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THE

Canadian Agriculturist

AND

JOURNAL OF THE BOARD OF AGRICULTURE

OF UPPER CANADA.

VOL. XV. TORONTO, JULY, 1863. No. 7.

AGRICULTURAL MUSEUM.

We again request the attention of our readers and all others interested in the promotion of agriculture in this Province to the proposed Agricultural Museum, for the accommodation of which the Board has set apart a very extensive and suitable room in their new Hall, on the corner of Yonge and Queen Streets, in this city. Some progress has already been made in procuring specimens of grain, &c., chiefly from abroad, with a few implements and machines:—As it is most desirable that arrangements should be commenced in earnest this summer, for carrying into practical effect this interesting and important object, the earnest attention of our farming and mechanical friends is herein called to the following explanatory observations.

What is sought to be obtained by the establishment of a museum, which the statute appointing the Board lays down as one of its principal objects, is the collecting and arranging in a suitable building, the characteristic productions of Canadian agriculture, including farm implements and machines, dairy utensils, and in fact whatever relates to, or illustrates our rural life in this country. Specimens of foreign growth or manufacture, whether from Great Britain and our sister Colonies in all parts of the world, the United States, or the continent of Europe, will be procured as opportunity may offer; and the Board will always feel happy to make exchanges as far as practicable either with individuals or Societies in all countries. Canadian productions, however, are those which are primarily desired, and with this view we make a direct appeal for co-operation and aid to Societies and enterprising individuals, who share a common feeling in promoting the important interests of our native agricultural and mechanical industry. It is desirable also to bear in mind in connection with this object, that the beautiful and truly valuable sister art of *Horticulture*, in all its branches, is associated.

It must be obvious upon a little reflection that in order to collect materials for a museum which will represent the state and result of the rural industry of Canada, in particular, and of our sister Colonies in British North America, in general, very much will depend upon the disposition of farmers, mechanics, and the lovers of gardening, however widely cast asunder, to aid the enterprise by forwarding suitable and characteristic specimens. With such aid, under proper and efficient management, a collection would in a few years be formed that would be highly useful and instructive, and would give the visitor, whether a stranger or otherwise, a much clearer idea of the industrial condition and capabilities of this magnificient portion of Her Majesty's dominions, than could possibly be otherwise obtained, except by extensive travel and careful observation.

As the season for maturing the productions of the earth is at hand, the co-operation of all such as can aid this object is respectfully and earnestly solicited. The cultivated cereals, both in the grain and straw, good characteristic

specimens carefully pulled up with the roots will be always acceptable. Also wild or cultivated grasses, uncommon weeds taken when in flower, slowly dried in the shade or folded between sheets of soft paper. New varieties, or extraordinary vegetable productions are also requested, whether of the field or the garden. Fruits, nuts, &c., will also be acceptable. Insects not generally well-known, injuriously affecting the cultivated crops, fruits or forest trees are solicited. Specimens of remarkable soils with the underlying rocks, and in short, any natural or cultivated production illustrative of the climate and productive power of the country, will be welcome. We may also mention the fur of wild animals, the wool of different breeds of sheep, stuffed specimens of remarkable domestic poultry, eggs, &c. Each specimen should be correctly named, where, and by whom produced, with a statement of the particular facts of interest connected with it.

Manufacturers of Agricultural Implements, tools, &c., are requested to send specimens, or in case of the larger machines, models, of what they consider not ordinary productions. The price of each article, and a statement of what are estimated its particular advantages, should accompany it. These productions will be kept on exhibition free of expense to the makers, and in this way it is believed a benefit will be conferred upon them. In case of farm or garden productions, sent by express, the Board will be at the expense of transit, addressed to H. C. Thomson, Secretary of the Board of Agriculture, who will be happy to furnish any additional information relative to this object that may be desired.

EARLY AND LATE SOWING OF WINTER WHEAT.

The following letter, published in the *Country Gentleman*, from John Johnston, of Geneva, N. Y., widely known as the "Great Tile Drainer," will be found highly interesting to farmers, and from the reputation and long experience of the writer is deserving of attentive consideration. We should not go so far as to endorse Mr. Johnston's views in all respects, including exact dates, as applicable to this country. Some allowance must be made for climate, soil, seasons, &c., but the general principle is worth noticing that it may be possible to sow too early; and where the Hessian fly is prevalent there can be little doubt that very early sown wheat suffers the most from its attacks. On the other hand forwardness in spring and early maturity is one of the great safeguards against the attacks of the wheat *Midge*. The problem then is, to sow late enough to avoid the fall attacks of the Hessian fly, and yet early enough to get the plant well rooted before winter, and thus secure as far as possible forwardness and early ripening the following season, as a protection against the Midge. By a thorough tillage of the land, adequate drainage, and sowing early ripening varieties of seed, this result may in average seasons to a great extent be attained. For Upper Canada generally the period of sowing we should recommend is from the 10th to 20th September, or even as late as the 25th in some localities where the soil and situation are specially favorable to early maturity. And it happens that within these dates is about the period of sowing found most conducive to the vigorous and healthy growth of the wheat plant, independently of considerations connected with the depredations of insects.

It is true that many farmers have been in the habit of beginning and ending their sowing between about the 27th August and the 10th September, and as a general rule with not unfavorable results. But in this case, if the land is in condition to promote immediate growth of the seed, and a warm autumn ensues, there is danger of the plant attaining too great a luxuriance before winter, and it is besides exposed to the attacks of the fall brood of the Hessian fly, where that insect exists. When wheat is sown as late as the 20th September, and afterwards, it is important that the land should be in a condition favorable to quick and uniform germination of the seed, and that an early ripening variety of seed should be selected. On the whole, it is doubtless safer to sow a little too early than too late.

MESSRS. EDITORS:—I notice there is much poor wheat around here. True, there are some fields that are *good*, but I fear there are a good deal bad. I wrote you last autumn that I thought mine was ruined by the so-called Hessian fly—it is a total failure, and all owing to too early sowing. I sowed the 5th and 6th of September, and many sowed earlier. I knew better than to sow so early, as I had had failures before from early sowing. For a few years after I came here, I began sowing when my neighbors

but as I then did the plowing and sowing myself I was often late in finishing, and I saw the wheat I sowed from the 18th till 25th of September was almost always the best crop. In 1831 I had quite a loss by this same fly, and determined to get all my land ready and not commence sowing until the 20th September, or thereabout. I continued that course for about 20 years, and had almost no failures, with the exception of 1844. In September of 1843, as I intended going to the State Agricultural Show at Rochester, I sowed early, in order to sow my wheat before I went, and in consequence lost at least half my crop of 80 acres. Some time after the midge commenced to destroy the wheat crops along here, people got almost crazy to have their wheat early sown—some, indeed many, sowing in August, but I never began earlier than the 11th or 12th of September, and had no failure.

I have proof positive that if I had sown about the 20th of last September, I would have had fine looking wheat now. By some imperfection in the drill it missed dropping from one spout the whole length of the field for several times; these rows I had drilled over about the 20th or a little later. Now these *rows are as healthy looking wheat as any man can wish to see, while the other is worthless.* If farmers will take heed to what I have waitten, it will do more good than the loss of 13 acres of wheat will harm me, although I fully expected 500 bushels when I sowed it. It is folly sowing so early. I never knew one day difference in coming in ear, or of ripening, *from that sowed on the 12th or 25th of September, if the condition of the land was equal,* and I have no doubt if farmers generally will make notes of their sowing and the ripening of different fields, they will find what I say is correct.

We now have very fine weather. My barley looks very well, grass very good, clover ditto. I have not been from home to see the wheat, but my friends tell me much is bad. Mr. Foster, who has as good land for wheat as any in this country, says his is an entire failure. I presume he sowed early, as he keeps up his work generally.

I should add that those who sow the end of September and in October, should sow *more seed to the acre* than those sowing earlier.

JOHN JOHNSTON.

Near Geneva, May 14, 1863.

EDITORIAL NOTES.

Visit to the County of Wellington, Mr. Stone's Stock, the Crops, &c.

Having spent a few days in the County of Wellington, it may not be uninteresting to our readers generally to bring under their notice, in a concise way, some of the more prominent matters that we observed in connection with the state and progress of Agriculture.

The ride from Toronto to Guelph on the Grand Trunk is in many respects an interesting one, embracing a section of country considerably diversified, and possessing on the whole great agricultural capability. After leaving the sand drift which forms a surface of some extent to the west of Toronto, comprising soils generally weak and of unequal degrees of productiveness, the traveller passes over the strong, and—where properly cultivated - highly productive lands of West York and Peel. The soil over extensive and comparatively level tracts is a calcareous clay, more or less retentive, admirably adapted for raising the finer qualities of wheat clover, and indeed, the usual farm crops, which almost every where had a very promising appearance. Upon these strong, rich lands, especially when the surface is wet, arising from flatness, the advantages of draining, especially deep underdraining, are most obvious even to the travelling observer. Instances were pointed out to us while in the train, which clearly indicated the vast difference between the appearance of crops on drained and undrained land, all other conditions being equal.

We had the pleasure and advantage of spending a day with Mr. F. W. Stone of Guelph, a gentleman too well known and respected both in Canada and the United States to need any eulogium from us. As an importer and breeder of farm animals of every description, except the Horse, Mr. Stone has for several years occupied a first position on this Continent, and a quiet day with such a man increases one's knowledge as well as pleasure. We had time to go over his home farm only, and regretted our inability to see his other farm, some four miles distant, where his celebrated flock of Leicesters is chiefly to be seen. The home farm consists of about 500 acres, most pleasantly situated within a mile of the flourishing town of Guelph. The farm buildings are new, quite extensive and apparently arranged in a convenient manner to meet the varied requirements of horn cattle of various ages, sheep, pigs, &c., as to ventilation, warmth, cleanliness, &c. One cannot help feeling in surveying this extensive suite of buildings, which are finished in a very substantial manner, that the enterprising owner has been guided by an enlightened desire to profit, rather than a prodigal expenditure. While Mr. Stone is to be regarded as a enterprising farmer, in the highest and

best sense of the term, he must also be considered essentially practical, and no young farmer, in particular, of ordinary powers of observation, can visit his establishment, without carrying away with him much that will be of pratical value and application in the great business of life. It is this keeping of expenditure within what may be termed practical and profitable limits, that most deeply impressed our mind in taking a general and afterwards a more detailed view of the arrangements and operations of this farm. We observed that a considerable portion of the cattle, especially the bulls, both Durhams and Herefords, are kept in the byres and yards during the summer and fed on green food, thereby making a large amount of valuable manner, and keeping the animals cool and quiet It is Mr. Stone's intention, however, to allow more of his animals to roam abroad, within certain limits, as soon as the fields and fences will admit Few but such as have had practical experience can understand the time and expenditure, as also judgment and perseverance required in bringing up an imperfectly cleared Canadian farm to the degree of finish and productiveness as that which characterises the one to which we are now referring. Mr. Stone adopts the progressive plan,—which is the safest and most profitable,—of bringing his ground into a complete state of cultivation; allowing time for the operations or agencies of nature to produce their ameliorating effects. Many acres of low lying swamp have already been partially drained by cutting deep and wide ditches as channels for the drainage, thereby preparing them for profitable pasturage; leaving more detailed operations to a subsequent opportunity. Mr. Stone is of opinion that the Italian and Pacey rye-grass may be advantageously substituted for Timothy with clover; they mature with the latter more evenly. We observed heavy crops of this mixture, promising three tons to the acre. Cocksfoots has also been introduced, producing a very heavy weight.

Of Mr. Stone's stock it is unnecessary to speak in detail, its quality is well known and appreciated far and near, but the quantity we found greater than we expected His Durhams and Herefords have been selected with much care and judgment from the best herds in England, and imported at great expense; while those of his own breeding will sustain, on the whole, the superior character of their parentage. We particularly admired some beautiful Herefords which we saw as prize animals at the Royal English Society's show at Canterbury in 186[illegible]. It is not till within the last three or four years that we have had in Canada any worthy representative of this excellent breed, which deserves to be better known both here and in the States. To make invidious companions between Shorthorns and Herefords, as some are wont to do, is alike discreditable to to good taste and correct judgment. While Mr. Stone duly appreciates the latter, we find by the large number of fine animals which he has of the former, that they continue to hold the same high place in his estimation In the flock of Cotswolds we observed many very superior animals, derived from the best blood from their native hills in Gloucestershire; and of Southdowns we noticed some perfect beauties, of the late Jonas Webb's world renowned stock It is but bare justice to remark that although Mr. Stone has most of the modern appliances for preparing food for live stock, such as chaff and root cutters, pulpers, &c, he eschews the *pampering* system, and prefers keeping his animals in a good thriving condition In eed several of the sheep were hardly up to this point during the late spring months, in consequence of the great scarcity of hay and other produce, but we observed that they were fast picking up in pasture. Mr Stone continues to devote attention to the improved breeds of swine, of which we noticed some fine specimens; nor does he consider the poultry yard beneath his notice, having imported the most approved varieties of modern breeds. In this department he regards his operations as not proving particularly fortunate. He is attempting to naturalize the English pheasant, with what success remains to be seen.

The depression of business in general which for the last few years we have experienced in Canada, coupled with the lamentable occurrences which have taken place in the neighboring Republic, must necessarily affect injurious enterprizes of this nature. Mr. Stone has now on hand a number of animals that otherwise would have been profitably disposed of; the choice being large, parties can readily accommodate themselves, *quality* being duly considered, on moderate terms.

We spent a very agreeable day or two in calling on several farmers in the townships of Guelph and Eramosa, and regretted our inability, for want of time, to inspect the famed Leicester sheep of Mr. Parkinson. We have long known Mr. Hogge as a successful breeder of shorthorns, but hardly expected to find in his herd so great a number of really fine animals. Mr. H. Tolton has a bull that is doing good service, and the general character of the stock throughout the greater part of this country, comprising sheep and pigs, as well as horses and cattle, is of much improved character. It was in Guelph that the first importation into Upper Canada of any importance took place of pure Shorthorns under Mr. Wingfield, and the rapid increase that has of late years been given to root cul-

throughout this section may be regarded both as a cause and a result of the continuous improvement of live stock. Every farm appears to have more or less of turnips, mangels, carrots, &c. We observed whole fields, from five to a dozen acres, with a smooth, level surface, and without a stump some with turnips in as good a style of workmanship as can anywhere be met with in the old country. The usual practice seems to be to make drills with the plough, cover the manure, principally farm yard dung, superphosphate, or ground bones, by the same implement, and drill on the ridge, after the manner of the Northumberland system, so prevalent in most parts of England and Scotland. It was truly pleasing to observe wherever we went the original farm buildings, often constructed of logs, giving way to more extensive and durable structures, thereby clearly indicating a state of social progress and prosperity. This being a limestone district most of the new houses are built of stone, which is also the case with many of the barns and other farm buildings. We must not omit to notice that in calling on Mr. Parsons we had an opportunity of observing the dairy operations by which Mrs. Parsons manufactures the Stilton cheese, which has now for a number of years been so deservedly esteemed for its superior quality This business requires the exercise of skill and judgment, and involves no small amount of care and trouble, which few, perhaps, would be willing to undergo Mr Parsons' cows are mostly grades, well adapted for his purpose, several of them being two-thirds Durham. It is an important fact to bear in mind that wherever a number, however small, of pure bred cattle find a local habitation, the general character of the stock of the district gradually improves, yielding in a few years grades of superior quality, whether for the dairy or the shambles.

Wherever we went the country presented a beautiful appearance, and the crops universally promising, which it is pleasing to be assured is generally the case throughout the Province. The late rains have been of incalculable benefit, and as yet few, if any, symptoms of disease, (except here and there complaints of the grub or cutworm,) among the cereals. With settled weather and an increased temperature, of which there ar now signs (June 25th), there is good reason to anticipate a more bountiful harvest than has allen to our lot for many years

We would suggest to our readers the importance of not delaying the commencement of haymaking and harvest operations; an error commonly committed Grass of all kinds should be cut when in full flower, and grain as soon as it is fairly out of the milky state, and the straw has a yellowish hue. In that stage of ripeness plants possess the largest amount of nutritious ingredients: but by allowing them to go beyond that point before being cut, or in other words, to become what is termed dead ripe, a large amount of the starch and sugar which they contain is converted into woody fibre, an almost totally innutritious substance Besides, a few days gained in the commencement of haying or harvest in a forcing climate like ours, where the season is brief and work must be hurried, present practical advantages which every reflecting farmer will be able to understand.

THE GRUB.

EDITORS OF THE AGRICULTURIST,—GENTLEMEN: Could you or any of your enlightened readers, through your widely circulated journal, give a remedy, or advise a scheme, to obstruct the ravages of the grub on our white crops. It is much to be regretted some remedy is not put forth for the destruction of this annual pest of the farm, for every one that is at all acquainted with rural affairs will agree that there is not a more formidable enemy to the agriculturist. Last year it was very destructive in this neighbourhood, whose fields of wheat and barley were hardly worth reaping. I see it has commenced its campaign this year again on the barley. In going into a field you see patches cropped off just as though it had been done by sheep. Now could there not be a remedy got in the shape of top dressing to annihilate or even palliate the ruinous evil?

What say you scientific men, initiated in chemistry, physiology and natural history?

Yours, &c., I. S. T.

Whitby, 10th June, 1863.

[Our correspondent does not state exactly what kind of grub he means. We presume it is what is commonly known as the Cut-worm, of which there are several varieties, all, however, resembling each other more or less in habits. We were not aware that any insect of this species was so destructive in the part of the country from which our correspondent writes. There has unfortunately been as yet no wholesale method discovered of getting rid of them. There is only one sure and reliable mode, namely, digging them out of their burrows, which may easily be detected in the morning by the freshly moved earth, and destroying them. But this plan, although it may be adopted successfully in a garden or small piece of corn, is hardly practicable in a large field. Some writers have suggested that they might be caught by puncturing the ground where they are committing depredations with holes with a sharp pointed stick. The grubs fall into the holes and cannot climb up the smooth sides, but loose their foothold and fall to the bottom, and may thus be captured and destroyed. It has also been suggested that as the cut-worms are great travellers, and ramble from field to field in the night, they might be kept out of ground where they have not al-

ready appeared by ploughing a single deep furrow around it, up the perpendicular side of which the grub could not climb This plan was stated to have been adopted with some success in some localities on the invasion of the Army-worm in 1861, the furrows in some instances being almost filled with the arrested worms, which were destroyed by dragging a heavy log of timber, or some equally efficacious implement over them.—Eds.]

IS IN-AND-IN BREEDING ADMISSABLE.

Its advocates point with triumph, to the example of Robert Bakewell with his Longhorns, and Col. Samuel Jaques with his Creampots; but it should be remembered that every man is not a Bakewell or a Jaques; to prove which it is only necessary to state a well known fact, viz: that after the death of Bakewell, the Dishley Longhorns rapidly degenerated, and have now become extinct; and, since the death of Col. Jaques, the Creampots are going the same way. No man has as yet, been found skilful enough to keep them up to the high standard the attained under the management of their illustrious originators. Chas. Colling tried it with the Shorthorns, and the fact that Comet (155), the best bull of his day, was deeply in-and-in bred, would seem to be sufficient evidence that in-and-in breeding was not only admissable, but highly advantageous. But Comet had a deformed shoulder, and he never sired so good an animal as he himself was. Colling bred from Favorite to the sixth generation. But Favorite is represented as a bull of great size and substance, and rather coarse. For this reason, it was desirable to give his stock more fineness of form than he himself had, and in-and-in breeding would have this effect. His great substance and stamina would admit of it, while at the same time the produce of an animal, with less substance and vigor, would have been utterly ruined. The Rev. Henry Berry tried it with good success, for a while, but many of his animals became entirely impotent, and he was obliged to throw in a strong cross to remedy the evil. Mr. Thomas Bates bred his Duchess tribe strictly among themselves for twenty years, and obtained what he most desired, viz: great uniformity. But many of his best heifers were hopelessly barren, and he was obliged much against his will, to resort to a new strain of blood, which he obtained in Belvidere, whom he purchased of Mr. Stephenson. As a result of this cross, his animals received new vigor, while at the same time their peculiar firmness and style was retained.

The editor of the Albany Cultivator, writing on the same subject, quotes the following remarks from Mr. Berry: Close breeding impairs the constitution and affects the procreative powers. In in-and-in breeding I believe that the procreative power fails first or chiefly on the part of the male.

The editor has the following remarks in regard to the stock of Mr. Robinson: Mr. Robinson purchased a stock of pure Shorthorns for his estate in Scotland, and pursued strictly the course of in-and-in breeding; the consequence was his cattle soon became feeble and delicate, very bad breeders, and many died of consumption. By resorting to Mr. Colling's stock and the use of one of his bulls for a few years, his stock was renovated and assumed their former beauty and vigor.

Mr. Stephens in the Farmer's Guide, has some remarks on this subject so much to the point, that I copy them entire:

The immediate effects of breeding in-and-in, or employing animals nearly allied by blood to procreate their kind, are remarkable. The bone becomes very small, of condensed texture and fine quality. The skin is so thin as to receive the appellation of papery so open of texture as to be sensible to the least change of temperature; and hence animals bred in-and-in are very susceptible of catarrhal affections, and on which account are liable to consumption. The carcass is much reduced in size, and the disposition to fatten increases to such a degree that the animal may be said to be always in a condition to be slaughtered. The hair is short, smooth and thin set, and the wool short, thin set and watery; and both hide and fleece lose a large proportion of weight. The body assumes a change of form, the barrel being beautifully rounded, but seems stuffed, as it were, with the skin. The extremities are very fine, the head and hoofs small, the ears thin and bros and the head of the sheep is almost bare of hi of a blue color, very liable to be scalded by t heat of the sun, and attracted by the fly. T necks of cattle and sheep are thin, and dro with a downward curve between the head to t top of the shoulder. The eyes are often affected with wateriness. Lameness frequently ens in one of the limbs. The constitution is ev entiy much weakened. I have seen many mals that were in-and-in bred, and they w either small in size, or deficient in constituti and these last died prematurely. In one stance, although the animal escaped both these defects, he had a nervous affection of eyes.

From the above facts we may infer that and-in breeding may be pursued, where the mals have great substance and vigor—especially if they are somewhat coarse, or when as sometimes the case, the breeder wishes to c centrate some particular strain of blood. Ei either case it must be pursued with great tion, and must not be carried too far. Some

the most successful of breeders have adopted the style of breeding in twice, and then breeding out.

Finally, the breeder should not attempt it unless he is possessed of great skill and judgment. —*American Stock Journal.*

SHOULD WE SOW THIN OR THICK.

The following article translated from a recent number of the *Journal D'Agriculture Pratique*, contains much that is deserving the thoughtful attention of our readers. It relates to a much vexed question, and we shall be happy to be informed of the views and results of Canadian farmers on the subject. The amount of grain for seeding a given amount of land must doubtless, always in some measure, depend on the composition and state of the soil, the character of the season, time of sowing, varieties cultivated, and other conditions that would occur to the minds of observing and practical men:—

In general, agriculturists of rich countries and well-cultivated lands say, "Sow thin, you will always have sufficient seed;" while, on the contrary, those of poor soils say, "Cover the field with seed, you cannot put on too much." Are not these opinions contrary to good sense? Putting a large number of plants into land which does not contain nutritive principles, and sow into soil which contains much nourishment, must be against all reason.

Let us inquire from whence these notions spring, and begin by establishing in principle a system which can but be beneficial to agriculture, namely thin sowing. Here we would remark, in passing, that sowing in rows with a machine which does not put two grains where there ought to be only one, nor leave only two where there ought to be four, is a true progress, and a great step towards amelioration based on reasonable practice. Under the impression that by sowing a large quantity of seed the crop would choke the weeds, we have sometimes been tempted to try the system; in fact, we have adopted it for some cultures, such as colza for example, but the results soon taught us a lesson.

If we sow very thick upon a poor soil or thin land, each grain of wheat, barley, or oats only gives one stem, which produces a single ear; if again thicker, the cereal will be poorer still, and the ears more miserable; but as all plants by an invariable law give some grain, would the stems be still thicker and poorer, would the stems still form themselves? Without doubt the stems will be weaker in proportion as they are numerous, because we shall have put more plants upon a surface which cannot nourish more than ten. We shall then have a yield in inverse proportion to the quantity sown, and the more we sow the less we gather in proportion, for this reason: as soon as the roots are developed they get entangled with one another, and in fact dispute the nourishment found in the soil; consequently they will always be poor and weak. Might we not compare the cultivator who sows thick, to him who upon land where there is put poor fodder, keeps three times more cattle than is fed upon good pasture?

In some localities nearly three hectolitres per hectare of cereals are sown, and sometimes even more. I have tried these enormous quantities, then diminished them gradually, and, in proportion as I lessened the quantity, the yield increased. I now sow 125 litres (220 pints) per hectare (or nearly 90 pints per acre), and it is that quantity well planted which gives me the best produce. I say well planted, because I think that every grain ought to be well buried.—Thick sowing is, then, preparatory to a thin crop.

Let us inquire now what takes place upon a soil well prepared, where the bed of vegetable earth contains a large proportion of humus.—The plants having room to extend their roots, strike them deeper and nourish them, obtain a strong vigorous vegetation, and are in better condition. The stalks multiply in as great a number as the earth can nourish, while we shall be sure of having nothing but healthy plants possessing all their faculties, and which will probably give a maximum produce.

Upon a surface of a metre (1 1-5th of a square yard), if I sow ten thousand grains of wheat, each plant will only have a centimetre (or $\frac{1}{8}$ of a square inch), and it will be impossible that the plants can arrive at perfection. Again, if I sow upon that same surface only ten, each root, having space to extend itself, will tiller until the soil is full; but it will not form one ear more than the earth can nourish.

In order, then, to have plenty of tillers, we must sow thin. We do not pretend to state the exact quantities which will produce a good crop. We have mentioned 125 litres for cereals; but a very fine harvest may be obtained from less seed. For this reason we do not approve of calculations of produce taking for their base the quantity of grains sown. The quantity gathered per hectare appears to us more correct. In fact, if I sow some grains singly upon a large surface, the plants will develop themselves in an extraordinary manner, and I shall have an enormous produce compared to the quantity of grain sown; but very little compared with the extent of ground. By this means we shall gather thirty or forty to one, being, however, a small return per hectare. It must therefore be left for the cultivator to judge the quantity of seed required, taking care not to diminish it beyond what is necessary for the stems to fill the soil.

Colza, planted or sown very thick, throws up a long stem very accessible to frost; then, early in spring, the flowers become developed, and if

there is much damp, or frost, the grains cannot form, and the crop will be almost, if not entirely, a failure. On the contrary, if sown thin the stems may lose their first flowers without injury, because the plants have other resources. They are vigorous, consequently the lateral branches soon form and give birth to flowers which produce good seed. There will then be two chances of success with thin seed plots or plantations, even when we do not reckon upon the vigour of the plants forming the greatest quantity of grain.

Buckwheat sown thick pushes out a stalk, which flowers and fructifies quickly, as if it felt its weakness; but, supposing the first flowers do not come to perfection, which is frequently the case, no lateral branches are formed, and the harvest is next to nothing.

I have heard it remarked, that weeds develop most rapidly when seed is sown thin or in rows; but it appears to me that it would be better to destroy the weeds by second hoeing or cleaning than to run the risk of spoiling your crop, which there is great danger of, if it is left to fight its way amongst the weeds.

This year the seed is sown under very favourable circumstances. The winter having been mild, our wheats are as thick as meadow grass. The question is, Will the harvest be the better for it?

Why not sow early in good sound land, bury all the seed, and put in only the necessary quantity? What economy—what increase of produce may we not obtain for France? Doubtless numerous objections will be made by various cultivators—such as these: "My soil is so meagre, that in order to obtain sufficient stems I must cover it with seed." "What advantage can be gained from sowing three hectolitres of seed in order to gather six or ten?" "Would it not be better to bestow upon one hectare the manure and labour we should have spent upon two? We should sow three times less, and gather double."

Some time ago it was remarked, with reason, *"The worst weed for the corn, is corn."*

J. Bodin.

Director of the School of Agriculture at Rennes.

THE FARMERS, THE ROOKS, AND SMALL BIRDS.

We find the following communication from an old sportsman and experienced agriculturist in a recent number of *Bell's Weekly Messenger*, (English). The reader will find in it something to gratify a rational curiosity. There can be no doubt but birds are often of the greatest service to the farmer in all parts of the world by keeping in wholesome check the ravages of insects, and thus assist in maintaining the balance of creation. In new countries like Canada, where wood largely preponderates, birds as well as other wild creatures no doubt sometimes require to be kept down by human artifice; but no where can an indiscriminate slaughter of birds be carried out without inflicting irreparable injury to crops whether of the farm or the garden:

In the *Royal Agricultural Journal*, Mr. Spence quotes from a provincial paper, *The West Briton*. In *The West Briton* it was stated that Mr. G. Pearce, of Pennave Govan, had saved an acre and a half of turnips, sown to replace wheat destroyed by the wire worm, and attacked by hosts of these larvæ, by setting boys to collect them, who, at the rate of 1½d. the hundred, gathered 18,000, as many as 50 having been taken from one turnip. Thus at the expense of only £1 2s. 6d., an acre and a half of turnips, worth from £5 to £7 or more, were saved, while, as the boys could each collect 600 wireworms a-day, 30 days' employment was given them, at 9d. a day, which they would not otherwise have had. To have earned that sum in 30 days one boy at 9d. per day in 12 months, excluding Sundays, would earn £11 14s. 9d. Five hundred wireworms weigh about an ounce; two hundred and two meal worms weigh about an ounce; and I have estimated thereby Thirty boys gathering 18,000 wireworms a day would be 531 years and 295 days collecting 468,000 lbs. or nearly 209 tons weight of wireworms, reckoning 313 working days to a year excluding Sundays.

Volume the 5th of the *Royal Agricultural Journal*, p. 208, Mr. Clitheroe, in the *Gardener's Magazine* so quoted, observes that in the county of York, in the neighbourhood of his native place, there is a rookery belonging to W. Vavasour, Esq., of Weston-in-Whardale, in which it is estimated that there are 10,000 rooks. One pound of insect food per week is a very moderate allowance for each bird, nine-tenths of their food consisting of worms, insects, and their larvæ. Here, then, there is the enormous quantity of 468,000 lbs. or 209 *tons of worms*, insects and their larvæ *destroyed by rooks of a single rookery in a year*. Each rook in this calculation is given to have picked up 1 lb. of food per week, nine-tenths of which was of insect matter, as wireworm and larvæ. I have kept rooks tame, and to my certain knowledge they consume more than the quantity above stated. In 12 months, then, 10,000 rooks destroy 468,000 lb. of the most destructive foe to the farmer, and effected, at a trifling cost to the farmer in grain taken at seed time and harvest, what it would have taken 30 boys £11 14s. 9d. each per year, to have done in 531 years and 297 days. One rook will collect 299,820 worms in one year, and

boy would collect in 312 days 187,800 worms: consequently one rook's work is nearly equal to one boy and six-tenths of another boy, which would make 10,000 rooks' work equal to that of 16,000 boys; and the wages of the latter, at the rate of 9d. per day for each boy, would amount to £600 per day, or £3,500 per week of six days, or £187,500 for 52 weeks. Upon Mr. G. Pearce's calculation, his acre and a half of turnips saved was worth from £5 to £6, say on average £6. *According to this the produce saved by 10,000 rooks in a year would be worth £998,400, extending over 1,197,400 acres.*

What man in his senses, then, would destroy the rook?

There is another fact that agricultural observers are apt to forget. When they see the rooks pulling the young turnips or the grain, if they will take the trouble to closely examine the spot, they will find that the rook has been working *for the farmer, not against him*, and that the turnips or grain so pulled up were at the moment being devoured by a worm or insect, and that the rook only pulled up and exposed to the sight seed already damaged or destroyed, and in laying bare the one destruction he stopped the further ravage, and by putting an end to the turnip or seed that had been poisonously assailed, and would have come to nothing, he found and exterminated the progenitor of legions of insects, that would have damaged the soil in future years. Let me, then, beseech the farmer to abstain from poison, and from the wanton destruction of the most useful life. *The rook is really the cheapest servant that the farmer has.*

GRANTLEY F. BERKELEY.

MANURES.

We subjoin an extended extract from a lecture recently delivered before the Ayrshire Agricultural Association by Professor Anderson, Chemist to the Highland Society of Scotland:—

Artificial manures differ from farm-yard manure in this respect—that, whereas the latter contained everything that the plant contained, the former supplied only certain parts. Artificial manures could never be put together in the place of the farm yard manure. They could never permanently cultivate the soil by their use alone, but merely employed them as valuable auxiliaries. Their use was principally to supply the soil with phosphoric acid and nitrogen; it was not necessary that they should be employed to supply lime, magnesia, &c., which could be easily supplied otherwise. They were used to supply these things which had been carried away in more than their fair proportion. The most of the artificial manures were of this kind. Some of them had only one ingredient, as, for example, nitrate of soda, which contained only nitrogen. Ordinary superphosphate and dissolved bones supplied both phosphoric acid and nitrogen. When they came to Peruvian guano they found that it supplied phosphoric acid, ammonia, potash, and certain other substances, such as magnesia, &c. The lecturer referred to the difference between the mode of applying farm-yard and artificial manures. When they applied 20, 40, or 50 tons of farm-yard manure to the soil they absolutely applied a greater quantity of valuable substance than when they applied 5 or 6 cwt. of artificial manure. The principal difference in the action of the two species of manures was that farm-yard manure might be applied in great quantities, but it was sometimes, owing to its condition, a considerable time in the ground before it came available to the plant, while artificial manures had the advantage of being instantly available. This was preeminently the case with Peruvian guano. When they passed from this to bones they found that they were not immediately available, and, in point of fact, in the last century when bones were used in enormous qualities, they did not at once produce the effects which were expected. But a great step in advance was made when these bones were dissolved by means of acid, and brought into a state in which they were immediately available to the plant. After this had been accomplished it was found that other substances could be employed in this manner as well as bones. Some years ago coprolities had been discovered, which were now of great importance as manures. They were first found in Suffolk, then in Cambridge, and later in France. Enormous quantities of these had been found and turned to account in the manufacturing of manures. They owed their introduction as manures to Mr. Lawes, a very distinguished agriculturist. The nature of these coprolites was a subject of great importance, and one about which there was a great difference of opinion. It had been maintained that they were very inferior to superphosphates derived from bones, and as the subject was one which had been somewhat warmly discussed, he had been asked to say a word or two with reference to it on the present occasion. The lecturer then proceeded to state that one of the principal recommendations of farm-yard manure was that, besides being a source of food to the plants, it also served to promote decay in the soil, which was essential to their growth. A superphosphate made from bones also promoted decomposition of the soil, and it was here that bones had the advantage over the coprolite. So far as mere supply of food to the plants was concerned, they were equal, but there was a difference with regard to their agency on the soil. He would, however, be

the last person to say that coprolities should not be employed. Nature had evidently intended them for use. What he objected to was making a manure from coprolites and calling it dissolved bones. The correct way was to tell exactly what the manure was composed of. A man could go into the market and buy bones at £6 a ton, and coprolities at £2, and it was not right to sell the cheap article for the dear one. The farmer, in his opinion, was not altogether free from blame in this matter. If he went into the market and asked for manures at a lower rate than could be made, he must make up his mind to receive coprolities. The cheap manure was made up of coprolites. This was particularly the case in London, where manures were advertised so cheaply, but the reason of this was that London manures were just coprolites. The whole thing lay in a nut-shell. If they wanted manures from bones alone, they must pay for them, and if they wished a cheap manure they must take coprolites. The question then came to be from which can you get the best result? Now, this was a question which only practical experience could solve. In some soils coprolities would produce as good an effect as bones, but this could only be solved by the actual experience of the farmer. In conclusion, he would strongly impress on them the value of experiments, especially when they had arranged to hold meetings for the discussion of agricultural subjects. These, when carefully made, were of the utmost importance to the art of agriculture—an art which had now almost become one of the learned professions.

PREPARATION OF BONES.

Your letter in relation to the preparation of bones for plants, and their value for grape, is at hand. My other duties at present forbid my doing justice to this subject; but hoping to be able to touch it again, I will, in all brevity, notice the points referred to.

First, then, as to preparing bones for plants, The process is partly *mechanical and partly chemical.* The bones must be first reduced to a greater or less degree of fineness, by mechanical means, and then be operated upon by chemical agents to render them soluble.

The work of reducing bones to anything like powder, is fraught with almost insuperable difficulties. No practicable method of doing it has yet been devised, and yet the success of the subsequent chemical process, is often dependent upon a degree of fineness being attained that has not been reached in any rawbone superphosphate that I have seen. To reduce raw bones by hand without the aid of machinery, is a most laborious and unremunerating operation.

Burned bones are very easily reduced to an impalpable powder, but after reduction, could be farther reduced by fermentation, as raw bones may, and by burning they loose about four per cent of nitrogen, which is very desirable to preserve.

Raw bones are very easily burned by piling them up with wood, and setting fire to the latter; a good wheelbarrow load of wood will burn a ton of raw bones, and leave a mixed white and coally mass, which is very easily broken up with a mallet, flail, or other implement to beat them with.

The chemical part of the process is as various as are the means that may be employed to perform the mechanical part.

Bones may be fermented in a great variety of ways. They may be kept moist and warm till they are broken up, under the decomposing action of the organic matter in them. Or they may be mixed with decomposing putrescent matter, by constant contact with which they are gradually decomposed. In this way whole bones may, in the course of a few months, be reduced, and thus the labour of breaking them up, by mechanical means, be avoided; if, however, they are first somewhat broken up it would be better, as the fermenting action is thereby rendered more intense. The bones either whole or after being broken into large pieces, may be thrown into a box, barrel, or hogshead, and let down into the ground in a moist place, where the draining of the cow-yard, the urine from a privy, the soap-suds from a wash-tub, the slops of dish-water, or any water containing organic matter, liable to become putrescent, may keep them constantly moist. They should not be allowed to become dry, nor should be constantly covered with water, nor should the water pass through them and run away by soaking into the earth. In filling the vessels with bones, dead animals, spoiled meat, hair, wool, hoofs, horns, or any other similar matter may be thrown in with them. The whole should be pounded down to a compact mass. It is by no means necessary that the vessel containing the bones be sunk in the earth; if kept on its surface, and the proper condition of moisture observed, the decomposition will go on, but when such these conditions are more easily kept up.

Another indispensable condition is a proper temperature; that of a comfortably heated room in winter, or of the ordinary temperature in summer, is what is required. The only advantage of using warm liquids to wet the bones, is the temperature thereby attained. It is best to carry out such experiments in summer time, when the solar heat is sufficient to secure the decomposition. It is further, not even necessary that the bones be put in a vessel at all; a hole or sink may be made in the ground and the bones thrown in and treated as above; such a hole should not be of the nature of a *groove*, narrow and deep, but a hole

ispherical sink, twice or thrice as wide as deep, and if convenient, it should have a clay bottom.

In all the above cases, a coating of fresh stable manure, thrown over the top of the fermenting mass, to the depth of eight or ten inches, will accelerate the process, and help to maintain the conditions required. Immediately beneath this manure a thin layer of coal dust from the bottom of an old coal pit may be thrown; this will prevent the putrescent mass from evolving offensive gases, and at the same time absorb what little ammonia may be evolved. After from four to six weeks it will be found that the hard bones will have been so far reduced that a spade can be forced down through them without difficulty. Bones, which when fresh, would have required a twenty horse-power engine to crush them, now crumble beneath the foot of a man. After about from two to three months they may be shovelled out, cut, pounded, and mixed up with a shovel, and applied to the land.

Another process is to make alternate layers of bones and fresh stable manure in a sink, and to throw over them any of the liquids mentioned above, and to cover the whole with stable manure, and let them ferment from eight to ten weeks, when the bones can be pounded and mixed up for use. Still another process is to pack away the bones, as in the first method above, in a hogshead, or box, and mix good unleached wood ashes with them, (at least a bushel of ashes to a barrel of bones) and pour water or soap-suds over them; in this case they may be covered with water at first, and after five or six weeks this water may be allowed to evaporate, and a decomposed, soapy mass will remain, which, on drying, may be pounded up. This mass is the best possible manure for grapes, as it contains phosphate of potash, both the acid and base of which are required in large quantities by this plant.

If the bones are burned, or if a phosphatic guano, or a mineral phosphate be used, since they contain no fermentable organic matter, they cannot be decomposed by the above methods, at least not by all of them, but the application of sulphuric acid to them will convert them into superphosphates, in which state their phosphoric acid is readily assimilated by plants. Some manure makers have talked nonsense about phosphoric acid rendered soluble from mineral phosphates, not being available by plants; such vagaries are altogether beneath criticism, and serve only to exhibit the ignorance of their authors.—*Gardener's monthly.—Dr. Pugh.*

THE PLOUGH AND CULTIVATOR.

The plough is, after the spade, the most ancient instrument of husbandry extant; and however rude and uncouth its original construction may have been, as exhibited on coins, medals, and other works of art handed down to us by all the nations of by-gone civilization, it was in any and in every form, a great saving of labour to the husbandman, to be able to extract from oxen that service which the spade and the arm of man had previously executed. So far as the forms of the ancient Egyptian, Grecian, and Roman ploughs are depicted on these vestiges of national art, they appear to have been calculated rather to scratch the soil to the depth of four or six inches, than to turn it over in a continuous and unbroken furrow-slice. Yet, if we may credit the historians of those countries, heavy crops of wheat were obtained from the land, especially in Egypt, where, we are told, as much as from two-hundred to five-hundred-fold the seed sown was sometimes reaped—a produce that would make even an enlightend English farmer open his eyes to the widest extent possible.

Very different in construction and operation is the modern plough of the English machinist. Science, art, judgment, and perseverance have been called into exercise to produce an implement that would fulfil the expectations and requirements of the Royal Agricultural Society, as the assumed exponent of the opinions of the agricultural body. The desiderated perfection of the operation of the plough, as insisted upon by that institution, consists in turning over the furrow-slice in the most perfect unbroken manner, without even a crack in it, and laid at an angle of 45 degrees, and at the smallest expenditure of power, as determined by the dinamometer. Such being the law laid down for the guidance of the competing machinists, they have exerted their talents and skill to the utmost, and have produced instruments that may be justly termed works of art, so scientific, artistic, and elegant are they in their construction, and so cleverly do they fulfil the requirements of the judges of the Royal Agricultural Society. We can, in fact, conceive of no operation in husbandry more beautiful than that of a clover-lay ploughed up by one of Howard's or Ransome's latest-constructed implements. By them the flag is turned over so gradually and carefully that it lies recumbent like an elongated unburnt brick, without a crack, and exhibiting nothing of its previous covering except a thin streak of verdure at the point of contact with the preceding furrow-slice.

About the latter end of the last century a Mr. William Lester, of Northampton, M. P., invented an instrument which he termed a grubber or scarifier: and so useful did it appear, that the Society of Arts awarded him one of their silver medals for the invention. In the first instance, the grubber appears to have been intended rather to scarify the sur-

face for the extirpation of weeds, than for the purpose of more serious and effectual cultivation; and this, we believe, was the chief object to which its employment was confined, until Mr. Smith, of Woolston, brought it into direct competition with the plough, by attaching it to his steam apparatus, instead of that time honoured implement. This operation being in direct contrast with that of its antagonist, he has quaintly termed it "the smashing-up system, in contradistinction to ploughing. The success the implement has met with, in the increase of produce from thus stirring the soil, instead of turning it over, has led the machinists to effect improvements in the construction of the same implements worked by animal power, so as to adapt it to the purpose of deep culture, instead of confining the performance to scarifying the surface for the destruction of weeds. It has now become an important question, whether the principal object of tillage—viz, the speediest and most effectual preparation of a seed bed—is not better accomplished by the cultivator than by the plough, especially on the refined principal laid down by the Royal Agricultural Societies on the dicta of their appointed judges; and it certainly does appear, from the testimony of innumerable persons who have used Smith's steam-cultivator, that the turning-over of the sod is not a necessary part of tillage, and that the unbroken furrow-slice is not the most effective operation for preparing a speedy a desirable seed bed.

This question is now, in the opinion of many, the most momentous one before the agricultural public; and upon it, in connection with steam-culture, subsoiling, and thorough drainage, depend the future success of the husbandman. The late Mr. Pusey was, we believe, the first who foresaw the value of Lester's invention as as a cultivating implement, and he unreservedly gave his opinion of it in public, and this expression brought it into general notice. "I may venture to say," as Mr. Pusey writes, "what may appear theoretical, that if ever steam be successfully employed by cultivation, it will probably be less by ploughing and digging, than with an implement like one of these cultivators." Thus far the prophecy is in part accomplished. Smith invented the smashing-up system; and Fowler has also found it necessary to yield to public opinion, and apply the cultivator as well as the plough to his steam apparatus, in order to meet the wishes of his friends and supporters.

It becomes an important question with the machinists, whether, in endeavouring in the race of competition to comply with the requirements of the Royal Agricultural Society, they have not so much refined upon the construction of the plough as to lose sight of the main object of tillage—the quickest and most effectual preparation of a seed-bed. It is now universally agreed by all intelligent men that the more completely the pulverization of the soil is effected, the greater are the chances of success; and certainly the upturned and unbroken furrow-slice is scarcely the fulfilment of that object. If the soil is a strong clay, be the weather either wet or dry, it will require days, and sometimes weeks, to mellow the furrow slice so as to be able to reduce it to a comminuted state, fit for a seed-bed.

It is worthy of remark, too, that whilst almost all who have used Smith's smashing-up implement agree in ascribing to it a considerable increase of produce—and the same is the case with Fowler's steam plough, which also breaks up the furrow-slice instead of turning it over in an unbroken state—on the other hand, we have never heard of an increase of produce effected by the operation of the ploughs constructed to produce the unbroken furrow-slice. The contrast in this respect is most striking, and of itself must lead the husbandman to inquire more minutely into the merits of the two systems.

The point we have raised has for some time engaged the attention of many of the most intelligent of the agricultural body and the conviction is gaining ground that the cultivator is the quickest, the readiest, and the most effectual implement, whether worked by animal or steam-power—but especially if by the latter—for converting the soil into a proper seed-bed. Both the Royal Agricultural Society and the machinists will have to meet this question; and, at any rate, the unbroken and uncracked furrow-slice must be given up and the desideratum substituted, of a perfectly comminuted and deeply cultivated soil, constituting by one operation a well-prepared seed-bed.—*Mark Lane Express.*

CAMBRIDGESHIRE AND LINCOLNSHIRE FENS.

[We take the following interesting communication from a recent number of the *Times*, (England), written by Mr. John Algernon Clarke of Long Sutton. Eds.]

Every one knows that the great level of the Fens, more than a thousand square miles in area, is a tract of alluvial deposits which has filled up to one almost uniform height a basin about six times larger than the Wash. The original coast consists of hills of chalk, green sand, gault, Kimmeridge and Oxford clay, oolite limestone, and drift beds of boulder clay and gravel, surrounding the district from Hunstanton and Lynn nearly to Cambridge, thence to Peterborough and Lincoln, and towards Wainfleet, leaving a belt of the flat along the North Lincolnshire coast up to the Humber, while numerous islands of the same upli

ground rise up through the horizontal plain, as at E y, Chatteris, Whittlesey, and March. It is generally understood, also, that while the fat grazing and corn lands bordering the shore for several miles inland are salt marshes, reclaimed by embankments from the warp-laden tides of the Wash, the black, vegetable soil of the interior and larger portion of the Level has been obtained from the drainage and tillage of deep peat mosses and shallow lakes once existing as a woodland country. But recent excavations for lowering the great network of cuts which carry off the downfall waters and convey the high land floods to sea have explored more deeply the structure of the Fen alluvials, and from a mass of sections and data collected with a view to future publication, I can state in a few words the main facts by which the Fens interlace archæology with geology. In the Saxon and Norman ages (according to the monkish chronicles) meres and pools alternated with immense bogs, and turf-moors with grazing and hay grounds, while some portions were clad with moisture-loving trees, and vert afforested by Royalty. For though the entire plain would be plunged several feet deep under water were the present valve-door sluices removed, the state of the region before the invention of sluices was not necessarily one of continual deluge: the peat being inflated with water like a sponge, its surface was elevated many feet above its modern level. Still further back we find, in the Roman era, the Great Level had already become a fen, though some localities may have borne timber for the axes of the busy legions. A Roman crossing the entire breadth of the Fen country, from Downham in Norfolk to Whittlesey and Peterborough, consists of a gravel causeway, three feet in thickness and 40 to 60 feet in breadth, with a foundation (in place) of oak timber and ragstone, resting upon the peat, which has become partially solidified by the weight. At some remote date the Great Level was a forest. Prostrate timber is found almost everywhere under the peaty soil—the roots of the trees generally standing as they grew, the trunks broken off, and in some districts lying in a certain direction, as if hurled down by some common catastrophe of storm or inundation. The remains testify that in some localities oaks and firs attained a size and altitude now, perhaps, unknown in England, while in other places only a more aquatic growth of alders, birches, willows, and sallows prevailed; the wild boar devoured roots and mast in the recesses of the thick woods; the aurochs or bison, as well as the red deer and stag, herded on the grassy glades, and the beaver colonized upon the shady margin of streams and pools. From the low level of the clayey surface upon which the woodland flourished (such that, were the clay now bared of its peaty covering, it would be drowned by salt water 10ft. to 20ft. in depth) it is clear that a subsidence of the country has occurred since the growth of the timber. This must have been long before the time of the Romans; for the marine alluvium occupying the "Marsh" districts between the true (or peaty) "Fen" and the coast, and in places 20ft. in thickness, rests upon the peat with its embedded timber and bones of animals, and Roman remains exist upon the surface of the alluvium. The peat, forming a subterranean forest" underneath the warp land of the marshes near Lynn, appears as a "submarine forest" in the Ouse estuary seaward of Lynn. Again the surface peat of East Fen (north of Boston) enters under the marsh alluvium, and crops out on the shore. The submarine forest visible at low tide, appears for many miles along the North Lincolnshire coast, and, 60 years ago, extended a mile out to the sea. Much ground has there been eaten away by the waves within the historic period, and it is evident that the ruined forest with its thick covering of tidal warp once extended far out into what is now the German Ocean That this marine alluvium, or "old marsh" land, had been deposited before the Roman age is demonstrable. Two centuries ago the outermost sea barrier was what is called the "Old Roman Bank." A document of the reign of Henry II. speaks of this immense engineering work as "the Old Sea Bank." It is certain from the low level of the land that the many towns and villages contiguous to the bank could not have existed before it had barred out the ocean: and most of them are named in Domesday Book as having existed (many with their salt pans) in the days of Edward the Confessor. Wisbeach could not have been out of the salt water had there been no embankments; yet Wisbeach and its river embouchure are distinctly spoken of in a Saxon charter of A.D. 664 Still further, some of the towns guarded by this bank have Roman names and Roman remains; the embankment communicates with several undoubted Roman sites, and while many Roman relics are discovered on the inland side, none have ever been found on the seaside of the bank. The level of the country and the position of the bank show that no subsidence has occurred since the Roman age; while the fact of the bank standing upon the thick stratum of marine warp which overlies the peat forest confirms the inference from the Roman road, that the subsidence and flooding of the woodland terrain happened long before the Romans visited the scene. But the forest had been peopled by the aborigines. Occasionally the buried timber is met with, bearing marks of human labour, and stone celts have been met with near the trees. In Downham Fen were found under the peat, and resting upon the subjacent clay, pieces of wood, piled for making a fire, with the embers still left in the centre. In Deeping Fen was exhumed a canoe 46 feet in length and nearly 6 feet in width, hollowed out of a single log; itlay below the peat and above the clay, resting upon cross timbers, which had been broken by its weight.—

The history of the Fen alluvials does not end here. The clay upon which the forest grew is a soft alluvial deposit, with a surface slightly undulating, like that of shoals in the Wash, and varying exceedingly in depth from a few inches to 20 feet, filling up a bay of irregular bottom. It is guttered in many places with silted-up channels or creeks, and it would appear that an elevation must have occurred before this wet mud could have been clothed with wood. Sinking through this "blue buttery clay" is found sometimes the Oxford clay, or other upland stratum, or beds of boulder-clay, of sand or gravel. But over large portions of the Great Level the soft clay reposes upon a second subterranean forest of oak, yew, and other timber, rooted in drift clay, as at Boston, 18 feet from the surface of the land Some of the trees are of enormous dimensions, representing growths of several centuries. There was plainly a depression of the country before this earliest forest was submerged for the disposition of the blue clay. The age of this forest is fixed after the dispersion of the boulder clay, but before the accumulation of the yellow drift gravel of Deeping, which has been found overlying the lower peat and its embedded trees. A remarkable circumstance is that this forest may be seen far out in the Wash Bay in particular states of this tide; and a stone axe has been discovered in the cleft of a blackened trunk, two miles from high-water mark, off Hunstanton. Certainly the Great Level possesses abundant written records of its physical condition in the Saxon times; it abounds with Roman and British antiquities; the relative levels of its alluvial strata and entombed forests, in juxtaposition with an ocean artifically barricaded from the flat, tell of elevations and depressions within the human period; and I believe that careful study of the various deposits (estimating the age of the warp beds by the rate of accretion of modern inclosures, and the age of the forests by the season-rings of the trees) would go far to solve the question of the antiquity of man, and to throw a bridge of years across the chasm now sundering chronology from the era of the stupendous glacial convulsions.

HAY MAKING.

There is something beautiful in the operation of making hay when the weather suits. This is so with Timothy, with all kinds of grass, but especially with clover. Cut it when in blossom, when stem and head are tender, and juicy and fragrant. The scythe—if you are so unmannerly as to cling to the old poetic usage—will "walk" through with the greatest ease, showing what a tender thing you have. It is precious, and requires careful handling. Let the sun wilt it; though it would be better if the sun did not see it at all. His rays are too fierce, and will scorch it and hurt it. Better if in the old fashioned winrow, than spread with the machine. If mowed with the machine, and there is time, put it in winrows, broad and somewhat thin, so that the air can get in. This will measurably relieve it from the sun. Then, if there is warm, dry air stirring, a few hours will sufficiently wilt the grass to fit it for the cock. It should always be cut when the dew is off. Then throw it in small cocks, say of half a hundred weight to the cock. Consult your barometer, and if you are sure of your weather, leave your cocks untouched for about three days, or nearly that. If rain threatens, clap on your hay-caps, or you are safe in doing it in the start if you like. They will interfere little with the curing process, and will shed rain. Then, if your weather is warm, with a little air in motion, let a hand precede the wagon, and turn over the cocks, loosening up the hay a little. This, with the stir the hay will get in loading and unloading will be sufficient. And now you have hay that is hay—green, with a slight touch of amber. You have every head entire, not falling into chaff. Every leaflet is there, tenacious of its stalk; the entire stem as the scythe left it, is there—pliable, not brittle and dried to a crisp, with the heads and leaves missing, or lodged on the barn floor, in the mow-seat, in your neck and bosom, and scattered on the field. But here you have heads with the hue of the blossom still there—a flower "pressed"—that is making hay. In this—"pressing your flower"—is the whole secret. *Wilt* and cure, but dry not. *Cure* is the only word. The wet weather in many parts of the country during the hay harvest has brought into requisition hay-caps. We are glad to see it. On the whole, they are a benefit. If the weather should continue wet beyond the time allotted for its cure, in with it the first moment it is dried off on the outside. Your hay is cured; but there is still some moisture left; and you have no means to give this to the air, so sprinkle a little salt on each load, amount according to moisture. Your hay, when fed, comes out about the same; is as readily taken by the stock. Even should it change a little in the mow, how much better so than a bulk of brittle sticks, with all the sugar and the starch out, and all substance. Such "hay" will starve cattle, and is a pity to look at There is no poetry in such "hay," neither in the making of it, nor the feeding. There is less labour in making it in the right way; and the wettest season will not spoil it, as in the other cases. Such hay—or grass cured—*will* fatten your stock. It will have the summer effect upon your cattle, upon the bowels. They will eat it with avidity, and brighten up over it. Roots may be dispensed with in the presence of such hay. 'Tis thus one may have summer with his cattle. Such a man is a benevolent, as well as an economical and wise man. The sight of such hay shows the prosperity of a man. There is but little in the country as yet, but it is fast increasing. It will soon be the only hay; and then a better era has dawned for the cattle, horses included—and man also.—*Valley Farmer.*

THE CROPS IN THE U. STATES.

We are indebted to the courtesy of Mr. Grinnell, chief clerk of the Agricultural department at Washington, D. C., for an abstract of the returns to the department of the amount and condition of the crops in twenty-two States reported from in May 1863, from which we give the following very condensed summary.

The number 10 represents an average of the crops, both as to heir *amount* compared with the crops of 1862, and their *appearance* in May, 1863. A number above or below 10, represents as many tenths as it is above or below it. Thus 8 is two-tenths below an average, and 14 is four-tenths above it.

The table from which this statement is extracted, is prepared by first taking an average from the returns of each county, and from these an average of each State.

	Average amount of land sown compared with 1862.	Appearance of crop at this date.
Winter Wheat,	11	9¼
Spring Wheat,	10	10
Rye,	10½	10
Corn,	11½	9½
Oats,	11¼	9½
Potatos,	11	10
Sorghum,	15½	10¼
Cotton,	37	10½

Agricultural Intelligence.

THE ACTION OF SUPERPHOSPHATE OF LIME.

[As this very valuable fertilizer is now made in Canada, and therefore available for use, we insert the following able and interesting paper from the last number of the *British Farmers' Magazine*. Mr. Cox is manufacturing the superphosphate at Montreal; and his Agents in Toronto are James Fleming & Co., Agricultural Hall. EDS.]

It is only by slow degrees that we acquire valuable information relating to the use of manures. The subject involves, in fact, all those difficulties which gather around the chemist when he is trying to unravel the mysteries of organic chemistry. The unwillingness of former generations to leave long-beaten paths, their dislike to try newly-suggested fertilizers, naturally enough long discouraged such efforts to increase our stock of knowledge. The way in which the introduction of artificial manures was opposed appears, indeed, to modern agriculturists to border on the ludicrous. The Sheffield cutlers were long obliged to pay for the removal of their waste bone-dust from around their lathes and workshops. And when the Lincolnshire farmers began cautiously to use crushed bones with their turnip-seed, they were of course, at first ridiculed; and then it was very gravely asserted by that class who seem born for opposition, that bones introduced the advent of a black grub or caterpillar; and then, changing their ground, the anti-bonemen contended that it was white clover that the bones introduced. When the next move was made, after Liebig had suggested the use of superphosphate of lime, the opposition men as usual, came out in great force; the very idea of adding sulphuric acid to the land excited their anger and their ridicule. The use of guano also was denounced very vigorously as "a mere stimulant," just as the use of sewage is now by the men who are ever constitutionally the opponents of every new fertilizer, and who complacently consider everything worthless which they do not happen to comprehend.

Then, again, it is only by very tardy advances that the most valuable improvements in the application of excellent manures are adopted. It is now more than fifteen years since the late Philip Pusey suggested the use of decomposed or fermented bones as a drill manure for roots (Jour. Roy. Ag. Soc., vol. viii., p. 417). He showed by various experiments of his own, and those of other considerable farmers, that crushed bones, when previously allowed to ferment, mixed with peat ashes, earth, or sand, were reduced to a state adapted for application by the drill. He next proved by varied trials that the effect of this dressing was as great as that of an equal money value of superphosphate of lime. This mixture was commonly composed of two measures of bones and one of sand, allowed to ferment in a considerable heap. The result of his first trial was, per acre, as follows: 17 bushels crushed bones, costing £2 6s., produced 13 tons 5 cwt.; 4½ bushels superphosphate, costing £1 2s 9d., produced 14 tons 5 cwt; 8½ bushels fermented bones and sand, costing £1 0s 9d., produced 13 tons 5 cwt. Three bushels of the mixture were valued higher than the two bushels of bones, because the heap sunk during the process of fermentation one foot in four showing from the shrinking of the bones, that there was more than two bushel of bones in three of the mixture. Two years afterwards Pusey recurred to the question (*ibid* vol. ix., p. 590). It was at the close of the year 1858 that he reported the results of his further investigations, and spoke of the precautions necessary to be taken to ensure a good result.

In that year he mixed bones with peat ashes, coal ashes, sand, mould, and sawdust. The fermentation is equal where the size of the heap is the same; but a small heap, unless carefully enclosed and covered, will not decompose so thoroughly as a large one—perhaps not even then. Whatever the substance employed, it should be in a free pulverized state—should be moistened, and the bones thoroughly drenched. Finely-ground bones decay more than coarsely

ground. Four cartloads, in one heap, heat much better, he found, than four cartloads in separate heaps. As the heat does not maintain itself well within a foot of the surface, it is useful to give the heap an external covering of the same material employed in the mixture. On the other hand, the quantity of ashes or sand employed may, perhaps, be reduced to one-half of the quantity of bones. The following is the result, per acre, of two trials made at Pusey, on the stonebrash, in 1848, with late-sown turnips: 5½ bushels superphosphate of lime, costing £1 17s., produced 16 tons 12¾ cwt.; 8 bushel of decayed bones, costing £1 2s, produced 13 tons 14 cwt.; soil simple, less than 1 ton. These bones were from a small heap, and not well decomposed. On two other lots, where the bones employed had lain in a large heap, and been better fermented, the yield was just even, viz.: 5½ bushels superphosphate, costing £1 17s., produced 15 tons 13 cwt. 67lbs.; 8 bushels decayed bones, costing £1 2s., produced 15 tons 12 cwt. The superphosphate always pushes on the turnips faster at first, and therefore is best for late sown turnips. For those that are sown early, though this mode of decomposition will not supersede the use of acid, I cannot but hope it will afford the farmer in many circumstances a useful choice.

Since the early efforts of Pussey, this mode of employing bones has been slowly extending, the preparation of the dressing varied and accelerated by mixing the bones with a considerable amount of farmyard manure by some of the great Norfolk light land cultivators; and I am strongly inclined to believe that they will hereafter make further improvements in preparing in a similar way a friable manure applicable by the drill. In a recent valuable paper by Professor Voelcker, to which I shall presently have occasion to refer, he observes: "Perhaps the best manure for growing roots on light land is a mixture of bonedust and rotten dung. On several farms in Norfolk this mixture is now used, in preference to all other manures, with most signal benefit. The best way to make this mixture is to cart into a corner of the field the yard manure about three months before turnip sowing begins. At the same time the bonedust, calculating 6 to 8 bushels per acre, is carted next to the place where the manure is to be put up in a heap. In making the heap, first a thick layer of dung is placed upon the ground; a thin sprinkling of bonedust is put upon it, then a layer of dung; again a sprinkling of bonedust; and so on, until all the bonedust and dung are placed in alternate layers in a heap. About a month before sowing the turnips the heap should be turned over. Proceeding in this way, we shall find that the fermented dung disintegrates and partially dissolves the bonedust to such an extent that by the time the manure is ready to be distributed over the turnip-field nearly the whole of the bonedust will have become decomposed and uniformly amalgamated with the dung. This excellent plan appears to me by far the most economical mode of dissolving and applying bonedust on light land, which, as has been stated, should, if possible, be manured with at least half a dressing of ordinary yard manure, in order that the deficiency of potash and organic matter in the soil may be be supplied."

It is at the end of this month that the use of phosphatic dressings will be the most general throughout our island. At such a time the results of the labours of Professor Voelcker, but recently published, will be of no mean value to the agriculturist (Jour. Roy. Ag. Soc., vol., xxiv., p. 37). It is indeed of the highest value to the cultivator to understand the chemistry of his noble profession, and he will ever be thankful for any such additions to our limited stock of knowledge. The Professor proceeded with his usual caution, step by step. The primary effort was to show by the analysis of the plant that phosphate of lime is an essential ingredient in its composition; next, that the Creator of its marvellous seed has bestowed an adequate supply in that seed for the earliest requirements of the plant; then, that the soil of our cultivated lands does not usually contain an amount of phosphate of lime sufficient to promote the most luxuriant growth of the plant; and lastly that there is much to be yet generally accomplished in the mode of applying superphosphate of lime to our root crops.

Now, to begin with the seed. The Professor notices the care which was taken by its Divine Architect to provide plants at the earliest periods of their existence with a constituent which possesses so remarkable an effect in pushing on the young plant, but is seldom present in soils in larger proportions than a mere fraction of a per cent. (commonly not more than from one to two tenths of a per cent.). "On examining the ashes of the seeds of all plants, it will be found that all contain much phosphoric acid, either in combination with alkalies, or with lime or magnesia. During the germination of the seeds the phosphates contained in them appear to be rendered soluble. The most important mineral food constituent is thus provided by the seed itself, and placed within easy reach of the infant plant just at a time when an amount of phosphoric acid in all soils would be inadequate to induce a vigorous development of the whole vegetable organism.

"In England the application of purely phosphatic manures is confined almost exclusively to root crops: why is it that these manures, as a rule, benefit root crops more than cereals and other crops? The idea naturally suggests itself that turnips or swedes require more phosphoric acid to bring them to perfection than wheat, barley, and oats; and an examination of the ashes of these several crops confirms this impression. A given quantity of ash of turnips, it is true, contains less phosphoric acid than the same quantity of wheat ash; but since the tota

amount of mineral matters or ash in a crop of turnips is very much larger than that in a crop of wheat, the amount of phosphoric acid which is removed from the soil by the one is very much more considerable than that taken up by the other.

"Taking the average composition of the ash of turnips, bulbs and tops, deduced from the recorded results of numerous experimenters, we have in 100 parts

	Bulbs.	Tops.
Potash	42·0	20·0
Soda	2·0	3·0
Magnesia	2·0	1·0
Lime	11·5	30·0
Phosphoric acid	9·0	5·0
Sulphuric acid	11·5	11·0
Silica	1·0	1·0
Chloride of sodium	6·0	8·0
Chloride of pottassium	—	5·0
Carbonic acid	15·0	16·0
	100·0	100.0

"The average composition of the ash of the grain and straw of wheat is as follows:

	Wheat.	Straw.
Phosphoric acid	50·0	5·0
Sulphuric acid	·5	2·7
Silica	2·5	67·0
Lime	3·5	5·5
Magnesia	11·5	2·0
Potash	30.0	13·0
Soda, Chlorides of potassium and soda	2·0	4·8
	100 0	100·0

"If we suppose the crop of bulbs of the turnips to weigh 20 tons per acre and the tops 6 tons, and take the average percentage of ash in the bulbs at ·70, and that in the tops at 1·7, we remove from each acre, in round numbers—

	lbs.	
the bulbs	314	mineral matter.
the tops	228	"
	542	

An average crop of turnips in fact removes from the soil 28¼lbs. of phosphoric acid in the bulbs and 11½lbs. in the tops—39¾lbs., or, in round numbers, 40lbs. in all.

"The grain of wheat, on an average, contains 2 per cent. of ash, and wheat straw 5 per cent. The mean produce of wheat per acre, taken at 4 quarters—32 bushels at 60lbs. the bushel, is 1920lbs. of wheat; and as straw, being generally twice the weight of grain, would weigh 3840lbs.,

lbs.	lbs.	
1,920 of wheat there are	32½	mineral matter.
3,840 of straw there are	192	"
Total mineral matter per acre	223½	

A fair average crop of wheat indeed removes from the soil 16¼lbs. of phosphoric acid in the the grain, and 9½lbs. in the straw—together 25¾lbs., or, in round numbers, 26lbs. Therefore a turnip crop weighing 20 tons per acre takes 14lbs. more phosphoric acid out of the soil than 32 bushels of wheat and the straw belonging to it."

Next let us travel with the Professor, while he farther inquires on the important question, for although the amount of phosphate of lime in the turnip crop is considerably more than in that of wheat, yet there are other reasons why the application of soluble phosphate of lime is so much more beneficial to the root than to the cereal. Here, again, to use the words of the Professor: "If we suppose the turnips to have been grown with 3cwt of superphosphate, containing 20 per cent. of soluble, and an inappreciable amount of available insoluble phosphate; the manure will supply 31lbs. of phosphoric acid and the remaining 9lbs. must be derived from the soil. Yet although the larger amount of phosphoric acid contained in a crop of turnips accounts to some extent for this crop being more benefited by phosphatic manures than wheat, I believe the principal cause of the more energetic and striking effect which such manures produce on root crops than on cereals, will be found in the different mode in which green and white crops take up food from the soil, and the different duration of their period of growth. The roots of wheat, as is well known, penetrate the soil to a much greater depth than the more delicate feeding fibres of the roots of a turnip. Wheat, remaining on the ground two or three months longer than turnips, can avail itself of a longer period of the resources of the soil; therefore in most cases the phosphoric acid disseminated through the soil is amply sufficient to meet the requirements of the wheat crop; whilst turnips, depending on a thinner depth of soil during their shorter period of growth, cannot assimilate sufficient phosphoric acid to come to perfection. This is, I believe the main reason why the direct supply of readily-available phosphate is so beneficial to root crops, and not to wheat.

"This view of the matter, if I am not mistaken, gains strength by the fact that barley, a crop which in many parts of England is often sown late in the season, and generally later than any other white crop, is much more improved by the superphosphate of lime than oats or wheat. On late sown barley this fertilizer has a strikingly beneficial effect. When the land has not been well done before, or is naturally poor, and the barley backward, a top dressing of 3cwts. of superphosphate will be found most useful. In that case a still better manure will be a mixture of superphosphate and guano in equal proportion, applied at the rate of 3 to 4 cwts. as a top-dressing. A crop of barley does not contain more phosphoric acid than a wheat crop; and yet I have repeatedly noticed the

effects produced on it by the application to the preceding crop of 3 to 4 cwts. of superphosphate made entirely from mineral phosphates, and containing no ammonia whatever. Although the superphosphate was applied to the preceding root-crop, and no other manure with it, and the turnips were carried off by the land, it nevertheless produced on the succeeding barley an effect as plainly visible as is the case when barley is top-dressed with nitrate of soda, or sulphate of ammonia."

I have on several previous occasions advocated the employment of the water drill for roots, and it is highly satisfactory to find its employment steadily increasing. It certainly economizes the use of superphosphate: it accelerates its action upon the young plant. Again let us hear the Professor on this branch of our important inquiry (and the reader will do well to read over and over the paper from which I have here taken so much). It is when applying himself to the scientific explanation of the action of superphosphate as a manure that he remarks that "the whole secret of the energetic action of superphosphate thus depends upon the production of most minutely subdivided or precipitated insoluble phosphates within the soil itself, not, as is erroneously supposed, on the direct absorption of soluble phosphates by plants; and it is not desirable to effect the precipitation before the manure is put on the land, for by so doing we should lose all the advantages resulting from equal distribution of the phosphates and their incorporation with the soil.

"The more rapidly the soluble phosphates in superphosphates are precipitated or rendered insoluble in the soil, and the more uniformly these highly-divided insoluble phosphates are distributed in that portion of the surface soil which is just under the young turnip plant, the more energetic their effects. Superphosphate acts a great deal more energetically when applied with the liquid than with the dry drill; to practical men, 2 cwts. of superphosphate applied with water, frequently produce as good an effect as 3 or 4 cwts. in a dry state.

"A little consideration will explain this difference. In the first place, superphosphate, in the shape of powder, cannot be so uniformly distributed on the land as it can in a liquid condition. In the next place, the acid or soluble phosphate may, and often does, remain unchanged in the soil for a long time, when superphosphate is applied in a dry state, and no rain falls for some time, or the manure is badly prepared. In dry weather the soluble phosphate remains as such where it has been deposited; when rain falls, as is frequently the case, in insufficient quantity to dissolve the soluble phosphate and to produce at once a dilute solution, a proper distribution in the soil is not effected. In other words there will be too much phosphate in one place, and none in another; and, besides this, more or less acid phosphate will be left that cannot exert any beneficial effect on the young turnips. I have frequently picked up on fields bits of superphosphate, a month or six weeks after its application, and found in them still a considerable portion of acid or soluble phosphate of lime, notwithstanding that some rain had fallen during that time. There cannot, therefore, be much doubt that in superphosphate applied in a dry state, frequently a large proportion of the phosphates remain inactive in the soil, just at the period when phosphates are most needed by the young plants."

It will be well if the young farmer studies again and again facts like these. The different results produced by the use of fresh and fermented bones, is by no means an exhausted question, and the comparative value of dissolved bones, and the dissolved coprolite, or the mineral phosphate of lime, has been as little investigated, from the preference shown by the farmers of many districts to the dissolved bone (a fact which I learn from the London Manure Company). I am inclined to think that we might with advantage examine the question far more closely than has hitherto been done. And I am not disposed to regard the present chemical explanation of the action of superphosphate of lime, as one that appears satisfactory. We see then, that there are still to be examined very important practical questions—inquiries that will long employ the chemical philosopher in his laboratory, and the enlightened agriculturist in far more difficult explorations on our hill-sides amid many and ever varying disturbing influences.

BY-LAWS OF THE AGRICULTURAL ASSOCIATION.

In accordance with a resolution of the Agricultural Association, passed at the Annual Meeting at Toronto, in September last, we publish for the consideration of the Directors of the County Agricultural Societies, the following draft of a code of Rules and Regulations for the government of the Association, submitted to the Board of Agriculture for the consideration of the Delegates at the last Annual Meeting and by them referred to the Annual Meeting of 1863:

Rules and Regulations

Of the Agricultural Association of Upper Canada, under authority of the Statute Vic., cap. 32, sec. 33.

Whereas by the Act of the Legislature of Canada, 20 Vic, cap 32, sec. 33, it is enacted that "The Directors of the Agricultural Association shall hold a meeting during the week of the Exhibition, and may make Rules and Regulations for the management of said Exhibition;" and whereas, by section 34 of the said Act, a Corporation is established, entitled, "The Council of the Association," with full power

act for and on behalf of the Association, between the Annual Meetings thereof; and as it is expedient that Rules and Regulations for the management of the affairs of the Association be adopted; Be it therefore enacted:

1. The Council of the Association, of whom for this purpose three shall form a quorum, shall, during the Exhibition, hold daily meetings, and in the absence of the President and Vice-Presidents, a Chairman *pro tem.* may be appointed, and all questions of importance requiring immediate adjudication shall be decided by said Council, and such decision shall be final

2. The Council of the Association shall attend at an early period in each summer, and at successive times, as may be necessary, with the Secretaries and Treasurer of the Association, at the place appointed for the next Exhibition, and may appoint a Local Committee (if such appointment has not been previously made), and shall make all such preliminary arrangements as may be deemed requisite for the ensuing Exhibition; determining when necessary the plans, dimensions, and capacity of the buildings, offices and fixtures, suitable for the proper accommodation of the Exhibition, and every thing relating thereto. And in case of anything occurring to prevent the Exhibition being held at the place appointed by the Annual Meeting, such as the failure of the local authorities to provide the necessary buildings, or such like cause, then the Council shall have full power to determine where the Exhibition shall be held for that year, and shall give the earliest possible notice of such change.

3. All contracts, and all lawful proceedings, by, with or concerning the Association, shall be made and had with the Council of the same, and no other contracts, agreements, actions or proceedings shall bind or affect the Association.

4. The Secretaries of the Association shall keep proper records of all transactions and proceedings at the Annual Meeting and Exhibition, and also of the Council of the Association from time to time; and shall, under the direction of the Council, prepare and publish in due time, a Premium List for the Annual Exhibition, with such regulations and information for the guidance of the public as may from time to time be adopted. All entries in the Departments of Agriculture and Horticulture shall be made with the Secretary of the Board of Agriculture; and all entries in the Department of Arts and Manufactures shall be made with the Secretary of the Board of Arts and Manufactures; and they shall prepare suitable books, and insert therein all articles entered for exhibition in their respective Departments, and under their appropriate classes; and shall make whatever other arrangements may be necessary to secure the fair and impartial exhibition of every article; and, if deemed expedient by the Council, shall prepare and publish, previous to the Exhibition, a Catalogue of all articles entered.

5. The Council shall use great care and adopt such measures as may seem best calculated to obtain the services of competent and disinterested Judges; and to secure these essential ends shall have full power at any period of the Exhibition to change or annul any appointment made.

6 The Judges shall, in the execution of their duties, be careful to act with the most rigid impartiality; shall make their entries in a clear and conspicuous manner, in all cases of doubt or difficulty referring freely to the Secretary, to any member of the Council, or to the Superintendent; and when they have completed their reports, shall sign and deliver their Books to the Secretary of the Department to which they belong, who shall cause the awards made by the Judges, to be transferred to Ledgers prepared for the purpose; giving parties entitled to the premiums orders upon the Treasurer for the payment thereof.

7 At the Annual Meeting, which shall be held at 10 A.M., on Friday of the week of Exhibition, the Directors shall decide the place of holding the next Exhibition; such decision, however, shall be in accordance with the provision of the Rule adopted at the Annual Meeting of the year, 1858

8. The Treasurer shall take charge of and duly account for all moneys advanced by the Government for the benefit of Agriculture, all subscriptions and donations made to the Association by Counties, Townships, Cities, Towns, or Societies; all funds arising from the sale of Members' Badges or Tickets, and for entrance at the gates, and otherwise, entering the same under their respective heads in his general account; shall pay all accounts and expenses under instructions of the Council. The payment of premiums, and of all authorized contingent expenses of the Exhibition, shall be made so far as practicable on the spot where the same is held.

9. The Treasurer and Secretaries, under approval of the Council, shall employ a proper number of experienced assistants in their several offices, so as to secure the most prompt and perfect despatch of business; and, with due regard to economy, there shall be employed such a number of constables and ticket receivers as shall be necessary for the best accommodation of the public, and for keeping order and protecting the articles in every department of the Exhibition.

10. The Treasurer shall make up and close the accounts of the Association, upon the 31st December of each year, attaching thereto a list of all claims unpaid; and the Council shall direct the same to be audited and published. All balances of cash and all other moneys received on behalf of the Association, shall be placed to the credit of the same in such Bank as the Council may from time to time direct.

11. All stores and properties, of whatever kind, belonging to the Association and used for exhibition purposes, shall be in charge of the Treasurer; and he shall have the same properly protected and cared for from year to year, and shall have such as may be required conveyed to the place where the Exhibition shall be held.

12. The Local Committee may appoint a Chairman, and such Sub-Committees as may be

deemed necessary, and shall assist the Council of the Association in everything concerning which their assistance may be necessary in relation to the Annual Exhibition

13. The Council of the Association may appoint General Superintendents of the several Departments, and also, so far as necessary, competent persons may be placed in charge of each class, who shall see that every possible facility is afforded to the Judges in the examination of the same.

14 A sufficient number of Refreshment Booths may be leased under direction of the Council, within the Exhibition grounds, and shall be so constructed as to afford suitable accommodation to the public, and so as to secure the due maintenance of sobriety and good order; and any infringement of this regulation shall subject the offender to a forfeiture of his lease and the consideration paid therefor, and the Booth may be immediately closed by order of the President of the Association.

15. The Members of the Agricultural and Horticultural Societies of the cities, towns and townships, and the Members of the Electoral Division Societies within the Electoral Division in which the Exhibition may be held, or immediately contiguous thereto, shall be Members of the Association and shall have free entrance to the Exhibition for that year; provided that the said Societies shall devote their whole funds for the year, including the government grant, in aid of the Association; provided also that the sum paid shall not be less than one dollar for each Member of the said Societies.

16. Upon the discovery of any fraud, deception, or dishonest practice, either in the preparation, ownership, or of any representation concerning any article exhibited, which may have affected, or have been intended to affect, the decision of the Judges, the Council shall have power to withhold the payment of any prize awarded, and may prohibit any such party or parties from exhibiting in any class for one or more years, and may also publish the names of such, or not, as may be deemed most expedient.

17. No Member of the Council or of the Local Committee shall be concerned in any contract or work of profit, directly or indirectly, ordered to be performed for the use of the Association, either as principal or surety.

18. These Rules may be altered or amended at any annual meeting of the Association; notice of the intended alteration or amendment being published in the *Agriculturist*, and in the *Journal of the Board of Arts and Manufactures*, for three months prior to the day of the Annual Meeting, when the same shall be decided by a vote of two-thirds of the Directors present.

WOOL GROWING.

The care of sheep, and the condition and quality of the food upon which they subsist, whether in barn or pasture, has a great influence upon the quality of the wool, and its value for manufacturing purposes. Sudden and unfavorable changes in the pasture and food, whether the effect is to fatten the sheep or make them poorer, will affect the quality of the wool for good or evil. There are two immediate changes in the fibre at such times. One is making a joint where the new growth commences, which often separate in carding on account of its brittleness, thereby shortening the wool, which is often very injurious to the kind of goods in which the wool is being worked; and the other is in the change of the oily or fluid substances, within and without the tube of the fibre, and which, to a certain extent, govern the softness of the fibre and its adaptability to receive color.

Wool taken from a sheep which has died from exposure to cold and change, or which has been for a long time diseased, is always found very hard to take a good color. This is in consequence of the coagulated character of the oily substances of the tube of the wool, which become very hard to remove under such circumstances, and will resist the dye.

Where changes take place in the pasture, which are very striking, the joints before mentioned are not often produced as often as such changes are made, but the substances pervading the interior of the tube will be found to be different between each joint thus made, and will require different solving powers before they will take the color uniformly through the whole length of the fibre. This effect has been demonstrated the past year very fully in indigo colors, and has worked great damage; at first attributed to the indigo, but subsequently found to be in the wool.

The theory of the influence of climate upon sheep, as well as pasturage and feed upon their wool, is by no means new; though some of your correspondents seem to ridicule the idea. Such persons must be sadly ignorant of the *sheep literature* of the past, as well as of practical manufacturing of the present day, or they would not treat an idea of such importance lightly. The first requisite of wool is fineness, which is produced under and governed by all the laws of stock raising, such as good blood or breed, to start with, and feed, pasturage, climate and careful keeping.

The second is softness, which is almost entirely governed by the character of feed, pasturage, and care, which will fix the character of the "yolk" or oily matter which surrounds and penetrates the tube of the fibre. This substance coagulates and crystalizes around and within the fibre in clearing, and renders it harsh and brittle, or soft and silky, according to the influences which have governed its growth.

The third is the length of the fibre, which is not of so much consequence when its real length can be estimated by the manufacturer. But for ages it has been well known that the change of climate and condition of the sheep

has effected and almost governed the length of wool.

Wool comes to us in various states, each country gives it a certain character for our market, all affected by locality as well as by the different breeds of sheep from which the wool is taken. Australian wool is divided into several varieties. German wool is the finest usually used for broadcloths, in connection with the Australian and Cape wool. The great magnitude of the worsted trade is of comparative late interest, though very ancient in its introduction, and uses long wool. Spain, Portugal, Denmark, Sweden, Prussia, and in fact all Europe, have changed the whole character of their wool, by changes of breed, climate and keeping, and it only remains for America to do what she can do, to produce as good wool and as much of it as any country on the face of the globe. What, in fact, may not Massachussetts do? She can raise the wool for her whole manufactures. She can raise flax as a partial substitute for cotton; and when she does this, she will find her home product more valuable to her from the fact that the capital thus saved will fill up a gap now open, and growing wider and deeper, dangerously so, by importations from other States of products she might do without, and which carry off her silver and gold, as well as much of her best energies, without a proper return.—*N. E. Farmer.*

WOOL GROWERS' CONVENTION.

A convention of wool growers was held at Cleveland, Ohio, the other day, and was very largely attended. The principal topic discussed was whether shearing should be done before or after washing. After a careful consideration of the question, it was resolved that the practice of washing sheep be abolished, because:

1st. It permits of early shearing, which secures a greater quantity ot wool, a longer staple, and a better condition of sheep and ewes, through the year.

2d. Of the exposure to contagious diseases, such as scab, foot-root, &c., in places frequented by different flocks to be washed.

3d. It is an expensive, unpleasant job, and unhealthy both for man and sheep.

4th. That the manufacturer must cleanse the wool at all events, and he can do it cheaper than the grower.

5th. That it is to the interest of the wool growers to put their unwashed wool in as good condition as possible, by keeping their yards well littered, and by throwing away all filth that can be separated from the wool.

6th. Some lots of wool are more gross and gummy than others, therefore no rate of deduction could be agreed upon, suitable to all grades and classes, but that each lot should be bought upon its own merits for quality and condition.

7th. As generally practiced, washing is little or no improvement to the fleece.—[*Ex.*

A NEW FLAX DRESSING MACHINE.

Is there is any man who believes that the days of invention are past, he could have this belief shaken in no better and more effective way than by thoroughly examining the new flax dressing machine, which has been patented by Messrs. Mallory & Sandford, and which may be seen at their office, corner of White and Centre streets. This flax breaking and dressing machine is, as an improvement, of inestimable value to flax growing farmers. It consists of two fluted rollers through which the straw passes, being completely broken in its passage, and entirely divested of all refuse. This is done in such a manner that the use of the scutching mill to free the lint of woody particles, is rendered almost unnecessary.

This machine, which may be classed among the scientific curiosities of the day, occupies scarcely as much room as the bellows in a blacksmith's shop. It is made of four different sizes, the first weighing twenty-five pounds, and capable of dressing three hundred pounds of straw in ten hours; the second measures two feet by two feet, capable of dressing six hundred pounds per day; the third is three feet by three feet, and can dress one thousand five hundred pounds per day, requiring less than one horse power; and the fourth is four feet by four feet, which will dress two thousand five hundred pounds per day requiring less than two horse power.

This machine makes one ton of fibre out of every four tons of straw, and so separates and mauls the flax that it is not required to run the straw through the rollers more than once.

Unrotted flax passed through this machine is excellent stock for the manufacture of paper. At Dayton, Ohio, four dressers are at work making stock for the paper manufacturer, at a mere cost of $10 per ton of lint.

It is estimated that this machine can prepare the flax for the paper manufacturer at a cost of two and a half cents per pound; a price less than that paid for rags before the rebellion began.

The portability and the great expedition of this new dresser in preparing flax for the manufacturer are entitled to the highest consideration by all who are interested in the cultivation of flax.—*N. Y. Com. Advertiser.*

NANKIN SHEEP.

I have recently noticed a request in your paper by J. B. S. of Montpelier, Vt., for information respecting "Chinese Sheep," their weight, quality of mutton, hardiness as compared with other breeds, their wool, the number of lambs at birth, &c. As I first introduced the Nankin sheep into this country

perhaps a few remarks about them may be interesting to sheep and wool-growers.

I shall go back to the commencement, when I only had three sheep of this breed, and none other of any kind. They had then just arrived from Nankin, China. These three were all ewes from which I had in twenty months, a clear increase of more than 70, and raised them. I am aware that this statement will not be generally credited, and I will endeavor to make it plainer by further explanation.

These three ewes were all large with lamb when I took them from the ship, and in a month or less each one had three lambs, making twelve old and young. Then, as I had no buck at first, I was compelled to wait four and a half months for a young buck; and in nine months both old and young were coming in —the old ewes the second time—the young ewes with three lambs each, and of the old sheep, one had three lambs, one four, and the other had five lambs—the latter sheep raising the whole five, and grew to be large sheep, breeding twice a year. At this rate, it will not be difficult to understand how I raised 70 sheep in twenty months. If we had taken the proper care of them, 80 or 90 might have been raised in that time, as quite a number died from the want of care, having no suitable stables, nor were they separated as they ought to have been.

I then sold the whole flock to R. L. Pell, Esq., of Esopus, Ulster county, N. Y., except one ewe, and from it I have since raised a large flock.

The live weight of bucks is from 175 to 200 lbs, and the ewes proportionately heavy.—The quality of the mutton is the finest I ever saw, being entirely free from the strong taste common with other breeds of sheep. The wool is coarse and long. They are easy keepers, and do not jump fences—a low stone wall is sufficient to turn them. They are quite hardy, and stand our northern winters equal to any sheep I ever saw. Their great recommendation lies in the quality and quantity of mutton that can be produced in a short time. I have also made some valuable experiments by crossing Nankin with other breeds, which I will give you if desired.—*Theodore Smith in Country Gentleman.*

EXHIBITIONS TO TAKE PLACE THIS AUTUMN.

PROVINCIAL AND STATE:

Upper Canada, at Kingston, September 21 to 25.

Lower Canada, at Montreal, September 15 to 18.

New York, at Utica, September 15 to 18.

Ohio, at September 15 to 18.

COUNTY AND TOWNSHIP:

Lanark County, at Almonte, September 15.

Wentworth and Hamilton, at Hamilton October 14 and 15.

Toronto and West Riding York, at Toronto, October 6, 7 and 8.

Durham West, at Newcastle, October 8 and 9.

[Officers of Agricultural Societies will oblige by informing us of the days in which their shows are to take place.

The Dairy.

HOW TO MAKE CHEESE.

BY ANSON BARTLETT, GEAUGA CO., OHIO.

The interests of the dairy are those of a large majority of the farmers in Northeastern Ohio, and still our agricultural periodicals are *comparatively silent on the subject of dairying.* Now, I am aware that no party is so much to be blamed for this silence as the dairy farmers themselves; for who are so well qualified to speak, write, and give information as those who are practically engaged in the business? As no article can be published in an agricultural journal without first having been written by some person, and as the editors of such papers are not generally acquainted with the practical details of the dairy, I see no other way by which we can secure the publication of articles interesting to dairy farmers, unless dairy farmers themselves will write such articles, and send them for publication.

Cheese-making, like every other branch of manufacture, requires skill; and I claim that no persons can succeed in making a superior article of cheese, unless they devote their whole time and attention to the business—it being one of the nicest chemical, as well as a very nice mechanical process, it follows, as a matter of course, that any mistake, or anything wrong, however small it may be, *in itself, is sufficient* to injure the product, and lessen its value.

The almost universal practice of dairymen is, to allow as little time as possible for making their cheese, hurrying through with it so as to be about something else; and the only question they stop to ask is: "Will it sell?" With this answered in the affirmative, they are content, caring little whether it is good, bad or indifferent. When I think how many there are in Northeastern Ohio, who will persist, year after year, in taking good wholesome milk, (for mind you, the cows don't give sour or stinking milk,) and work it up, or allowing it to work itself up, into such hard, dry, sour and stinking stuff, as they do, I feel vexed. And then to have them pretend that such garbage is fit for human beings, when a great deal of it is already half decomposed and rotten, or is so dry and hard as to be almost indigestible, is absurd.

Although I have long held the foregoing opinion of the importance of skill, care, and

the necessity of taking time in the manufacture of cheese, I was never so forcibly impressed with them, as during a visit which I made among the fine dairies of New York, located in Oneida and Herkimer counties.

The first of these dairies which I visited was that belonging to Mr. JOHN O. FRAZEE, two miles north of the village of Rome, Oneida county, where the milk from 400 cows was made into cheese; and where I saw that every cheese in his cheese-house was as *perfect* in *form* as when taken from the press, and still soft as butter, and every one who is posted must see at once that such cheese must be *firm*, *mild* and *rich*—the three essential points of a superior cheese.

I next visited the dairy of Mr. JESSE WILLIAMS, four miles from Rome, where the milk from four hundred and fifty cows was manufactured into cheese. Here the same perfection of form appeared as at Mr. FRAZEE'S; and after a critical examination of six or seven hundred cheeses, weighing one hundred and fifty pounds each, I failed to detect any, *even the least*, change of form in any of them, from what they possessed when taken from the press, and still they were *perfectly soft and buttery.*

I have at one time and another, visited over one hundred of the best dairies in Northeastern Ohio, as well as a large number in Eastern and Western New York and Western Vermont, but I never at any time, or in any place before, have seen a dairy of cheese so near what I considered perfect, as those of Mr. WILLIAMS and FRAZEE; but when I show how perfectly every step of the process of manufacture is reduced to a system, all wonder at the uniformity of the product will cease.

The cows are owned by different individuals, living at various distances from the dairy house; some of them are even four or five miles away; the owners draw the milk as soon as it is taken from the cows, directly to the dairy, where it is accurately measured, and an exact account kept, and the dairymen take it when it is thus delivered to them, manufacture it into cheese, keep it, and take care of it until sold. They then sell it, and after deducting the cost of salt, capping, rennet and anatto used in the manufacture, pay over to each farmer who furnishes milk, his pro rata share of the proceeds, except one per cent. per pound on the sale weight of the cheese, which, and the whey is the pay of the dairyman for all his labor, care, use of buildings, fixtures, &c.

EVENING WORK.—As soon as the milk is delivered and put into the vats at night, they add one gallon of cold water for every ten of milk, which they will have in the vat when it is all in, and immediately set cold spring water to running around the milk vat, and reduce the temperature as quickly as possible to sixty degrees, when it is left for the night with the water still running around the vat, in order to still further reduce the temperature, and keep it cool through the night, and prevent souring.

MORNING WORK.—In the morning the milk is put in with the last night's milk, as soon as delivered, and when all is in, the heat is raised to eighty-two degrees in warm weather, and eighty four in cool, and sufficient rennet added to produce perfect congulatation in one hour and fifteen minutes.

THE CREAM.—Before heating to put in the rennet, the cream which has risen on the last night's milk is dipped off and poured back through a cloth strainer, until it has become thoroughly incorporated with the mass of the milk; and after the rennet is added, the milk is kept frequently stirred, dipping off the top and pouring through the strainer until the milk begins to thicken. This is to keep the cream from rising. When allowed to remain quiet, even for a few moments, the cream separates, and rises to the top; and if the curd begins to form with the cream floating on top, it will work off in the whey; but if kept thoroughly mixed and incorporated with the milk until the milk thickens and the curd begins to form, it is not very difficult to keep it in the cheese, and not lose it in the whey. One great object in adding the water to the milk, is to reduce the milk so as to have the cream work in the more readily.

THE CURD.—When the curd is sufficiently formed to go to work at—which may be known by its breaking with a clean, smooth fracture, in passing the fingers through it—break it up carefully with some instrument, so as to leave it in lumps about two inches square; but this instrument should have no sharp edges so as to cut, for—take very particular notice—*no cutting edge*, of any kind, must be allowed in the curd at any time during the process of manufacture. This is essential and important. The curd must be divided entirely by *breaking*, and not by cutting. As good a way as any is to use the hands for breaking the curd from the first. After breaking, as above described, so that the lumps will be about the size of an egg, let it stand about ten minutes, or until the curd begins to settle, and then begin to work and break the curd with the hands. Let the motion be very slow and careful, so as not to work the cream off, or whiten the whey; meantime, raise the heat to eighty-eight degrees; when the temperature arrives at eighty-eight, cut off the heat, let the curd settle, and draw off the whey until there is barely enough left to cover the curd.

PRESSING OUT THE WHEY.—Now comes the most difficult part of the process, that is, to break the curd thoroughly and finely, and at the same time preserve the green appearance of the whey. This is done by taking the curd between the hands in small quantities at a time, and bringing the hands flat and close together with a pretty strong pressure. Care must be taken, however, not to rub or mash

the curd so as to start the white whey. In fact I hardly think any written description of this part of the process will be intelligible, practical instruction being almost indispensable, but the result aimed at is to expel the whey from every particle of the curd, by thus pressing it between the hands, as well as to break up the curd.

Cooking the Curd.—When you have completely broken up the curd, put on the heat; keep it stirred and broken until the temperature arrives at ninety-four, and then cut off the heat; keep the curd stirred with a lively motion fifteen minutes, and then draw off the whey again, leaving enough to cover and float the curd. Now go over the curd again, and break it up as before, getting fine and even as possible, and then put on the heat again and heat to one hundred degrees. This is the greatest heat. Meantime stir the curd with a brisk, lively motion, cut off the heat and keep stirring twenty minutes, and then cover the vat up with a blanket, and let it stand until the curd is thoroughly cooked, which will be about an hour or little longer. When the curd is completely cooked, which may be known by taking a small lump and pressing it firmly between the thumb and finger—if well cooked, on removing the pressure, the curd will spring out into its former position; or select the softest lump you can readily find, break it open, and if it appears dry inside, and free from whey, it may be considered done.

After Cooking.—Now let off the hot water from the vat, and replace it with cold water; cool the curd and whey to eighty-eight degrees, and then dip the whole out into a draining sink, or a cloth strainer, keep it stirred so that it shall not pack together until thoroughly drained; and then add the salt and work it thoroughly.

Salting and Pressing.—Mr. Williams' rule for salting is two pounds and seven-tenths of a pound of salt to a cheese from one hundred gallons of milk—beer measure—and Mr. Frazee's rule is two and five-eighths pounds of salt to one hundred pounds of pressed cheese. —Either rule will do well enough I think, although I prefer Mr Williams' rule. When the curd is salted, it is ready to be put into the press, and its subsequent treatment is much the same as is ordinarily pursued.

Rennet.—Nothing but the skins of the rennets are used; the curd, if there should be any, being thrown away. The way to preserve them is to use salt enough to do it, and then add a little more salt; stretch on a bow end, hang, up in a close, dry place. In preparing the rennet take a gallon of water at the temperature of ninety degrees, for each rennet used, put the skins into the water, and add more salt than will dissolve; let them soak two or three days, rubbing them occasionally; and then take out the skins and put them into another vessel, and add water and salt as before. Use of the first until that is gone, and by that time the other will be ready. A good rennet is sufficient to make from six to eight hundred pounds of cheese.

Anatto.—When the rennet is put into the milk, add a small quantity of anatto, just sufficient to give the cheese a bright straw color, or the color of good butter. The best way to prepare the anatto for coloring the milk, is to boil it in strong lye; white-ley is best. The quantity to be used must be determined by experience, as no very accurate rule can be given.—*Ohio Cultivator.*

CHEESE MAKING.

The following is the statement of Mr. Hugh McMillan, of Erin Township, of the mode of manufacturing the cheese exhibited by him at the Provincial Exhibition of 1862, to which was awarded the second prize:

Size of farm 200 acres. Mixed husbandry. Number of cows, 10. Breed, Durham grades. Pasture, clover and timothy mixed Was made about the 20th June Night's milk is strained into pans, and l ft till morning, then the cream is skimmed off, and part of the milk put in a tin pail, putting the pail in a pot or kettle of boiling water, until it is sufficiently warm to raise the temperature of night and morning's milk to nearly that of new milk. If the cream is heated it has a tendency to be greasy on the top, if the milk is heated in a pot or kettle it is apt to give it an unpleasant flavour. Rennet is prepared by steeping one or more in water until the strength is obtained, and then straining off the liquor, use a sufficient quantity to digest in about an hour, then carefully break or mix the curd; then putting the strainer over it, it is allowed time to settle, then the whey is dipped as it rises, (we neither scald nor use colouring matter). When the whey is off cut the curd in slices which are piled in one side of the tub to drain. When it is drained it is broken with the knife, and half an ounce of common salt used to every pound of curd. It is then put in the hoop allowing it a short time to drain before putting it to press. It is pressed lightly for the first three hours, after which the pressure is increased to 16 or 20 cwt. It is changed two or three times a day till thoroughly pressed, after which it is taken to the cheese room, where it is bandaged and turned once a day.

Yours, &c.,

Hugh McMillan.

LEITH BUTTER REPORT, MAY 8, 1863.

For the Canadian Agriculturist.

The past month was one of great depression in the Butter Trade, and contrasts strongly with the same period last year.

Holders of Danish and German Butter finding they could never realize their consignments without a loss, were directed by the

shippers to hold for higher prices than the dealers were disposed to pay; meanwhile, owing to the American war, supplies continued to flow in from the North Western States, on a scale quite unprecedented.

Last month the holders of Danish and German sorts became anxious sellers, and some large sales of these sorts were effected, from 4½d to 5d, (equal to 9 and 10 cents per lb.,) and even at these low rates, a clearance of old has not been effected. These sales will entail a loss of from 43 to 47 per cent.

The weather on the continent of Europe having been very mild during winter and spring, the supply of new milk Dutch Butter has been abundant since the beginning of March, and prices have been very low.

Comparative value of New Milk, Holland Butter as on the 5th of May......	1858	1859	1860	1861	1862	1863
	11d	11¾	11½	11d	11¼	8d

Prices of cured butter generally decline after the end of May; they are, however, already so moderate as to leave less margin for a fall, and the demand being very good, I do not anticipate the decline will exceed ½d to ¾d per lb.; as with the advance of the season, the quality will improve and tend to support prices.

No new States or Canadian Butter has yet reached this country, neither is it likely much will arrive for a time; as during the Summer most of the butter arrives in this country in a heated state, it becomes a question whether it is advisable to run the risk of getting the butter oiled, or hold it over on your side, where it may get stale before being shipped in Autumn.

Holders of butter in Canada, should endeavour to keep their stores cool with ice during the heat of Summer; but the great point is early and perfect curing, and unless this is attended too, no after cure of the butter will protect it from rancidity.

There is a small work on Dairy Husbandry, by J. C. Morton, Editor of the Agricultural Gazette, London, published by Longmans of London, which it would be well for every Canadian farmer to possess; the cost is moderate, only 1s 6d Sterling, or 36 cents, and contains much valuable information.

Leith, Scotland. MN.

Horticulture.

ON THE PEAR.

READ BEFORE THE TORONTO GARDENERS' IMPROVEMENT SOCIETY ON JUNE 15TH, BY MR. A. PONTEY.

Mr. Chairman and Gentlemen,—The subject which it is proposed shall occupy our attention to-night is the culture of the Pear. I am sorry that instead of listening to some one or other of the many persons composing this society, who are more competent to deal with the matter than I am, that I have to give you my limited ideas and experience on what I consider, next to the apple, one of the most important of fruits.

I shall preface my remarks by saying that the subject of Horticulture, which by our meeting here to night we are endeavouring to advance, is one which is becoming more and more popular every day, and the effects of which cannot but be refining and exalting to the human mind. There is scarcely a man, no matter what his circumstances are, but is desirous of in some degree embellishing his premises, be it a humble cottage or more stately mansion, with trees, and in this speculative and commercial age, he often wishes to combine the ornamental and useful, more especially the man of limited means, and it is on that account, namely, its adaptibility to a small garden, that I shall speak of the pear principally as a dwarf, being in that shape more suited for a small garden than when grown as a standard.

In the first place, I may say, there are two ways in which pears or any other fruit may be propagated, namely, by seed, which is the natural way, and by dividing the plants by scions or buds, which is the artificial way,—and the only way by which the same variety can be produced with certainty.

I have mentioned the growing of fruit trees from seed, in order that I may call your attention to the fact that a great many of the maladies which the pear is subject to when grown as a standard, are attributable I think, to the unhealthiness of the stock. No care is taken, as a general thing, by nurserymen to ascertain that the seed which they sow for stocks is produced by good, healthy, vigorous trees, or no heed is taken as to whether it is the product of sorts which are well adapted to this climate or not. Now, how can we have a healthy tree, when the stock through which it has to draw the greater portion of its nourishment, and with which it must become most intimately identified, is of a sickly character? The thing is so obvious, that it is only necessary for me to allude to it, to convince every one of the importance of bestowing more care and attention on that branch of pear culture.

Artificial propagation, with regard to the pear, may be divided into two ways, namely budding and grafting. The only stock which can be used to any advantage are the pear seedling, and the quince; although they will do on some others, for instance the thorn and mountain ash—but it is only on very light soils where the other stocks would not do, that the mountain ash is used. The seedling pear is the stock used when a standard tree is required, and the quince where it is wished to produce a dwarf tree.

The same care should be used in the selection of a quince for stocks, that I have pointed to in regard to the pear seedling. There are two or three kinds of quince grown, some of which, owing to their more vigorous growth, are much more to be desired than the others. In fact, now there is but one that meets with cultivation by experienced nurserymen, and that is a variety called the Angers.

It has been found that when pears are worked on the others, say the apple quince for instance, that they make a very poor union, and consequently the tree is often very short lived, frequently not living more than 5 or 6 years. This I believe is mainly owing to the slow and feeble growth of the apple quince, and has done more towards throwing dwarf pears into bad repute than any other one cause.

A strong loam, having a tendency to clay, with a clayey subsoil, is acknowledged to be the most suitable for the pear, both for giving fine fruit, and for preserving a healthy state of the tree for the longest time. This soil, and where it is attainable, a considerable proportion of lime in its composition, I believe is everywhere acknowledged to be the very best that can be desired, and, in short, the soil for the pear.

By a clayey soil I do not want to be understood to mean a soil that will retain wet too long, for no fruit tree can remain healthy long in a soil that retains water so as to become cold and sour. It ought to be so thoroughly worked up with the plough or spade, and so closely intersected with drains, that it will admit of being worked at once after a heavy fall of rain.

Before proceeding to speak of the best kind of manure to be used for the pear, I would call your attention to the shameful want of economy and good management as evinced by almost every one having anything to do with a garden, in the collecting and taking care of material for manure. It is well known that vegetable matter decomposed is the best fertilizer that can be applied to vegetable life, and yet we almost always find that when a garden is being cleaned up, either in the spring or fall, that the weeds and refuse matter, instead of being carefully preserved, are either burned, or, worse still, thrown out into the road or some out of the way place, never more to be thought of.

The greatest desideratum next to a good soil for the pear is a good manure, and unlike a great many other things, the manure which the pear, together with many other fruits, most revels in, is within the reach of every cultivator. Stable manure, or in other words, animal manure, is the best fertilizer that can be used for trees, as it contains not only some but all the ingredients which plants require for their nutrition and for the fullest development of all their parts. This manure, in order to be thoroughly effective, requires to go through a course of preparation, in order that it may be thoroughly assimilated with the soil, and that the roots of the trees may find it in a condition suitable to be made use of by them.

If I was about to plant a pear orchard, one year before I intended doing so I should accumulate a sufficient quantity of stable manure, leached ashes, crushed bones, and charcoal to give the piece intended to be planted a thick coating, say 2 inches over the whole surface, I should turn it over two or three times in order that the different material might get thoroughly incorporated together, taking great care that if anything in the shape of liquid ran away from it to have it thrown back again from time to time, and the whole heap occasionally sprinkled with gypsum to fix the ammonia and thereby allow none of the more volatile but not the less valuable portion of the heap to escape before it was required by the trees. This I should spread thickly over the ground and plough in, taking care to have the furrows as narrow as possible to insure the more complete mixture of the manure with the soil. A portion of this compost I should mix with some virgin meadow loam, perhaps in the proportion of one half, and throw a few spades full of it around the roots of each tree after deposited in the hole prepared to receive it, and previous to any of the other soil being thrown in.

The trees, I mean dwarfs, should be planted from 8 to 10 feet apart each way, and for two or three years the intermediate spaces could be cropped with some vegetable crop, avoiding the plants which are allowed to mature their seeds, such as oats, wheat, &c., and preferring those which require cultivation with the hoe or cultivator, such as potatoes, cabbage, &c.

By this method not only does it give a source of profit to the planter, but it benefits the trees, —care should be taken though when ploughing not to go near enough to the trees to disturb the roots. A dwarf pear comes into full bearing the 2nd or 3rd year after planting, while the standard requires 10 or 12 years to come into anything like a good bearing condition,—by this you will see that the dwarf trees, suppose they only bear annually a small crop of fruit, will have yielded a valuable series of crops while the standards were coming into a bearing state.

Almost every kind of pear does well on the quince, but there *are* some slow growing kinds of which I will give a list at the close, which do not, except by double working, which is by first working a vigorous growing kind upon the quince, and then the slow grower upon that.

The pruning of the tree comes next in course, and is by far the most important operation connected with pear growing on the quince.

It used to be considered in days gone by that it was almost unnecessary to prune, that what was required in some of the moister duller climates of Europe, in order to admit the sun and air sufficiently to the branches and fruit, was unnecessary to be done here in our brighter and clearer atmosphere; but

more thorough knowledge of the subject has shewn that idea to be erroneous, and a glance at an unpruned dwarf pear will at once convey to any intelligent mind the necessity of using the knife freely. Such a specimen would be found to be a perfect mass of leaves and wood at its extremities, and void of all spurs and branches in the interior of the tree, and the only well developed, properly flavoured and coloured fruit will be such as by their situation at the extremities of the branches have been enabled to receive the full influence of the sun.

Pruning, when properly performed, is intended to induce and counteract different forms of the tree; thus we prune to induce fruitfulness and to lessen it, we prune to throw more vigorous growth into a certain portion of the tree, and we prune to prevent a too full development of any particular branch or branches.

Pruning, when applied to a dwarf tree, should commence when the tree is one year from the bud, what is called in nursery parlance a maiden tree—which is simply a single long shoot, varying in length according to the strength and robustness of the kind. This at a year old should be cut down to within 4 or 5 good buds at the bottom, thus causing a growth in diameter so to speak—that is to grow branchy and stocky at the bottom, and thereby preventing the upper part from overbalancing by keeping the height of the tree subject to the increase of the diameter. For the same reason and on the same principle an equal growth of the branches is acquired by checking the growth of any particular branch whereon it is found to usurp more than its proper share of room in proportion to the others, and by so doing allowing the weaker branches to receive some of the extra nourishment it was absorbing.

Pruning generally should be performed before the sap has commenced to rise, say about March, or any time after the severe frosts are over, and before any warm weather has excited the tree. In this pruning an eye should be had to the general appearance of the tree, making it as bushy as possible at the bottom, and approaching in shape as nearly as is practicable to a pyramid. This style of tree, which is called the pyramidal, is acknowledged to be the best form for the dwarf pear, as every part of it then gets the fullest benefit of the sun, &c., there being no one part of it allowed to outgrow another, and thereby abstract the direct rays of the sun from falling on each part alike.

Summer pruning or pinching with the finger and thumb is found to be of great importance in pear culture, not only to regulate any inequality in the growth of a tree at the time it is making such growth, but to induce fruitfulness. When it is intended to have the latter effect, it should be performed at a later period of the growth, than for the former, because if stopped too soon, instead of causing the bud left to throw out fruit spurs, they would most likely break and form shoots for wood again. Although the pyramidal is the shape in which the dwarf pear is generally grown, there are many others. In a recent number of the *Cottage Gardener*, I saw mention made of a French work, by a Mons. Du Breuil, in which the author goes at length into six different methods of training the pear; the only one which I recollect as being likely to come into use generally, is what he calls the Double Contra Espalier in Vertical Cordon. It is described as a double row of trees six inches apart, planted zigzag, twelve inches from tree to tree. The trees are allowed to get nine feet high, cut short back to spurs, and not allowed to get more than one foot through in the branches. Posts are put in every twenty feet and connected together by fencing wire, this wire steadies a nine foot lath, to which each tree is fastened, making a perfect wall of foliage and fruit in the fall. The author claims that this method is twice as fruitful as the pyramid, and comes into bearing in half the time. It struck me it might be used in growing the pear along side the walks of a garden, in the way that Espalier trees are now grown.

Pears which are sure to succeed well on Quince.

SUMMER

Osband's Summer.	Dearborn's Seedling.
Tyson	Rostiser.
Beurre Giffard.	

AUTUMN.

Belle Lucrative.	Beurre Deil.
Uranieste.	" Langeleir.
Duchesse d'Angouleme.	White Doyenne
Howell.	Beurre Superfin.
Beurre d'Anjou.	Louise bonne de Jersey.

WINTER.

Easter Beurre	Figue d'Alençon.
Glout Morceau.	Seckel.
Josephine de Malines.	Vicar of Winkfield.

FOR DOUBLE WORKING.

Maria Louisa.	Doyenne d'Ete.
Beurre d'Aremburg.	St. Michael Archange.
Ananas d'Ete.	

A great deal more might be said about the diseases which the pear is subject to, and some of the remedies used; also about its culture in orchard houses. Not having had any experience in that way, I hope that some one of our members will ere long give us an article on the culture of fruits in orchard houses, and make the pear a speciality, combining its diseases and orchard house culture in one article.

Before taking my seat, Mr Chairman and Gentlemen, I have a few remarks to make in reference to our Society. The avowed purpose of our meeting is to enlighten each other as much as possible on the best methods of cultivating anything that comes within the sphere of any one of us. Now I think that object could

be better attained, or, in other words, I think more information could be elicited, if our discussions took more the shape of a debate; it might perhaps be the means of causing a greater interest to be taken in the meetings, and cause a more earnest spirit generally to pervade our ranks. What I mean is, that when any one has read an article, and in it has put forth anything that some other member does not quite agree with, if he would stand right up and point out those parts, and adduce his own reasons for differing, I think it would give more zest to our meetings, and that we should be mutually benefited thereby.

Then again, without wishing to interfere with any established rule of the Society, I would suggest that by having one person constantly in the chair, we lose to the Society the experience of one who, from his long and intimate connexion with Horticultural Societies, could give us much and varied valuable information.

HAMILTON HORTICULTURAL SOCIETY.

Mr. Editor,—Monday, the 25th day of May last, the day set apart for the celebration of the Queen's birth day, a day which the loyal citizens of Hamilton highly appreciate and enjoy, as has been usual, the Horticultural Society held its first exhibition for the season in the Mechanics' Hall; the day was favourable, and the attendance in the afternoon and evening very good. The Spring Shows of this society have hitherto been considered amongst the foremost in the Province, if not the best. The latter, in the opinion of competent judges, far exceeded any of the former in a fine display of plants. The entries by the practical gardeners and amateurs were more in numbers than on any former occasion at this time of the season. The quality of the stove and greenhouse plants were good, and showed a considerable improvement in their formation and growth. The display of foliage, greenhouse, and stove plants from the gardens of W. P. McLaren and John Brown, Esqs., was excellent; also the geraniums, fuchsias, and greenhouse plants from the gardens of I. Buchanan, John Young, and R. Juson, Esqs. The amateurs came out very well and produced some very good specimens. We wish much more to be done on their parts, and long to see the exertions made by the many that are now confined to the few. The vegetable and fruit department was, for this time of the year, well represented. The collection of apples may be said to be the largest and best we have seen for a long time at a May Show. The grapes from the orchard houses of W. P. McLaren, Esq., deserved the very highest commendation, His pot strawberries were also good.

Mr. Fleming, from Toronto, exhibited a collection of cut blooms of Pelargonium, geraniums. The plants Mr. Fleming has lately imported; the flowers were very fine and much admired.

I shall not trouble you with the whole prize list, only the leading things, as follows:—

Best Achimenes, in pots, Thomas Buchanan, gardener to W. P. McLaren, Esq. Best Balsams, W. W. Chapman, gardener to I. Buchanan, Esq., Auchmar House, Clairmont Park. Best Calceolarias, in pots, Wm. Hill, gardener to John Brown, Esq.; 2nd prize, R. Murray, gardener to John Young, Esq.; 3rd do., Hugh Shaw, gardener to R. Juson, Esq. Best specimen Calceolaria, Wm. Hill. Best Cinerarias, Thos. Buchanan. Best Carnation, in pots, Wm. Chapman. Best four Fuchsias, R. Murray, (varieties—Lord Clyde, Guiding Star, Rose of Castille, Bank's Glory); 2nd prize, Hugh Shaw, varieties—Venus de Medici, Souvenir de Chiswick, British Sailor, Ariel. Best three double Fuchsias, Hugh Shaw, (varieties—Sir Colin Campbell, Madam Cornellisen, Leoline; best specimen dark, R. Murray; best light, do. do.; 2nd do. dark, R. Murray; 2nd do. light, H. Shaw. Society's prize for the best six foliage plants, Wm. Hill, (varieties—Caladium Chantinii, Caladium Whytii, Pavetta Borbonica, Farfugium Grande, Dracena terminalis, Colens Verschaffelta, a new plant; 2nd do., Thomas Buchanan, (varieties—Caladium Chantinii, Colens bloomii, Cisses discolor, Maranta Zebrina, Maranta Regalis, Solanum Cuten. *Special*—Best six, Thos. Buchanan, (varieties—Calladium Bellymii, Cynophyllum magnificum, Maranta Regalis, Maranta Zebrina, Caladium Chantinii, Campylobertrys regalis; contested by Wm. Hill with Cisses discolor, Croton tricolor, Maranta Zebrina, Caladium Whytii, Cynophylum magnificum. Best three green-house plants, Wm. Hill, (varieties—Combretum purpureum, Penies Carnea, Lechenaultia formosa, Ixora coccinia, Stephanotis floribunda, Calceolaria rugosa, Hydrangea Hortensis, Cuphea Platycentra, Euphorbia splendens, Centradenia floribunda); 2nd do. R. Murray, (varieties—Cytisus racemosus, Euphorbia Splendens, Santana delicata, Santana Rosea, Calceolaria rugosa, Calceolaria Sulphurea, Cuphea Platycentra, Solea Concolor, Polygala dalmasina, Russalia Junea, Hydrangea, Hortensis, Metrosideros floribundus, Orchidens; W. Hill, (varieties—Epidendrum Cauliflorum, Oncidium Flexuosum, Oncidium Papilia, Gongora atropurpurea. Special prize for green-house plants was taken by Thomas Buchanan, (varieties—Stepnanotus Floribunda, Hoya Carnosa, Hoya Bella, Cyetserius Reflexum, Hydrangea Hortensis, Vinca Rosea, Vinca Alba, Erica Ventricosa Rubra, Calceolaria. O'Connell, Azalea Chalsonii, Azalea Grenvil. Aralea Gem.) Best four P. Geraniums, Thos. Buchanan, (varieties—Brunetta, Topings, Elegans, Butterfly, Sir Henry Smith; 2nd to R. Murray, (varieties—Elegans, Arnold's Virgo, Queen, Reine Debald, Alexandrina. Special prize in this class taken by Thos. Buchan-

with varieties - Bride, Miss Foster, Mrs. White, Arnold's Virgin Queen, Comtesse Bresson, Princess Matilda. Best specimens by Thos. Buchanan and W. Chapman. Best four fancy Geraniums, Hugh Shaw, (varieties—Evening Star, Acma, Queen of the Valley, Mrs. Allan); 2nd do., R. Murray, (varieties — Itloniskii, Louisa de Bellmont, John's Improved, Mrs. Allan. Special prize in this class, Thos. Buchanan, with Acma, Formosum Negro, Mrs. Black, Modestium, Calaban. Best four Scarlet Geraniums, Wm. Chapman. Best specimen, Wm. Chapman; 2nd do., R. Murray. Extra to Wm. Chapman for a pyramidial oak-leaved Geranium. The plant small, but in good taste. Best Pot Roses, R.Murray. Best hardy Shrubs, John Freed. Best Tulips, Bruce and Murray.

The successful competitors in the amateur Floral department were George Carlysle, W. Michael, Thos. Smith, and John Weatherston. Ladies' department, Mrs. C. Lee.

Successful in the Fruit department, Wm. Chapman, Thos. Lottridge, Adolphus Case, John Stabins, Thos. Buchanan, and H. Colbeck, Esq.

The successful competitors in the Vegetable department were Wm. Jones, gardener to P. Grant, Esq., for the best Asparagus; Wm. Hill, for the best Early Cabbage; Hugh Shaw, for the best Seedling Onions; James Goy and S. Singfield, for Onions of 1862; Jas. Wilds, for Curled Parsley; Early Potatos, Wm. Hill and Singfield; Radishes, J. Wilds and T. Buchanan; Rhubarb, J. Wildes, J. Freed, and Wm. Harris; Sea Kale, W. Hill and Wm. Chapman. Mushrooms, T. C. Fearnside.

Amongst the extra prizes awarded was one to Anthony Copp, in this City, for a very handsome Aquarium, which attracted much attention; and one to John Weatherstone for a collection of Daisies. GEORGE LAING.

Hamilton, 2nd June, 1863.

THE CURCULIO.

The *Rhynchœnus nenuphar*—"Plum Weevil." This is the renowned "Curculio," of which so much has been said, surmised, and written; whose fame is as illy deserved as that of many heroines embalmed in history. It belongs to the *Coleoptera* order—the large family of weevils—the second division, *Rhynchœnus*. This family is divided into three great divisions, *Curculio Rhynchœnus*, and *Callandra*, by Linnæus, with inumerable genera and and sub genera. This insect belongs to the genus *Conotrachelus*. It is a native of this country, and was first described by Herbert, in 1797. It has a number of synonyms. It is a small dark, rough beetle resembling a withered bud. When you touch it it draws up its legs, presses its long antennæ and snout close against its breast, and feigns death for any length of time.

When the mother beetle is prepared to deposit her eggs, she places herself on the plum, and with her strong proboscis cuts across the lower end, which is always softer than towards the stem. It has been for me many years of investigation whether she could do this: it was impossible, for the brittle muzzle must inevitably snap off at the head in the effort of cutting the skin of a fruit which I could with difficulty indent with the strong nail of my thumb. I could not relinquish my supposition that it was performed with some sharp instrument at the end of the abdomen. But time and perseverance convinced me of my error, and I was both delighted and amazed when I found how beautiful her means are adapted to the end she has in view. At the extremity of the proboscis are two small sharp teeth of horn. You perceive how elbowed the antennæ are, the long joints of which reach two small punctures near the eyes at the very top of the proboscis. When she is preparing to cut the skin the joints of the antennæ are placed in these sockets, which strengthen and guide the proboscis as its teeth force upon the skin, giving it the needful purchase. This accomplished, she turns round and widens it with two small plates at the end of the abdomen, and with their aid deposits a single egg, drawing the skin back over it, and the wound in a day or so is healed. A hole is made at the end of the cut to allow evaporation to take place around the egg, or the young worm would, when so very tender, be drowned or suffocated. This proboscis, when the insect is just dead, placed under a magnifier, shows one of the most marvelous complications of nerves, turning, twisting, and communicating with each other all the way up, until they are lost in three large main arteries which go through the whole body. As soon as the egg is hatched the worm works into the fruit, destroying it completely in time. It is a small white, footless grub, with a strong brown horny head. When ready to transform, the plum generally falls to the ground, and the worm issues from the same path it made and enters the earth, where it rolls itself into an oval, making a loose pupa-case, a few grains of sand adhering to the coarse thread or paste it places around the limbs. It is a singular chrysalis, imbedded in sand, on one side, resembling grains of mouldy rice on the bark. Then if she accomplished this her larva would starve as its jaws are feeble, scarcely able upper, and can easily be detected reposing as close as possible to the main roots of the plum tree. If you turn up the soil carefully a few inches, you can relieve the tree of hundreds of this fruit-destroyer.

Often the plum does not fall, and the worm comes from it on the tree. In wandering along it must assuredly meet with some of those black, grainy warts made on this tree by insects belonging to the *Hymenoptera* order, *Gallicolæ* family (gall insects.) Here it often

remains over the winter, curled up, not transforming to a chrysalis until the spring, if at all. I have often found these worms in these warts—a dozen and more in some; but never had them come to anything unless I shook them upon the earth, when they would burrow immediately, and in a day or so would be discovered in a chrysalis state. But to conclude, as some authors have done, that the weevil makes these warts is simply absurd. She has no saw, no instrument which can perforate to consume the soft pulp of the plum. If it were not for detaching the stone, and allowing the air to enter and penetrate the interior, the worm itself would do very little harm to the plum. It is the air admitted, causing the decay, and not that the worm consumes so much, that destroys the fruit. Many suppose that this insect cannot fly; but this is an error. Because they can perceive no joining of the wing-cases they conclude there is none. But they fly well; the under wings are full and strong. Like those of other beetles, these are beautifully marked on the edges with brown, while the wing covers are a light horny yellow on the lower portions. This is really all that can be said or written about this insect; and you can easily conceive yourself that it is all that is needed.

If you will examine the roots of a plum tree which has been infested, at the end of the season, you will see how utterly useless are washes, nets, etc., etc. Scrape the roots free of soil in the fall, before frost, throwing around them lime or ashes, and this insect will gradually disappear.—*Harper's Monthly.*

FRUIT GROWER'S ASSOCIATION OF U. C

Editor of the Agriculturist,—Dear Sir: Will you please notice in the July number of the Agriculturist, that the next regular meeting of the U. C Fruit Growers' Association will be held in the "Agricultural Hall," in the City of Toronto, on Wednesday the 15th day of July, at 2 o'clock, p.m.

Your most obedient Servant,

D. W. Beadle, Sec.

June 16th, 1863.

WHAT AILS MY GRAPE?

To the Editor of the Agriculturist.—The following conversation will explain the occasion of the above enquiry, and perhaps account for it.

Mr. James. What ails my grapes! all my fine prospects of weighty Hamburghs, Chasselas's and Frontignans are no more.

Mr Richards. Indeed, I am sorry to hear you say so, what is the matter?

Mr. J. The matter! I declare my discouragement is great. I begin to think that we cannot raise grapes in a cold grapery. I am disappointed.

Mr. R. And perhaps unreasonably so. Do you fancy that grape growing under glass is wholly exempt from partial failure and occasional disappointment, can you name the walk in life, the occupation or the scheme in which disappointment is not frequently met with? You cannot. And are you to doom the cold grapery, which has had splendid success, for years, in other cases, because through some negligence of yours you are this one season balked of a great crop? But tell me what is the matter, and perhaps I may be able to account for it.

Mr. J. The matter, I tell you I have lost my crop. Those fine stout canes, which were so well ripened, haven't a live bud for several feet. Only at the extremities are there a few. Now tell me why that is so.

Mr. R. Did you keep your cold grapery closed the whole winter?

Mr. J. I did so.

Mr. R. Now for your comfort, for the old saying is, that misery loves company, let me tell you that my grapes are just in as bad a condition, one in particular. I left it last fall, after pruning, about ten feet long. It was a thick well ripened cane. This spring the buds are all dead except for about two feet at the end farthest from the root. I account for it thus: During March, and the first part of April I was from home, and the grapery was neglected. There were many fine clear days, when it became so warm as to start the sap, and render the bud tender. Cold, sharp weather followed and froze them. The extremities being better covered escaped. So you see the matter is very simple.

Mr. J. Well I believe you are right, I am not alone in my misery, for other graperies have suffered in like manner. But would you advise opening the house in winter.

Mr. R. I certainly would in all fine, moderate weather. So as to let the heat escape William Cherlton says, only he ought to have put it in large letters, "Let the house remain open through the winter, except in stormy, wet or very severe weather." Allen says, "As the spring advances, and the power of the sun increases, open the windows and doors of the house to let the heat escape, and to prevent the vines bursting their buds, shutting up again before night." You thought that all your labor and care were at an end, when last fall, you had pruned and laid down your vines, and covered them so nicely, but it was a mistake. For your comfort some little attention is required during the long winter months, but especially towards the approach of spring. I say, for your comfort, for how would you feel, if you could bestow no pains on your beloved vines for so dreary a length of time?

Mr. J. That is all very well, but what am I to do now. What would you advise?

Mr. R. Fruit the large canes all you can

but let me hint, that owing to the injury they have received, they may very possibly fail to bring the fruit to maturity. Meanwhile you can grow another cane for the ensuing season, which I trust you will not destroy by carelessness or inattention.

CLERICUS.

June, 1863.

BEST METHOD TO DESTROY APPLE-TREE WORMS.

Take three pints of soft soap in a pail, pour on hot water to dissolve the soap, and then fill the pail two-thirds full of water; take a light pole eight or ten feet long, cut notches in the small end, then wind around a piece of thick coarse cloth, several times—let it project over the end of the pole five or six inches. Now tie it firmly with a large twine, so that it will not slip off; thus you have the whole materials to commence warfare.

As soon as the worms appear in their webs, take the pail of soap suds and swab, dip into the suds and apply to the nest of worms, wipe it all off, and thus proceed over the trees. This should be repeated at least every other day, as the eggs do not hatch at once. A little later, worms will appear on the body of the tree and large limbs, without any web, but in clusters on the sun side of the tree. These may be instantly killed by means of the swab, applying the soap-suds; it will kill them nearly as quick as fire. If the trees are large, have another pole sufficiently long to reach the top of the trees; but the short pole will be sufficiently long enough to do the most of the work. The best time to kill the worms on the body of the tree is from ten in the morning to three in the afternoon; they are then sunning themselves in clusters.

Strict attention must be paid until the worms wind up, as the eggs continue to hatch, and sometimes the worms come from the woods, or a neighboring orchard that has not been attended to—they have eaten all the leaves from that, and then they will come like an army; but if attention is given they may be soon destroyed by the soap-suds. Some persons neglect to kill the worms; they have no fruit, and the trees soon die.

I have found by many years' experience that this method to kill apple-tree worms is the cheapest, quickest done, easiest, (no climbing the trees,) and most effectual, for all the soap-suds wets are sure to die in a few moments.

JOHN T. ADAMS, *in Country Gen.*

A NICE METHOD OF PLANTING STRAWBERRIES

EDITOR OF AGRICULTURIST—SIR: Permit me to detail for the benefit of your readers, a method of transplanting strawberries, which though not new is rarely employed, but which I followed last August with most gratifying success. The strawberry was that noble one, the Triomphe de Gand. When the runners were about forming, I took three and four inch pots, filled them with a mixture of sand and black mould, and stuck the runners in them. As soon as they were filled with roots they were cut off from the parent plant. A bed was prepared for them. They were turned out nicely and planted in it, growth commenced immediately. And now at this spring, no one could believe that they had been so recently planted. Single plants have made three and four crowns, and are sending up magnificent stems crowned with blossoms. I feel tolerably sure of having a fine crop of fruit. By the way let me say, that out of eleven kinds, planted side by side, and with little treatment, the Brighton Pine gives the best promise. If the crop is equal to its fine appearance it will be fine indeed. The soil is clay. The Brighton is a staminate, very early, similar to the Boston Pine. In writing of it thus, I do not mean to prefer it to the Triomphe, for the last is a late strawberry and therefore can scarcely be brought into competition with it. If the strawberry season is very short at the best, it behoves us accordingly to lengthen it, as much as we can. This may be done, by having the early, the mid season, and the late kinds. The Albany is an early kind, so is Jenny Lind, and McAvoy's Superior. The Hovey, the Sir Harry, and Triomphe being late.

This bids fair to be one of the most productive seasons, in the strawberry grower's calendar, in these parts. The only possible disappointment, is apprehended from severe frosts, which I fervently pray we may not experience.

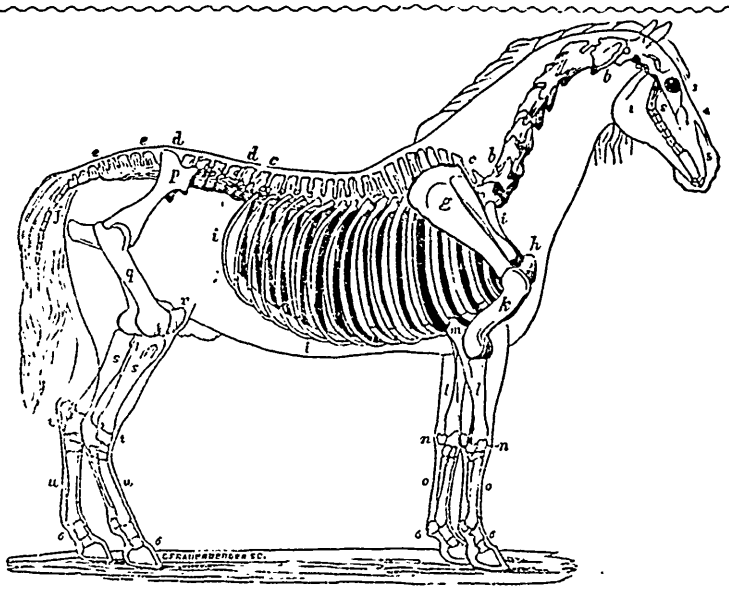
The above was written yesterday, this morning I have again examined the different sorts and really the Brighton is superb, the blossoms so abundant as to throw the foliage into the shade. Should this appearance not be deceptive I shall say the Brighton for me. But I have before been led away by the fine show of some of our barren staminates, and you can't catch old birds with chaff, says the rude proverb, therefore I will not get into too exhilirated a state. You shall be faithfully informed of the result. This bountiful rain is to us a wonderful blessing. How kind is the Great Creator to this land of ours, and alas! how basely ungrateful are we!! C.

June 5th, 1863.

LARGE DUCK EGG.—Last week a Rouen Duck, the property of H. Elliott, jr., of Hampton, laid an egg which weighed seven and a half ounces; it measured over eight and a quarter inches in circumference, and was nine and a quarter inches in circumference the longest way.

Veterinary Department.

Conducted by A. SMITH, V. S.



THE HORSE.

(Continued from last number)

The bones of the hind extremities are composed of the sacrum, the ossa innominata which is formed of three bones, viz: the illium, the ischium, and pubis. These bones have already been described in a previous number. The remaining bones are the femur (9 a), the patella, (s), the tibia (t), the fibula, (7) the bones of the hock (10 10), the Metatarsal (u).

The femur is the largest bone in the body and is placed in an oblique direction downwards and forwards, and presents a shaft and two extremities. The shaft is smooth and prominent in front and flat posteriorly. The posterior surface has near its middle a round roughened portion to which is attached one of the heads of a large muscle called the triceps abductor femoris. Rising from the upper third of the external lateral side is a sharp prominence called the trochanter externus, and from the internal lateral side rises a similar prominence called the internal trochanter. Extending from the internal trochanter is a ridge which receives the name of the trochantery ridge, to which is attached the pectinous muscle. The lower half of the bone is constricted and has posteriorly a deep fossa called the supra condyloid fossa. The superior extremity is divided into two portions, one smooth and hemispherical, known as head of the femur, the other portion constricted. The head of the femur is lodged in a cavity called the acetablum, forming the hip joint, on the inner side of the head is a deep notch into which is inserted the round ligament. On the outer part of the superior extremity is a large irregular prominence called the trochanter major, which presents two parts, the part looking backwards is called the summit, the other portion the convexity.

The inferior extremity presents two condyles and a trochlea. The condyles are posterior and divided by a deep notch called the intra condyloid notch. The trochlea presents two eminences divided by a vertical groove, the internal is the larger, and rounded. With the trochlea articulates the patella; the internal condyle is the larger and articulates with the tibia and semilunar cartilages. The Patella is an irregular bone, the anterior surface is convex and roughened for the attachment of ligaments, the posteriorsurface s smooth, articulating with the trochlea of the femur, and is divided by a prominence into two concavities. When the patella is displaced the animal is said to be *stifled*. Partial displacement of the patella is of common occurrence in foals of a weakly constitution, especially when running on hilly grounds. This arises from intentitial absorption of the trochlea of the femur, causing the patella to slip outwards almost at every step.

Situated betwixt the femur and hock is the tibia. This bone is larger superiorly than inferiorly, the outer anterior surface of the body is grooved, and in it is lodged the extensor pedis muscle, the inner anterior surface is covered simply by skin and faschia, the posterior surface is marked by numerous longitudinal furrows for the reception of muscles. The superior extremity with the patella and femur form the stifle joint. Between this bone and the condyles of the femur are interposed the semilunar carti-

age. Between the articulatory facets is an eminence called the tibial spine; in front of the spine is a tuberosity, from which extends the tibial ridge; at the lateral sides is a projection for the attachment of the lateral ligaments of the stifle. The interior extremity is much smaller than the superior, and presents two smooth concavities or grooves, running obliquely from before backwards; besides these concavities are three prominent ridges.

Extending down the postero-external part of the tibia is a small bone called the Fibula or clasp bone affixed to the former bone by cartilage and ligament This bone presents a body and head, the head is broad and flattened and somewhat circular in shape, the body is slender and tapering, reaching about two-thirds down the tibia.

The Hock Joint is formed of ten bones, viz: the lower end of the tibia, the astragalus, os calcis, cuboid, three cuneform bones, magnum medium and parvum, and three metatarsal bones.

The Astragalus or knuckle bone is situated immediately below the tibia, is somewhat pulley shaped and is the strongest bone in the hock. It presents three surfaces, superior, inferior, and posterior; the superior surface is smooth and wholly articulatory, the posterior surface is very irregular, presenting four articulatory facets for articulating with os calcis.

The Os Calcis projects backwards and upwards from the hock, and is divided into body and tuberosity. The body is slightly convex externally. The tuberosity is oblong, flattened from side to side, ending in a tuberosity to which is attached the tendon of the gastronomi extemus muscle. The internal side is smooth and grooved giving passage to the tendon of flexor pedis muscle. The superior part of the tuberosity is covered with fibro cartilage and forms a true synovial joint.

The Cuboid occupies the outer part of the hock, is oblong in shape and has four surfaces, and articulates with the cuniform magnum and medium, and also with the astragalus and large and external small metatarsal bones.

The Cuniform magnum, or wedge bone, has two surfaces and four borders. The superior surface is smooth and wholly articulatory, except in the centre, where there is a groove. The inferior surface is slightly convex, and articulates with the medium and parvum. The external lateral border is in contact with the cuboid.

The Cuniform medium is triangular in shape, and situated below magnum, its borders are rough and irregular for the attachment of ligaments.

The Cuniform parvum is the smallest bone of the hock and is situated at the posterior internal part of the joint. The Metatarsal and remaining bones of the extremities are the same as in the fore extremity, which has already been described.

ANSWERS TO CORRESPONDENTS.

A. C, Mulmur.—Your horse in all probability is suffering from some of the effects of distemper, which are so many, that it is useless for us to prescribe knowing nothing as to how he is affected.

H. S., Drummondville.—Judging from the description of your case, we consider it one of Osteo-Sarcoma, (a disease of frequent occurrence in cattle) that is a tumour on the jaw formed of osseous and soft tissues. The treatment will be to remove the tumour, and at the same time give plenty of nourishing and easily digested food.

Miscellaneous.

THE GENTLEMAN FARMER.

Gentlemen must not hope to farm for profit. The duty of making experiments, and establishing models, in order to show others not only what to do, but what not to do, is that which may fairly be expected of the wealthy territorial magnate. To turn farmer. and to spend money patriotically for the good of the farming interest, is the only serious aim of a gentleman's agriculture. It may be followed as an agreeable occupation, and purchase pleasure far more cheaply and healthily than many of the other pursuits whereby the rich and idle seek to kill their time. Now and then, too, it may pay; but these latter examples are the rare exceptions to the rule. And when a gentleman does make his farming pay, it will be found that he devotes to it an amount of personal care and labour which is by no means contemplated by the vast majority of those who take to farming otherwise than as their sole means of winning a livelihood. There is an old proverb, which says that "the best manure is the master's foot." And it is because amateur farming is followed as a pursuit, and not as a daily toil, that it is almost invariably a source of serious loss rather than of any money profit whatsoever. Farming, moreover, is in itself a trade so comparatively unprofitable that its returns are singularly ill calculated for bearing any diminution. It leaves no margin by which a man can contrive to get his pleasure, and at any rate not to be a loser by the pastime. To all who have enquired into the subject it is well known that the profits yielded on invested capital even by successful agriculture, are very considerably lower than is the case in ordinary trade. The result is visible in the notorious fact that what we call "fortunes" are rarely made by farmers, except in times of war and artificial prices. Every other branch of trade and manufacture supplies a better investment for a man's capi-

tal and personal labour united. About ten per cent. on his capital is all that an active and inteligent farmer can reasonably hope for as his return. From this must be deducted at the least four per cent., as the interest which would accrue from the capital if invested in such a way as to demand no labour or attention. Five per cent., indeed, is the deduction which is usually made in every case where risk is involved. But as we do not wish to overstate the case, let us allow six per cent. as the farmer's real profit on his capital as an agriculturist. It will quickly appear from a few figures that if an amateur farmer simply fails of making this six per cent., and does not also positively lose the additional four per cent., he is a marvelously lucky fellow. The chances are that he will not only lose the interest on his capital, but the whole rent of the land he cultivated into the bargain. And the secret of his loss is this. He pays too much for almost everything he buys. It is not that he necessarily farms ill, or is cheated on all sides, or fails to sell his produce at the market price. These sources of failure doubtless help to empty his pockets, but they are comparatively minor evils. His account book presents a balance on the wrong side, chiefly because he rarely purchases in the cheapest market. Every gentleman is painfully aware that for every cow he gives a guinea more than he ought to give. When he buys sheep, he thinks it little matter if he pays guineas instead of pounds. An extra shilling on a little pig is a bagatelle. And as for horseflesh —he never dreams of not giving a matter of five guineas too much for a fine teamster. In short, if we assume that our amateur pays only two shillings in the pound or ten per cent. more than the professional for his bullocks, his cows, his horses, and his sheep, we shall let him off more easily than he deserves. But what does this extra ten per cent. mean? The whole of the live stock of a farm, on the average, from horses down to sheep and pigs, cannot be supposed as remaining more than three years. In other words, about one third of it will have to be renewed every year. We have already got him to the point when all profits have more than disappeared, and his conscience tells a worse tale still. He is not only quite ready with his humble confession that he has habitually expended his inevitable sixpence where his tenant only pays fivepence, but he painfully shrugs his shoulders when he reflects on his weekly list of labourers, and the banker's checques which he has drawn on behalf of his numerous and sleek-looking teams. He desires only to draw a curtain tenderly over the past, and loudly echoes the statement that he who would succeed as a farmer must live like a farmer, and, above all, must screw lik a farmer. If a man cannot do this, his consolation must be that he has ridden his hobby, and paid for it.—*The Saturday Review*

COMPARATIVE VALUE OF WOOD FOR FUEL.

MESSRS. EDITORS,—The subject of obtaining and preparing wood for fuel is one of considerable importance, and although it will probably receive but little attention from those who own land that has a supply of wood on it, yet there is a large class of persons who are under the necessity of buying their fire-wood, and it seems desirable that they should know the comparative value of the different kinds of wood for fuel, in order that they may be able to spend their money to the best advantage in the purchase of their fuel. From experiments made to determine the comparative value of different kinds of wood for fuel, results have been obtained according to the following table:

Shellbark Hickory	100	Yellow Oak	66
Pignut Hickory	95	Hard Maple	59
White Oak	84	White Elm	58
White Ash	77	Red Cedar	56
Dogwood	75	Wild Cherry	55
Scrub Oak	73	Yellow Pine	54
White Hazel	72	Chestnut	51
Apple Tree	70	Yellow Poplar	48
Red Oak	69	Butternut	51
White Beech	65	White Birch	45
Black Walnut	65	White Pine	41
Black Birch	62		

"Some woods are softer and lighter than others—the harder and heavier having their fibres more closely packed together. But the same species of wood may vary in density, according to the conditions of its growth Those woods which grow in forests, or in rich wet grounds, are less consolidated than such as stand in the open fields, or grow slowly upon dry barren soils. There are two stages in the burning of wood—in the first heat comes chiefly from flame; in the second, from red hot coals. Soft woods are much more active in the first stage than hard, and hard wood more active in the second than soft. The soft woods burn with a voluminous flame, and leave but little coal; while the hard woods produce a less flame, and yield a larger mass of coal.

"The purpose, however, for which it is needed must be considered. Although white pine, compared to hickory, is only as 42 to 100 for heat, if a quick fire be needed for immediate warmth, or kindling for coal or other wood, the pine, or other soft wood, is the most suitable."

The comparative value of hard and soft wood will depend very much on the purposes for which they are used. Where a steady and continuous heat is required, hard wood is much the most valuable; but when a quick and active heat with a steady flame is wanted, soft wood seem to be preferable. In making sugar I prefer about equal proportions of hard and soft wood, as I can boil more sap in a given time with this proportion than with either kind separate. On railroads soft woods are used exclusively, as a quick and rapid flame of heat is wanted. On the other hand the steady and intense heat required for the furnace or forge needs hard wood or coal to produce it. E.

perience would seem to ndicate that for the ordinary uses of the family a portion of both hard and soft wood was the most economical; but it shou d alw.ys be *dry wood*. C.T. ALVORD. *Wilmington, Vt. Cultivator.*

IMPROVEMENT IN SOAP BUBBLES.—The soap bubble is a great institution. It affords to the mora.ist an emblem of frailty, instability, and the transitory character of many things in life and in human affairs. It affords some of the delightful amusements to childhood. It is also of great use as a philosophical instrument. By it, many of the abstruse laws of natural philosophy can b demonstrated, and it has been instrumental in bringing about the discovery of some of the most interesting phenomena of the rays of light. The great Sir Isaac Newton used it for this purpose, and was assisted by it in some of his most brilliant discoveries in this branch of philosophy. It is useful also in demonstration the pressure of aeriform forces, and in exhibiting to the eye, the fact that expansive forces which are free to act on every side, assume a spheroidal form, or direction. We have been in the habit of considering the soap bubble as one of the perfections that could not be improved upon—a thing which was always uniform in its tenuity of substance, and shortness of duration, and we have often regretted this last character of it, wishing that it might last a little longer, or give us some way by which it could be modified in shape if in no other particular. It seems from the account we glean from a foreign journal that in this age of improvements, even the soap bubble comes in for its share of the improvements of the day A mode has been devised by which it is made to not only last longer, but to allow of its being thrown into different shapes and forms almost at will.

We will give an extract of these improvements. It will interes some of our readers who are fond of using the means of research which nature has given us, whereby to enlarge our sphere of knowledge and usefulness, even from so insignificant an instrument as a *buble.*

M. Plateau, an experimental philosopher of Paris, in France, in pursuit of some of his investigations, was anxious to obtain liquid figures of different forms and shapes, that should remain in a quiescent state for some time. He first, made a common mixture of alcohol and water of the density he required. This was to constitute the sphere in which the bubble proceed should remain By using oil, instead of soap suds, and the water and alcohol instead of water to fill it with, he obtained an oil bubble in the alcohol mixture. These, of course, would remain in the mixture some little time. When put up in a vessel, they would remain some time longer than a common soap bubble in the air. On further search, he improved the bubble still further, which has been of much advantage to him in his investigations. He uses glycreine with strong soap suds, with which to make his bubbles. These he found to be capable of enduring much longer than any other kind. He next wanted to obtain them of different shapes, or figures. This he accomplishes by the following very ingenious arrangement. "If" says he, "through an ordinary tobacco pipe; a bubble of this material be blown, and then carefully deposited on a metal ring, one and a half inches in diameter, previously moistened with the same liquid, this bubble, if not disturbed, will last three hours, and if in a close vessel three days." We presume this is the first instance of *hooping* a bubble to make it stronger. In order to make a cylindrical figure of this bubble, Mr. Plateau adopts the following method. Two rings of the same diameter are made. One of them rests upon three legs, and the other slides up and down on a perpendicular shaft, with a thumb screw to fasten it to any height. Blow a bubble and place it carefully on the lower ring. Then let down the upper ring (both being moistened as before) until it crowns the top of the bubble. The bubble then adheres to both; then by raising the ring carefully the bubble will be drawn out into the cylinder. By making figures of several angles, (polyhedrons,) and dipping them into the liquor, a film of it will extend from wire to wire, and form the figure in question.

This is what we call an improvement in the soap bubble, and is hereby rendered more useful as an instrument of investigation and research, as well as more varied and extended in its applications to the sports of those "men of a smaller growth" called children.—*Maine Farmer.*

"WHO IS THE BREEDER?"—By long established custom, the party in whose possession a short-horn calf is *born* is said to be *the breeder* of that calf, although the dam may have been the property of another person, even up to the very day of calving. All the *credit* of having bred the animal is claimed by the dam's new owner; but all the *merit* of having bred the animal is clearly due to another. An outlay of *money* avails to secure the former; but the latter is the result or care, thought, sagacity, anxiety, and experience. It is conceivable that a man of wealth should purchase fifty cows of great value, each in calf to some distinguished bull (a Booth bull, for instance), obtained, by hire, at a distinguished price; and all within a few weeks of bringing forth their offspring. The cows in due time calve; and their produce, *the consequence of another man's capital and judgment*, are recorded in the Herd Book, not to *his* honour to whom, in fact, honour alone belongs, but as memorials of the breeding skill of one who may possibly possess no breeding skill at all, and whose part in the transaction was simply that of arranging a pecuniary investment. The real breeder of a calf is unquestionably the person who brings the sire and dam together; and yet, according to orthodox usage, the place of calving constitutes the criterion. We sug-

gest no alteration in the ordinary method of proceeding; it is perhaps as good as any other; but our readers will perceive that it renders the Herd Book a less faithful exponent of the history of facts than it would otherwise be, and very frequently imparts undeserved lustre to obscure names.—*Bell's Messenger.*

USE OF THE TURKISH BATH IN VETERINARY PRATICE.—Sir,—Though the use of the Turkish bath in the treatment of disease in the human subject has made so much progress of late, we seldom hear of its application in the case of quadrupeds; and it may not, therefore, be without use or interest if I give you a short account of its effects in an instance in which it was lately tried under my directions. The animal was a cart mare. When I was first told she was ill, and saw her two or three hours after the first appearance was observed, she was shivering with her hind legs straddled, continually looking round at her flanks, first one side and then the other, and very unwilling to move at all. Her pulse was full, and 80 in the minute. The symptoms appeared to indicate inflammation in the region of the kidneys. I had her removed to a loose box, and having the command of a cattle-bath, I had the fire at once lighted; but as it would take some hours to heat, and the symptoms were urgent, I had the mare bled, a purgative of dissolved aloes (4 drachms) administered, and a mustard poultice applied to the loins. During the bleeding the pulse varied from 80 to 100, and when it became feeble, and the mare showed signs of weakness, the bleeding was stopped. More than 7 quarts of blood had been taken by measure. At the end of 4½ hours after the bleeding, the pulse was not reduced in frequency, ranging from 80 to 84, but it was softer than before. The mare, however, was till suffering, lying at full stretch in the loose box, occasionally struggling from pain, and raising her head to look at her flanks. By this time the bath was heated to 100 degrees, and I was anxious to get the mare into it. It was with some difficulty that she was got on her legs and up to the bath, but from the moment she entered she seemed to find relief, and after a short time showed no signs of pain. She was kept for 5 hours in the bath, the temperature increasing to 120 degrees, which it was not allowed to exceed. After washing in the outer chamber of the bath with tepid water, and sheeting, she was brought down to the stable and dried with cloths. Her pulse had come down to 60 degrees, and she appeared entirely free from pain, and took a little bran mash. She dunged, and passed a small quantity of urine without pain. She had drunk water freely while in the bath. After an interval of an hour and a-half she was put again in the bath for about three hours. The treatment of the bath twice a day and then once was continued for four or five days, at the end of which time she was quite recovered. The cattle bath can be so easily constructed, and at so moderate an expense, that it is much to be regretted it is not in more general use. I have seen a cow with highly inflamed udder after calving speedily cured of it; and for common colds and coughs in horses it is most effectual in arresting and removing them. —Yours, &c. C. E. F., *December* 15, 1862.—*Mark Lane Express.*

THE RURAL SEASON IN ITALY.—The only season of the year in which the Italians are really loth to tear themselves from the country is the *latter end of Autumn—October and November* —at least up to St. Martin's day. Lovely as the country is during spring and summer in North Italy, it seems to intensify all its charms so as to clothe in ineffable loveliness the fall of the year. The air sharp and bracing as it is apt to be in the morning and evening, is never so balmy and genial as it becomes at this time towards the noon, and continues to the close of the usually bright, gorgeous sunset. The stillness of the landscape, generally prevalent in these mountain-screened regions, becomes infinitely more striking, and, as it were, palpable in this season of nature's repose. Nothing can be slower or gentler and more lingering than the decline of a North Italian year—the autumn tints steal over the foliage by imperceptible degrees, as the crowsfoot over the countenance of a lovely woman untouched by illness or sorrow; the leaves drop one by one, circling and winding round through the stirless air, like so many flakes of undrifted snow; the first touch of decay seems rather to revive and enhance than to blight or even tone down and mellow the richness and luxuriancy of this bountiful land; and the sky, no longer dazzling with its settled glare, no longer monotonous in that cloudless blue which is apt to cloy us in settled summer or winter weather, entertains us daily, in this period of transition, now with vast masses of heavy vapours in the shape of phantom clouds clinging to the Alpine summit, now with a thin white veil of mist floating over the plain like a transparent ocean.

A HINT FOR OUR SPARROW CLUBS.—Those valiant members of the agricultural community who spend their time in killing birds, and then meet together to celebrate their folly, may do well to read the following prices, which the Auckland Acclimatisation Society offers for the introduction of birds and animals in which New Zealand is deficient: Hares, per couple, male and female, £5; red deer, ditto, £15; blackcock, grouse, cock and hen, £10; silver pheasants, ditto, £5; nightingales, ditto, £5; English partridges, ditto, £4; cuckoos, ditto, £3; missel thrush, ditto, £2; common thrush, ditto, £1; blackbirds, ditto, £2; starlings, ditto, £2; skylarks, ditto, £2; rooks, ditto, £2; crows, do. £1; jays, ditto, £1 10s.; robins, ditto, £1 10s.; wrens, ditto, £1 10s.; bullfinches, ditto, £1; green grey linnets, ditto, 15s.; sparrows, 5s.; English quails, ditto, £1. That distinguished or-

hologist, the Rev. F. O. Morris, says in his ery interesting account of the sparrow. "I ave watched pairs of sparrows repeatedly feed- g their young, and have found that they bring od to the nest once in ten minutes during at ast six hours of the 24, and that each time om two to six caterpillars are brought—every aturalist will know this to be under the mark. ow, suppose that the 3,500 sparrows destroy- d by an association for killing sparrows were have been alive the next spring, each pair to ave built a nest, and reared successive broods f young during three months, we have, at the te of 252.000 per day, the enormous multitude f 21,168.000 larvæ prevented from destroying he products of the land, and from increasing heir numbers from 50 to 500 fold!" (see 2nd ol. of first edition, p. 279).

Discovery of a Forest of Nutmeg Trees.—Intelligence has been received by the Dutch overnment that Dr. Burnstein, while under- king a scientific expedition for account of the olonial Government of Netherlands, India, to e Molucca Islands, and New Guinea, has ade a discovery in the Island of Batjau, which ay lead to important results, and cannot fail o prove of the greatest interest to all grocers nd merchants engaged in the spice trade. In s ascent of the chain of mountains known by ame of the Sabella range—which, it appears, as never been hitherto visited, or at least, cientifically examined by any other European reviously—the learned doctor discovered, at an eration of from 2,600 to 3,000 feet above the vel of the sea, a very extensive forest of nut- g trees, laden with fruit of unusual size and cellent quality—in fact, far superior to any therto seen in the European markets. In con- quence of the favorable nature of Dr. Burn- ein's official communication, reporting that is nutmeg tree forest extends over a very large act of country, orders have been sent out from olland to the Governor General to obtain a w piculs of this produce as a sample, and to nd it to Holland, where its value will be prac- ally tested by the price it fetches in the usual ice sales of the Netherlands Trading Com- ny.—*The Grocer.*

To Destroy Rats in Barn and Rick.—elt hogs' lard in a bottle plunged in water of mperature of 150° Fahrenheit; introduce into to it half an ounce of phosphorus for every und of lard, then add a pint of proof spirit or iskey; cork the bottle firmly after its con- nts have been to 150°, taking it out of the ter and agitating till the phosphorus becomes iformly diffused, making a milky looking id. The spirit may be poured off on the id cooling; and you have then a fatty com- und, which, after being warmed gently, may incorporated with a mixture of wheat flour sugar, flavored with oil of rhodium or oil of anisee l, &c.; and the dough, on being made into pellets, should be laid at the rat holes; being luminous in the dark, and agreeable both to their palates and noses, it is readily eaten and proves certainly fatal. The rats issue from their holes and seek for water to quench their burning thirst, and they commonly die near the water.—*Dr. Uer.*

Mediterranean Winds.

The physical history of the Mediterranean cannot be complete without some notice of the winds, which move this great mass of inland waters. We do not find here, nor could we expect their existence, the constant or strictly periodical atmospheric currents, which sweep over the wider oceans of the globe In a landlocked basin, thus irregular in outline, studded with mountain isles and girt round in great part by mountain chains, local causes modify or predominate over those general conditions to which the atmosphere is subjected by the rotation of the earth, and its annual revolution round the sun. To other influences on the winds of this sea must be added that of the great African desert, stretching for 2,000 miles in a direction parallel to its southern shore, and in parts touching upon it—an enormous waste of bare sand or rock, vehemently reflecting the rays of a southern sun, and acting as a furnace upon the atmosphere above it. In effect of these and other circumstances, the winds of the Mediterranean, though to a certain extent regular and periodical, yet abound in local characters and local names; and we might readily enumerate more than a dozen, pertaining to different coasts or gulfs—as the Birazones of the south-east coast of Spain; the Vent de Bize, or Mistral, of the southern French coast; the Raffiche of Corsica, and other mountainous islands; the Gregale of Sardinia and Malta; the Siffinto and Bora of the Adriatic; the Tramontana generally over the Levant; and the Levanters and Sirocco of the whole Mediterranean. Of these several winds, the Sirocco, or south easterly wind, is by far the most remarkable; not merely from its frequency and wide prevalence, but yet more from its physical properties, and peculiar effects on the animal frame. These effects, mainly manifested on the nervous and muscular powers, are now become too familar to the traveller to need being dwelt upon in detail. Every one who has felt this wind as it occurs at Malta or Palermo will remember that prostration both of body and mind, which is its instant and continued effect—an effect certainly not owing to temperature alone, since winds of greater heat may blow from other quarters without producing the like results. Various circumstances make it probable that the atmospheric electricity is concerned in these phenomena; but we need minute and prolonged observations, like those of Peltier and Quetelet, to satisfy the demands for

facts, bef re this or any other hypothesis can stand good. Such research might be readily carried on at Mal a; and with collateral observations as to the proportion of ozone, and other properties of this strange and malignant wind the local relation of which to the African and Arabian deserts, and to the Samuel wind of Egypt, wi l at once occur in any speculations as to its c us s. The frequent suddenness and vi - lence of Mediterranean storms are well known to those who have been voyagers in the Gulf of Lyons and the Archipelago. But we m u t add a few words also as to the calms of the deep sea—the *bonaccia* of the Italian mariner—those times when its waters sleep under the sun for days together, as if they had never been ruffled by wind or storm. The voyager in the Mediterranean in older times loitered long and wearily under these calms. The traveller of our own day presses forward despite them; with the aid of that ever c nstant motive power, created by and subjected to human skill. Yet even he may well long for breezes to stir the still surface and give life and motion to the stagnant air. The *pumâtōn anêrithmon gelasma* portrays, in language almost pecul ar to the great p et who uses it, that happier aspect of seas which gladdens with movement the eye of the sailor—such as Claude so often and so fondly conveys to his canvas, with accompaniments which the Mediterranean alone can furnish to the painter.—*Dr Holland's Scientific Essays.*

Editorial Notices, &c.

Sheep Husbandry.—We learn that there is now in preparation and to be published in a few weeks by J B. Lippincott & Co., Philadelphia, and D. D. T. Moore, Rochestor, N. Y., a new and complete work on Sheep Husbandry, entitled The Practical Shepherd, by the Hon. Henry S. Randall, LL.D., author of "Sheep Husbandry in the South," "Life of Jefferson," "Fine Wool Sheep Husbandry," etc.; also Editor of the American Edition of "Youatt on the Horse," of which over thirty thousand copies have been sold The author of "The Practical Shepherd" is well known as the ablest and most valuable writer on Sheep Husbandry in this country, and the work cannot fail of becoming the standard authority on the subjects discussed. It must prove indispensable to every American flock-master who wishes to be thoroughly posted in regard to the History and Descriptions of the popular breeds of Sheep, their Breeding, Management, Diseases and remedies. The work is intended to give that full and minute practical information on all subjects connected with Sheep Husbandry which auth r has derived from the direct personal perience of thirty-five *years with large floc* together wi h that knowledge of different me and systems which has flowed from a very tensive correspondence during a long pe with leading flock-masters in every part of world.

The first six chapters of "The Pract Shepherd" will be devoted to a full descrip of the best breeds of Sheep in the United St including the different varieties of the Mer and the various English mutton breeds, these will be illustrated generally with eng ings from original drawings from life. T will be fo lowed by Chapters on Cross-Breed on Breeding In-and-in; on the Qualities Points to be Sought in Sheep; on Yolk an Uses; on the Theory and Practice of Bree on the adaptation of different Breeds to D ent Soils and Circumstances; on the Prof Wool and Mutton Production and their pects in the *United States*; on the Spring agement of Sheep; on Summer Manage (two chapters); on Fall Management; on ter Management, Food, &c., (two chapt on Diseases and their Management, (se chapters).

We bespeak for this work when it ap that amount of attention to which the i tance of the subject and the ability of the a entitle it.

The British American, No. 2, June: ' to, Rollo & Adam.

The second number of this Canadian m fully sustains the favourable opinion \ pressed in our last. Its articles are vari interesting. If it is continued in the spirit and with similar ability, the *I American* cannot fail to prove a welco itor in every family possessing the leas and refinement throughout the whole of these Provinces. Terms $3 per ann.

The London Quarterly Review, May The North British Review, May, 1

These standard British Quarterlies plete as usual with articles of substanti on all the great questions of the day American War in the former, and th tegration of Empires, and British Inter

foreign struggles, in the latter, will be read this moment with a peculiar interest on is side the Atlantic. The elaborate article Vegetable Epidemics should be carefully died by farmers and gardeners in particular. *ackwood* for May, has as usual, several ar- les of great merit. Now is a convenient e to commence subscribing to these British iodicals, as new volumes commence this nth. All four Reviews with Blackwood's nthly magazine can be had at the extraor- ary low sum of $10 per annum; or each gly, for $3. They can be ordered of Book- ers, or from the American publishers, mard Scott & Co., Walker Street, New York.

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TORONTO, JULY 1, 1863.

l Wheat, per bushel.....	$0	85	to	$0	95
ng Wheat, "		80	"		87
ey, "		60	"		70
s, "		50	"		55
s, "		45	"		50
"		56	"		60
"	4	00	"	5	00
on, "	4	00	"	4	50
tos, per bushel,.....		40	"		50
es, per barrel,.....	2	00	"	2	25
Butter, per lb.,.....		11	"		12½
Butter, "		10	"		11
per doz.....		10	"		12
ens, "		35	"		40
s, each, ...	3	00	"	5	50
per ton,.....	10	00	"	16	00
"	9	00	"	10	00
per 100 lbs.....	4	50	"	5	00
ins, per lb.....		8	"		9
skins. each		50	"		
per lb.....		36	"		38
r of Paris, per barrel ..		95	"	1	00
per bbl.....	1	45	"	1	47

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