propensity for country life, and coming into possession of landed property, he soon distinguished himself as an earnest student and promoter of agriculture. We have often heard him relate the pleasure and advantage he derived from the lectures of Low Coventry, the first professor of agriculture in that distinguished seat of learning, also from those of Professor Dick, the founder of the world-renowned veterinary school of Edinburgh. Mr. Fergusson also spent some time with two or three extensive farmers and breeders in the counties of Northumberland and Durham, where he formed an acquaintance which ripened into an intimate friendship with that celebrated agriculturist John Grey Esq., of Dilston, extending over a lengthened period of more than half a century. It was

that Mr. Fergusson acquired a taste for ham Cattle, or, as they are now usually ed, "improved short horns;" a depart- t of husbandry to which he devoted him- with distinguished success, both in Scot- d and in Canada.

In 1831, Mr. Fergusson came to Canada, purchased an extensive tract of wild land the Wellington District, now forming the rishing and well-farmed township of Fer- s. His clear and penetrating mind foresaw advantages which that part of Canada n then offered to enterprising industry, and accordingly wrote a series of letters, which re published by Messrs. Blackwood of dinburgh, a book that elicited much enquiry d conveyed valuable information to such as re seeking new homes in the then literal lds of Canada. In 1842 he was ap- nted by the Crown to a seat in the Legis- ive Council, where by his frank and straight- ward course he commanded the respect, if the confidence, of all parties. In 1846, r. Fergusson, in connection with Colonel W. Thomson, and a few others, succeeded forming the AGRICULTURAL ASSOCIATION UPPER CANADA; the first exhibition of hich was held in Toronto, in the fall of that ar. Mr. Thomson, with whom the idea first iginated, being President, and Mr. Fergusson livered the Address. Of that association om its commencement to the period of his ath, he was a constant and zealous sup- rter. He was also a member of the Board Agriculture from its formation, and the iginator of a scheme for giving to young rmers sound practical instruction in the terinary art, with an ultimate view of estab- hing in Upper Canada, a veterinary school; project that has already been commenced Mr. Smith, a licentiate of the Edinburgh llege, under the patronage of the Board of griculture.

Mr. Fergusson was one of the oldest mem- ers of the *Highland and Agricultural ociety of Scotland*, having been elected, we elieve, as early as the year 1806. He was mong the first to introduce pure bred cattle nto this province, and he always had, to the ay of his death, a select herd of Short horns, breed to which he was, we may say, enthu- siastically attached; and for the dissemina- tion of which he had bred and sold upwards of sixty male animals, exclusive of cows and heifers. Among the many proofs of his ardent love of rural improvement, particularly of cattle, it may be mentioned that he gave annually a silver cup, and two medals, the former for the best grade cow from a Short horn bull, and the latter for the two best pair of Domestic Fowls, exhibited at the Provin- cial Show.

Our good and venerable friend has been re- moved from a sphere of action, which by his virtues he adorned, and blessed. The writer of this hasty notice had the pleasure of spend- ing a day with him at his picturesque retreat, Woodhill, only a fortnight before his decease, and found him as usual full of desire and hope in the great work of agricultural and social improvement. He was looking with anxious interest to the results of our forthcoming Pro- vincial Show, during the holding of which he was summoned to another and, there is good reason for hoping, a better world. The mem- bers of the Provincial Agricultural Associa- tion gave expression, at the annual meeting on the show ground, to their esteem for his memory, by passing in solemn silence an ap- propriate resolution. Mr. Fergusson had entered, we believe, on his 79th year. The memory of the just is blessed.

FOR SALE!

Avrshire Cattle, Leicester Sheep, and Berkshire Pigs.

THE Subscriber offers several Young Bulls, Heifers and Cows, on very Liberal Terms. Specimens from his *Prize Herd* will be on Ex- hibition at Toronto, if all's well.

P. R. WRIGHT, Cobourg, C. W.

Aug. 30th, 1862. 6-mos.

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DANIEL TYE.

County Waterloo, Wilmot, August 1862. td

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HUGH C. THOMSON,

Toronto August, 1862. *Secretary.*

Contents of this Number.

The Agriculturist,

OR JOURNAL AND TRANSACTIONS OF THE BOARD OF AGRICULTURE OF UPPER CANADA.

IS published in Toronto on the 1st and each month.

Subscription—Half a dollar per annum. Single copies; Eleven copies for Five Dollars, Twenty-two copies for Ten Dollars, &c.

Editors—Professor Buckland, of Upper College, Toronto, and Hugh C. Thomson, Secretary of the Board of Agriculture, Toronto, to whom all orders and remittances are to be addressed.

Printed at the "Guardian" Steam Printing Office, Street East, Toronto.