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REPORT OF THE BOARD OF AGRICULTURE OF THE PROVINCE OF NOVA SCOTIA, FOR 1868.

Halifax, May 17, 1869.

The Board of Agriculture beg to submit the Annual Report of their operations for the year 1868, being the fifth year of the existence of the Board.

In accordance with the nominations of the Agricultural Societies of the several Rural Districts into which the Province is divided for the purposes of the Agricultural Act, the Board for the past year, was constituted as follows :

District No. 1.—(City and County of Halifax.)

The Hon. SIR WM. YOUNG, Kt.
H. YEOMANS, Esq.
W. CUNARD, Esq.
JOSEPH J. NORTHUP, Esq.

District No. 2.—(Counties of Kings, Annapolis and Digby.)

DR. C. C. HAMILTON, M.D., Cornwallis.
AVARD LONGLEY, Esq.

District No. 3.—(Counties of Lunenburg, Queens, Shelburne, and Yarmouth.)

H. A. N. KAULHACK, Esq., Lunenburg.
FRANK KILLAM, Esq., M.P., Yarmouth.

District No. 4.—(Counties of Hants, Colchester, and Cumberland.)

Hon. ALEX. MACFARLANE.
Hon. R. A. McHEFFEY, Windsor.

District No. 5.—(Counties of Pictou, Antigonish, and Guysborough.)

Hon. JOHN MACKINNON, Antigonish.
SHERIFF HARRIS, Pictou.

District No. 6.—Counties of Cape Breton Inverness, Richmond and Victoria.)

HENRY DAVENPORT, Esq., Sydney.
GEO. C. LAWRENCE, Esq., Port Hood.

Members ex-officio.

The Rev. DR. ALEX. FORRESTER, Principal of the Normal School, Truro.
T. H. RAND, Esq., M.A., Superintendent of Education.

The Executive Officers elected by the Board were :—

President—HON. ALEX. MACFARLANE.
Vice Pres.—HENRY YEOMANS, ESQ.
Treasurer—WM. CUNARD, ESQ.
Secretary—GEORGE LAWSON, LL.D.

The list of members has been reduced by the death of one of their number, the Rev. Dr. Forrester; and the Board have to regret, in common with a very large portion of the people of this Province to

whom he was personally known, the loss that has been sustained. In addition to his labours in the cause of Education, Dr. Forrester gave much attention to the improvement of Agriculture, and was intimately connected for many years with the various agricultural organizations of the Province. The success of the Provincial Exhibition of 1854 was, in an especial manner, due to his energy and zeal; he took an active and persevering interest in every measure calculated to promote either Education or Agriculture, and the Farmers of the Province will feel, as the Teachers do, that they have lost in him a sincere and active friend.

The duties imposed upon this Board by the Act for Encouragement of Agriculture, passed in May, 1864, are the following, viz.: (1.) To take measures for the formation of County or District Societies and for infusing new vigour and efficiency into those already in existence; (2.) To receive the accounts and reports of such Societies, and see that

before participating in the Provincial Grant they have complied with the provisions of the Act; (3.) To publish a Journal for the diffusion of agricultural and horticultural information adapted to the condition and circumstances of the country, and to cause the same to be distributed as generally as possible; (4.) To take measures to obtain from other countries animals of new and improved breeds, new varieties of grain, seeds, vegetables, plants, or other agricultural productions, for general and equitable distribution throughout the several counties; and (5.) To hold every third year, or oftener, should the Board deem it advisable, in some central and suitable locality, a General Provincial Exhibition of agricultural and horticultural products, animals, and domestic manufactures.

The Board has now been in existence for a period of nearly five years, and the several objects just enumerated have been steadily kept in view, and carried out as fully as the funds placed at disposal by the Legislature would allow. The successful carrying out of these objects has required from the members of the Board a very large amount of time and attention, not so much in attending Board meetings at Halifax, which under usual circumstances are held only twice a year, as in the several districts which they represent, where their personal exertions have been necessary to stimulate the local Societies to activity and induce the farmers to second the efforts of the Board by entering with spirit into the raising of improved stock and the adoption of improved methods of culture. In order to represent the present position of the Board, it may be proper to refer to their labours under the several heads above mentioned, stating under each the efforts that have been made in the past, the results obtained, and the course of procedure that seems to be indicated by experience as the most promising for future exertion.

The duty enumerated first in order in the Act is the formation of Agricultural Societies, and it is the one to which the Members first directed their attention when they met five years ago to constitute the Board. It has been found by experience in every country that a Central Board is comparatively powerless unless it be provided with an effective

organization of working local societies through which its efforts in improvement may be extended over the whole country, and brought home to the door of every farmer. The Board have therefore spared no pains in their attempts to form new societies and to infuse vigour into the old. Their first act in 1864 was to despatch one of their officers to the most distant parts of the Province; a large number of Societies were formed by this means under the regulations of the new Act, old Societies that had gone to decay were resuscitated, and others in which abuses had grown up were remodeled and brought under the control of the Board. During the first year, the Board had organized 37 Societies, comprising 1744 members, whose subscriptions for the year actually paid and attested, amounted to \$1859.00.

In 1865 the number had increased to 48 Societies, 2198 members, subscriptions \$2384.00.

In 1866 there was a still further increase to 52 Societies, 2543 members, subscriptions \$2800.50.

In 1867 there was still an increase in the number and strength of Societies the numbers being 58 societies, 2833 members, subscriptions \$3051.50.

Whilst this continued increase in the number of societies was highly gratifying to the Board, it was not without its difficulties and embarrassments, for the provisions made under the Act five years ago for a membership of 1700, which was then considered large, was found to be inadequate to the wants of Societies with a membership of nearly 3000. The annual appropriation for Agriculture provided for by the Act is \$6000. Of this sum \$4000 is paid over to Agricultural Societies in rateable proportion to the subscriptions of members, the amount to each County being limited to \$240; and the balance of \$2000 is devoted to the general purposes of the Board, expenses of management, printing, importation of grains and seeds, &c. This appropriation of \$1000, whilst it was deemed adequate to meet the wants of the limited number of Societies in 1864, is now found to be insufficient to afford adequate encouragement to local effort. Thus several of the Societies in the fine agricultural counties of Colchester and Kings do not receive more than \$30 per annum, a sum too small even to pay the subscription which

they are naturally expected to give towards a Provincial Exhibition, or to defray the expense of transit into the Province of a thorough bred animal. It will thus be seen that on account of the stated sum at the disposal of the Board for the encouragement of Agricultural Societies, their efforts in this direction were limited; as the Societies increased in numbers and in strength, the legislative encouragement decreased. It is to these circumstances clearly, aided no doubt by a discouraging rumour that the Legislative Grant, small as it was, would be still farther reduced, that the Board have this year to report, not a continuation of the progressive increase observable through the four previous years, but a slight decrease in the number of Societies, the number of members, and the amount of subscriptions. The detailed statement appended to this Report shows that there have qualified for participation in the Legislative Grant during the year 45 Societies, comprising 2246 members, who have paid subscriptions to the extent of \$2519.75. There is thus a decrease as compared with last year of 13 Societies, 297 members and \$531.75 of subscriptions. The appropriations made to Societies this year in proportion to subscriptions, and under the limitations of the Act, amount to \$3232.50. It is to be observed that a large number of these local Societies, depending upon the Legislative Grants being proportionate in amount to their own subscriptions, made purchases of valuable thorough-bred animals; these were in many cases bought by use of borrowed money, and the officers of Societies have thus come under pecuniary obligations in order to promote the general interest. The animals have likewise to be maintained at considerable expense; and considering the great benefits which accrue to the Province from the possession of them in the rural districts, the Board desire to represent the strong claims which these Societies have upon the liberality of the Legislature, and the importance of enabling them to retain their stock and continue the course of improvement upon which they have so auspiciously entered. Every Nova Scotian who had an opportunity of seeing the large and respectable assemblage of thorough-bred animals congregated in the Governor's field, from all parts of the

Province, in October last, and then exhibited (for the first time in this Province) in classes according to breed, must have felt a just pride that our Agriculture was entering upon a new and important phase, that had never before been attained. To allow these Societies to fall to the ground, after all the energy and money that have been expended upon them during the last few years, would be a grievous loss to the country. But the Board trust that, on consideration, the Government and the Legislature will not permit any such result, but will see the importance of maintaining in efficiency an organization which is so manifestly beneficial to the Province at large. From the communications received by the Board, there can be no doubt but that an increase in the Agricultural Grant at the present time will give much satisfaction in all parts of the country, and the Board believe that it will prove of great permanent benefit.

The next object contemplated by the Act was the publication of an Agricultural Journal. The Board commenced the publication of a Journal in March, 1865, which has been regularly continued, and they have endeavoured, as far as consistent with the nature and size of the publication, to supply the farmers of the Province with the latest information respecting improvements in Agriculture that are being carried out in various parts of the Province as well as in other countries. During the past year the Journal was occupied to a large extent with information respecting the Provincial Exhibition; and the arrangements made from time to time by the Committee, as well as the Prize Lists, were published in the Journal, as the most ready means of reaching the agricultural community. A large portion of the Journal is likewise necessarily occupied with the Reports of County and District Societies, which it is essential to make public for obvious reasons. In addition to such information a large number of articles on practical agriculture have been published, including, besides those prepared and selected by the Secretary, a number of valuable communications from correspondents.—Mr. Bustin, of the Carlton Farm, Yarmouth, contributed elaborate papers on the potato disease and the field culture of cabbages; Mr. Saunders, of Halifax,

articles on the use of lime and of salt in agriculture; Colonel Sinclair, on potato blight, and on the drain tiles suited for field purposes; Mr. Jas. Hutton, Jr., on the horticultural exhibitions of Scotland; and Chas. E. Brown, Esq., results of experiments in the culture of strawberries; Mr. Foorde furnished an interesting article on tea culture in India; and there were many other contributions by members of the Board and others.

As regards the importation of live stock and improved grains and seeds, the labours of the Board have been considerable. In October, 1864, a Committee of their number visited the Triennial Provincial Exhibition of New Brunswick, held that year at Fredericton. Many of the animals shown were found on examination not to be so suitable for Nova Scotia as was anticipated, and the purchases made were comparatively few. However, several excellent animals were obtained, including the:

First Prize Devon Bull,
First Prize Durham Bull,
Young Stock, and several excellent Rams.

These animals were sold by public auction to Societies, and brought good prices.

In the following year (1865) an importation of thorough-bred Leicester Rams was made from England, which were sold on 11th November, and were chiefly purchased by Agricultural Societies, several of them bringing nearly 100 dollars each.

Another importation of 10 Rams from Lower Canada, chiefly Leicesters and Cotswolds, was made shortly afterwards, but the animals did not reach Halifax in time to be sold earlier than 8th December, and although the stock was good, yet the prices realized were not large.

In the fall of 1866 a large importation was made. The Secretary of the Board was sent to the Provincial Agricultural Exhibition of Upper Canada, with instructions to purchase such animals as were suited to the wants of our farmers, and could be obtained at reasonable prices. He returned with the following stock, all thorough-bred:

8 Short Horn Durham Bulls,
2 Hereford Bulls,
2 Ayrshire Bulls,
1 Devon Bull,
3 Short-horn Durham Heifers,
11 Cotswold Rams,
11 Leicester Rams,
1 Shropshire Down Ram,
1 Southdown Ram,
5 Ewes.

These animals were chiefly sold to Societies and brought high prices.

Next year (1867) another importation was made, consisting of purchases from the Provincial Agricultural Exhibition of Ontario, which was held that year at Kingston. These animals suffered considerably on the voyage and the prices realized were not so high as at the sale of the previous year. The animals were:

2 Short-horned Durham Bulls,
5 Ayrshire Bulls,
3 Ayrshire Heifers,
3 Short-horned Durham Heifers,
18 Leicester Rams,
5 Southdown do.,
5 Shropshire and Hampshire Down Rams,
8 White Chester Boars,
5 Berkshire "
4 Yorkshire "
3 Yorkshire Sows.

There have thus been imported and sold to Agricultural Societies during the last four years, not fewer than 22 thorough-bred Bulls, 9 thorough-bred Cows and Heifers, upwards of a hundred thorough-bred Rams, and 20 thorough-bred Pigs, all of the very best breeds that could be procured. The progeny of these animals may now be seen in every part of the country where there is an active Agricultural Society, and the recent improvement in the character of our farmers' live stock is obvious to every careful observer.

Notwithstanding these importations, the wants of the country are far from being satisfied. In wealthy agricultural countries, especially where grain and other feed are cheap and abundant, the raising of thorough-bred stock is frequently engaged in by amateur breeders, and the wants of the farmers are thus supplied; but there is no immediate prospect of our Nova Scotian farmers having their wants met in this way. It is necessary, therefore, in order to continue the improvement in our stock that there should be frequent introductions of fresh blood into the Province, without which our thorough-bred stock will run out again. It was contemplated at one time to establish a Stock Farm for the raising of thorough-bred male animals for distribution, and a sum of \$8000 was placed at the disposal of the Board for this purpose by the late Government, prior to the Union of the Provinces. The amount is now lying in the Merchants' Bank at interest at the credit of the Board, but it is not sufficient to carry out the scheme efficiently without an additional annual grant as originally intended, and this the Board do not feel justified in applying for at the present time, when there is difficulty in meeting even the ordinary claims of local societies. The Board

therefore recommend that the money remain in the bank at interest for the present, so that when the Government is in a position to give the necessary encouragement, it may be applied to the use for which it was appropriated, in such way as the Legislature may determine.

The importations of Grain and other Seeds made by the Board have been considerable. In addition to annual importations of Wheat, there have been brought to the Province and distributed among the Societies, Russian flax seed, which gave great satisfaction, English Horse Beans, Barley, Canadian Field Peas and other Grains; and the various sorts of Potatoes known as the Goodrich Seedlings imported by the Board a few years ago, and now universally spread over the Province are in great requisition on account of their superior quality, great yield and the power of some of the sorts of effectually resisting the much dreaded "potato rot." Last spring the Board imported from Western Canada 360 bushels of spring Wheat of the variety called Fyte Wheat, from having been originally raised in Canada by a farmer of the name of Fyfe. This wheat was sold to Societies at cost price, and has now, from that and a previous importation, had a fair trial in various parts of the Province. The results have been very satisfactory. From every locality where it has been tried, from Cape Breton to Yarmouth, favorable reports have been received, and it is believed that by the careful selection of seed wheat farming may become much more successful and profitable than it has hitherto proved in the Province. Mr. Sprott, Secretary of the Lower Musquodoboit Agricultural Society, reports that the Society having obtained 20 bags of the wheat from the Board, sold it, a bushel to each member, at \$1.25 per bushel. During the previous year there had been hardly a bushel of wheat raised in the district in consequence of repeated discouragements. But with the new seed in 1868, out of the whole forty trials only three failed, and in many instances there was far above an average crop. Some of the sowings were made as early as the 1st of April, and some as late as the 1st of June; the early wheat was the best. Results more or less similar to those of the Musquodoboit Society have been communicated to the Board by Societies throughout the whole Province.

This season (1869) an importation of wheat from Northern Russia, of a character likely to be suitable to our soil and climate, has been made by W. J. Stairs, Esq., and he has kindly placed a considerable portion of it at the disposal of the Board of Agriculture.

Whilst the introduction of improved seeds is one means of increasing the pro-

duce of our farms, it requires to be seconded by improved cultivation and enrichment of the soil. Our farmers may now obtain unlimited supplies of Bone Dust at reasonable rates, at Mr. Stanford's Bone Mill, Three Mile House, established under the patronage of the Board.

The last duty laid down in the Act as devolving upon the Board is the carrying out of a system of Provincial Agricultural Exhibitions. In 1866 the Board, by special resolution, called the attention of the Agricultural Committee of the House to the importance of holding a Provincial Exhibition, and the autumn of 1868 was approved of by the Legislature as a proper time for such Exhibition. The necessary arrangements were accordingly made. After much consideration it was resolved to conjoin with the Agricultural Exhibition a General Exhibition of Arts and Manufactures. In order to carry out the scheme successfully, the Board felt it to be necessary that the practical work should be undertaken by gentlemen resident near the city who could give almost daily attendance at meeting- and constant attention to the various arrangements required. It was therefore determined by the Board to call a public meeting in Temperance Hall, which was held under the presidency of His Excellency the Lieut. Governor, and the whole subject of the Exhibition was thus brought prominently before the public by spirited addresses and resolutions. At that meeting a Committee was named to carry out the Exhibition; and their Report, when submitted, will show the effective manner in which they have discharged their duty.

The Board beg to submit herewith the Treasurer's Accounts, for the past year, with relative vouchers and Auditing Committee's report thereon, and general abstract of sources of income and expenditure.

There is likewise appended hereto a detailed statement of the present condition of the Agricultural Societies in the various counties of the Province, showing in reference to each the number of members, the names of the Executive Officers, the amount of subscriptions actually paid during the year as attested in terms of the Act, and the amount of grants assigned by the Board.

A tabular synopsis of Returns of the Crops in the several counties during the season of 1868, as reported by the various Societies, is also submitted herewith.

By direction of the Board of Agriculture.

ALEX. MACFARLANE,
President.
GEORGE LAWSON,
Secretary.

To the Hon. W. B. VAIL,
Provincial Secretary.

THE SPARROWGRASS PAPERS.

CHAPTER I.

Living in the Country—Rural Anticipations—Early Rising—Baked Hippopotami—Our new Chickens—A discovery—The advantages of having a watch-dog in the country—A finale to the First Garden, and unpleasant prospects for the future.

It is a good thing to live in the country. To escape from the prison-walls of the metropolis—the great brickery we call "the city"—and to live amid blossoms and leaves, in shadow and sunshine, in moonlight and starlight, in rain, mist, dew, hoar-frost, and drouth, out in the open campaign, and under the blue dome that is bounded by the horizon only. It is a good thing to have a well with dripping buckets, a porch with honey-buds, and sweet-bells, a hive embroidered with bees, a sun-dial mossed over, ivy up to the eaves, curtains of dimity, a tumbler of fresh flowers in your bed-room, a rooster on your roof, and a dog under the piazza.

When Mrs. Sparrowgrass and I moved into the country, with our heads full of fresh butter, and cool, crisp radishes for tea; with ideas entirely lucid respecting milk, and a looseness of calculation as to the number in family it would take a good laying hen to supply with fresh eggs every morning; when Mrs. Sparrowgrass and I moved into the country, we found some preconceived notions had to be abandoned, and some departures made from the plans we had laid down in the little back-parlor in Avenue G.

One of the first achievements in the country is early rising! with the lark—with the sun—while the dew is on the grass "under the opening eyelids of the morn," and so forth. Early rising! What can be done with five or six o'clock in town? What may not be done at those hours in the country? With the hoe, the rake, the dibble, the spade, the watering pot? To plant, prune, drill, transplant, graft, train, and sprinkle! Mrs. S. and I agreed to rise early in the morning in the country.

"Richard and Robin were two pretty men,
They laid in bed till the clock struck ten;
Up jumped Richard and looked at the sky:
O Brother Robin! the sun's very high!"

Early rising in the country is not an instinct it is a sentiment and must be cultivated.

A friend recommended me to send to the south side of Long Island for some very prolific potatoes—the real hippopotamus breed. Down went my man, and what, with expenses of horse-hire, tavern bills, toll-gates and breaking a waggon, the hippopotami cost as much a piece as pine apples. They were fine potatoes, though, with comely features, and large languishing eyes, that promised increase of family without delay. As I worked my own garden (for which I hired a

landscape gardener at two dollars per day to give me instructions). I concluded that the object of my first experiment in early rising should be the planting of the hippopotamusses. I accordingly rose next morning at five, and it rained! It rained for two weeks! We had splendid potatoes every day for dinner. "My dear," said I to Mrs. Sparrowgrass, "where did you get these fine potatoes?" "Why," said she, innocently, "out of that basket from Long Island!" The last of the hippopotamusses were before me, peeled and boiled, mashed and baked, with a nice thin brown skin on the top.

I was more successful afterwards. I did get some fine seed potatoes in the ground. But something was the matter: at the end of the season, I did not get as many out as I put in.

Mrs. Sparrowgrass, who is a notable house-wife, said to me one day, "Now, my dear, we shall soon have plenty of eggs, for I have been buying a lot of young chickens." There they were, each one with as many feathers as a grasshopper, and a chirp not louder. Of course we looked forward with pleasant hopes to the period when the first cackle should announce the milk white egg, warmly deposited in the hay which we had provided bountifully. They grew finely, and one day I ventured to remark that our hens had remarkably large combs, to which Mrs. S. replied, "Yes, indeed, she had observed that; but if I wanted to have a real treat, I ought to get up early in the morning and hear them crow." "Crow," said I faintly, "our hens crowing! Then, by 'the cock that crowed in the morn, to wake the priest all shaven and shorn;' we might as well give up all hopes of having any eggs," said I, "for as sure as you live, Mrs. S., our hens are all roosters!" And so they were roosters! that grew up and fought with the neighbours' chickens, until there were not a whole pair of eyes on either side of the fence.

A dog is a good thing to have in the country, I have one which I raised from a pup. He is a good stout fellow, and a hearty barker and feeder. The man of whom I bought him said he was thorough bred, but he begins to have a mongrel look about him. He is a good watch dog, though, for the moment he sees any suspicious looking person about the premises, he comes right into the kitchen and gets behind the stove. First we kept him in the house and he scratched all night so get out. Then we turned him out, and he scratched all night to get in. Then we tied him up at the back of the garden and he howled so that our neighbours shot at him twice before day-break. Finally, we gave him away, and he came back; and now he is just recovering from a fit, in which he has torn up the patch that has been sown for our spring radishes.

A good strong gate is a necessary article for your garden. A good, strong, heavy gate, with a dislocated hinge, so that it will neither open nor shut. Such a one have I. The grounds before my fence are in common, and all the neighbours cows pasture there. I remarked to Mrs. S, as we stood at the window in a June sun-set, how placid and picturesque the cattle looked, as they strolled about, cropping the green herbage. Next morning I found the innocent things in my garden. They had not left a green thing in it. The corn in the milk, the beans on the poles, the young cabbages, the tender lettuce, even the thriving shoots of my young fruit trees had vanished. And there they were looking quietly on the ruin they had made. Our w'ch-dog, too, was foregathering with them. It was too much, so I got a large stick and drove them all out, except a young heifer, whom I chased all over the flower beds, breaking down my trellises, my wood-bines, and sweet briars,—my roses, and pæonies, until I cornered her in the hot bed. I had to call for assistance to extricate her from the sashes, and her owner has sued me for damages. I believe I shall move in town.

[From the Mark-Lane Express.]

THE RUST-IN-WHEAT COMMISSION.

To His Excellency Lieutenant-Colonel Hanley,
Officer Administering the Government of
South Australia, &c., &c.

His Excellency Sir Dominick Daly, Knight, late Governor-in-Chief of South Australia, having appointed us whose names are hereto appended a commission to inquire into the diseases affecting the cereal crops of this province, we have the honor to report to your Excellency as follows:

I. PRELIMINARY.—The natural history of the rust-diseases having for years past formed a subject for scientific investigation, your commissioners did not anticipate being able, with the limited means and appliances at their command, to throw new light on the physiology of that malady; but they have directed their best attention to the question whether the disease which has recently destroyed our cereal crops was identical with the "rust" described by scientific men, or whether it was some new and modified disease, generated by peculiar conditions of soil and climate affecting the growth of corn in this colony. They have, however, notwithstanding former researches, inquired anew whether the cause of rust was to be sought for in the seed sown, in the soil itself, or in atmospheric conditions affecting the growth of the plant; and, finally, whether any plan could be devised for mitigating the severity of the disease. On these points much valuable evidence, written and oral, has been collected, and will be found appended to this report. Your commissioners have also directed their attention to the disease popularly designated, "take-all," and have recorded the observations of many experienced and competent witnesses. The method of investigation has been the following: A schedule of

questions (see Appendix) comprehending some twenty separate branches of inquiry was printed, and parcels forwarded to all the corporations and district councils of the province for distribution amongst agriculturists and other suitable persons in their respective neighborhoods. It was considered better that the various district councils should themselves select the farmers whose evidence was required, than that the commissioners should limit their inquiries to individuals of their own choice. As regards the schedule of questions itself, it was framed simply as a guide to those who might wish to avail themselves of it; each person addressed being invited to state his own views and opinions in his own way, altogether regardless of the questions proposed by the commissioners. Many witnesses have, in accordance with this invitation, given the result of their experience on various points of importance, supplementary to their replies to the schedules. The communications received in answer to the queries propounded by the commission have been carefully considered and collated, the most important portions of the information elicited being hereto appended. This has unavoidably occasioned some delay, but the value of the evidence thus secured will more than compensate for the loss of time. In addition to the useful and varied information gathered through the post from about 700 practical agriculturists, various witnesses have personally attended before the commission, and given *vice voce* evidence. The witnesses include some of the most experienced and observant wheat-growers in the province, as also our ablest agricultural chemists and microscopists. Your commissioners have also had the benefit of a thoughtful and elaborate paper, prepared by Mr. Chas. Todd, on the rain-fall of last season, compared with that of seasons preceding—a paper to which they point with more than ordinary satisfaction, as replete with information valuable to the scientific farmer and the naturalist. Reference should also be made to a report kindly and readily furnished by Dr. Mueller, of the Melbourne Botanic Gardens, on the subject of the rust in wheat, summarizing the latest researches and discoveries with regard to that fearful malady, and effectually setting at rest some plausible but unsupported theories on the subject. The scientific aspects of the question have also been professionally elucidated by Drs. Muecke and Schomburgh, and Messrs. Francis Cossins and Ey, of this colony, whose conclusions are also appended. With these preliminary remarks, your commissioners proceed to submit the result of their investigations.

II. RED RUST.—As regards the physiological character of red rust, there can be no doubt whatever that it is essentially a vegetable parasite or fungus, attacking the plant externally, and brought into active operation by certain atmospheric or climatic conditions, the most effective of which last year were heat and humidity. In September and October there was a most unusual amount of moisture combined with sultry heat, and frequent heavy dews at night—the blades of cereal plants being kept in a continual state of dampness, with occasional rapid evaporation, causing the pores of the leaf to be more than ordinarily open, and thus facilitating the entrance of the infinitely minute spores, or seeds of the rust fungus, which are more or less always floating in the atmosphere, or deposited on the soil or surrounding objects, ready for dissemination by every wind that

blows. An opinion has been expressed before this commission that the rust on the wheat blade is simply an exudation from the plant itself, a spontaneous overflow of sap, and is not the result of parasitical attack. But this theory is altogether without support, either in the general conditions and circumstances of the rust as observed by the naked eye on a great variety of plants, or in the microscopic appearances of the diseased wheat plant. For although the most luxuriant growths of wheat have doubtless suffered most from the rust, thus lending an apparent support to the theory of sap "exudation," it is an undeniable fact, that a large number of cereal plants and grasses—the very reverse of luxuriant—have also suffered from rust, which must, therefore, be accounted for in some other way than by the outflow of superabundant juices. The spores of the rust are proved to be true seeds, possessing a uniform and definite character according to their variety, retaining their vitality as other seeds do, and capable of being developed at any time by the application of heat and moisture. Your commissioners have examined through the microscope various specimens of last year's rusted wheat, and find the rust spores identical in appearance with those noticed and delineated by Mr. Cooke, and other eminent mycologists, who have written on the subject. There is, therefore, no doubt whatever, that the rust in wheat, now so painfully known to South Australian farmers, is identical with the disease long recognized by the same name in Europe, briefly described by Dr. Mueller, in his report hereto annexed. It has also been shown in evidence, that the red rust has affected, in addition to wheat and other cereals, flax, lucerne, wild oats, wild barley grass, reeds and many other vegetable productions. It has been noticed that the red rust appeared in some localities before the humid weather of September and October, and also (in the south-east) after the dry, hot weather had set in. On this point it may be remarked that there are two distinct varieties of red rust, designated in Mr. Mueller's paper, *Puccinia graminis* and *Puccinia straminea*—one of which has the power of producing its spores in almost any season. Mr. Ey, in his evidence, also refers to the two kinds of rust, and avows his conviction that both have been active agents in the destruction of last season's crop. The rust that appeared earlier is popularly known as the "long corn" rust, and is believed to have borne a full share with the *Uva rubigo* (or true rust) in the desolation of our late harvest. In the course of this investigation some points of importance have been established, materially affecting and modifying opinions hitherto entertained. In 1865, it was reported by the Agricultural and Horticultural Society, who took evidence on the subject of rust, that crops grown upon land long cultivated were much more liable to the disease than those grown upon new land, and that crops grown upon well cultivated and manured land were much less liable. These opinions, though disavowed by some cultivators, prevailed very generally down to the time when your commissioners entered upon their investigation; but the experience of last season excited grave doubts on the subject; and the result of the evidence now adduced entirely sets aside this portion of the report of the Agricultural Society. It is found, as the almost uniform result of last year's operations, that rust has prevailed upon all kinds of land—upon lands long cropped,

upon fallow lands, upon grazed lands, upon virgin soil, upon manured lands, upon the plains, and upon the hills. But more than this, it has been proved that in nearly every instance the richest lands have suffered the most from red rust; and that, in a large number of cases, the best crops have been reaped from the poorest natural soils, and from those most exhausted by frequent cropping. It is an almost universal fact that wherever the wheat grew most luxuriantly in September and October, there the failure has been most complete; whilst those crops that in the early part of the season were the least promising, as a rule, turned out by far the best sample and the heaviest yield. This very remarkable circumstance, attested by hundreds of witnesses, is thus accounted for: Luxuriance in vegetation, like excessive fat in animals, is not identical with vigor. Plants forced into abnormal luxuriance are more susceptible of climatic changes than those which are tough and hardy. The more juicy and succulent the plant, the more predisposed is it to the inroads of the rust. The pores of the leaf being unusually open, the minute spores of parasitical fungi can more readily enter. Then again, the more dense and heavy the crop, the less possible is it for the wind to circulate, and the saturated leaves to dry. On the other hand, in a thin, light crop, the leaf pores being less open to the entrance of the rust seed, the disease is not so freely propagated, whilst the whole crop is far better situated to enjoy the drying influences of the wind, which retard the development of the parasite. The poor crop has thus a twofold advantage over the thick and luxuriant crop in a season favorable for the development of rust. Hence, so far as red rust is concerned, rich soils, and what is termed "high farming," instead of shutting out the disease or mitigating its severity, operate in the contrary direction, always supposing that the climatic conditions favorable to the development of rust are present.

The *modus operandi* of the disease is twofold. The rust spores, obtaining entrance through the open stomata, or breathing pores of the plant, are very quickly developed, and, pushing forward rootlets (*mycelia*), gradually work their way along the sap vessels of the leaf—in all probability injuring, by their multiplication and progress, its internal mechanical structure. But the chief damage—or, at all events, that which can with most certainty be traced—is caused by the absorption of the wheat sap by the parasite that has entered its channels. The juices that should have gone to nourish the wheat-ear are intercepted in their progress by the rust fungus, which starves the grain by living on its proper nourishment. This is not only deduced from microscopic observations, but is clearly demonstrated by chemical analysis. Healthy grains of wheat contain certain definite proportions of phosphoric acid, potash and soda, and magnesia. It has been demonstrated that rusted wheat is very deficient in that ash, having sometimes less than one-third its proper quantity. On the other hand, the rust spores, gathered from the rusty wheat, yield, on analysis, an extraordinary quantity of ash; and this ash is found to contain a large amount of the constituents present in the ash of healthy wheat, but wanting in the ash of rusty wheat. Doubtless further experiments

* September and October are spring months in Australia, answering to our April and May.—Sec.

on the point are eminently desirable; but, as far as chemical analysis has extended, it seems fairly proved that the wheat perishes through the absorption of its proper nutriment by the rust fungus, and that the constituent elements wanting in the shrivelled grain are to be found in the parasite which has fed upon and destroyed it.

III. SEED WHEAT.—Your commissioners having come to the conclusion that the red rust is not originated in the soil, next directed attention to the several varieties of seed-wheat, with a view to determine whether any descriptions were of more hardy character than others, and better calculated to repel the attacks of the disease. On this subject the evidence of the numerous witnesses is remarkably coincident. With but very few exceptions it has been found in all parts of the colony that the Tuscan and purple straw varieties suffered least, whilst the more prolific varieties, such as the Goldsmith, suffered most. The Tuscan, however, being a poor yielding grain, is not likely to be generally selected for seed; and the purple straw therefore, is the wheat now generally recommended as combining a fair yield and a certain degree of resistance to the red rust. It, of course, remains for the farmer to determine whether (to insure the weightiest crop) he will sow prolific but tender varieties; or whether he will purchase a certain degree of immunity against the rust by being content with a variety of seed not quite so famed for heavy bearing. It is noticeable that the Victorian Commission of 1865 emphatically recommended care in the selection of seed wheat, reporting favorably of the red straw and Tuscan, and deprecating the golden drop, white prolific, white velvet and Winslow. Attention has been specially directed during this investigation to the question of the fitness or unfitness of shrivelled grain, and grain from rusted crops, for seed. There being in many districts of the colony, but little good seed this year, your commissioners deemed the point now under consideration to be one of the utmost importance, and they have much satisfaction in stating that numerous witnesses declare, as the result of their own personal experience, that shrivelled and rusty seed will produce healthy and abundant crops. This fact has, indeed, been known both to scientific observers and practical farmers for many years, and is specially remarked upon by the Victoria Committee. In that colony scientific research and practical testimony were both brought to bear on the subject; and, although Dr. Mueller and his colleagues appear somewhat hesitant to account for the fact, yet they are most confident in reporting that not only will shrivelled and rusty seed produce good plants, but in many instances have yielded healthier and heavier crops than those raised from first class seed. Nevertheless, as strong objections had been urged against the use of last season's rusted wheat as seed, the commission felt it desirable to bestow special care upon this branch of their inquiry. They therefore collected all the reliable information in their power, and also requested Dr. Schomburgh, of the Botanic Gardens, to experiment upon various samples, including some of the worst procurable. The result of experiments thus made fully supports the evidence of agricultural witnesses. The very finest grain germinated as readily as it appeared slightly weaker than the other, it grew freely, and in a few days was as vigo-

rous as that proceeding from a plumper seed. As, however, the germ must be nourished from the substance of the seed until its roots can draw nutriment from the soil, it is reasonable to suppose that very poor seed would have a better chance in good than in exhausted soils. Your commissioners, therefore, consider that their inquiries on this particular question terminated alike in an undeniable and satisfactory conclusion. Much valuable information on that subject, including Dr. Schomburgh's report, is appended. It having been thought by some persons that the rust may partly be accounted for by the continued use for many years of the progeny of the same crop, and that a change of seed, brought from distant localities, would shut out the disease, your commissioners report that this idea is not supported by the evidence. On the contrary, crops raised from seed brought from distant places have been affected with rust equally with those raised from seed grown on the same sections. No doubt, for other reasons unconnected with rust, change of seed is often desirable; and the evidence of witnesses on this point shows that new seed should be procured as nearly as possible from a latitude similar to that where it is intended to plant it, and also from a poorer soil to a richer one, and *vice versa*, otherwise time will be lost in the acclimatization of the new arrival. Fine specimens of South Australian seed-wheat have produced soft and diseased crops in England, in fields where seed grown in the same neighborhood produced healthy and fruitful plants. The colonial seed had not become acclimatized, and the plant suffered accordingly. But although the red rust is shown to be dependent upon atmospheric conditions, and to commence its ravages upon the stem and leaf of the plant, and not to ascend from the root, it is nevertheless desirable to pickle the seed for the purpose not only of killing the spores of black rust or smut, but also in order to destroy spores of the red rust which may happen to attach to it. On the subject of the composition of pickles for wheat, a few words will presently be added.

IV. BLACK RUST AND SMUT.—Smut being effectually destroyed by a proper preparation of the seed, it has not been thought necessary to inquire particularly into a disease within the knowledge of all practical farmers. With reference to black rust, late sowing is recommended as a preventive, unless the ground should previously be thoroughly saturated. Dry plowing, by turning up the land in clods, and leaving open cavities beneath the surface, which harrowing does not fill up, is considered by several practical agriculturists as strongly favoring the development of black rust. One witness says, "The remedy I always adopt is, never to work my land unless it is sufficiently saturated with a certain depth of rainfall, so that the soil is sufficiently moist throughout, and then working the land when it is mellow. I have always found I have avoided black rust. I was led to conclude that black rust came from the roughly-broken state of the soil; as the harrows only penetrate an inch or two—the black rust always made its appearance when the roots got down that far—the bottom being hollow as a honeycomb." Others, in like manner, recommend the thorough working and pulverization of the land, combined with proper pickling, as a sufficient antidote to this form of cereal disease.

V. TAKEALL.—This disease, so destructive in many districts of South Australia, is

not so well understood as rust. Farmers and chemists are alike at sea—ploughmen and microscopical observers differ *in toto* as to its nature and causes. It is said to result from an exhausted soil, from the presence of too much salt in the soil, from the deficiency of some constituent element essential to the maturing of cereal crops. It is declared to be want of drainage, and it is said to be want of manure. It is affirmed to be caused by a vegetable fungus, and to be a disease analagous to the potato disease. It is also said to be the result of insect ravages. Scarcely any two witnesses agree on this point, whether farmer or chemist. But the subject is of far too great moment to be passed over indifferently. In some respects, takeall is more to be dreaded than red rust. The latter cannot commit wholesale destruction, unless in connection with a description of weather such as we rarely have in this colony; but takeall appears altogether independently of the weather. And as its ravages are irrespective of climatic influences, so are its movements inexplicable by reference to locality or soil. It is, like last season's rust, to be found everywhere, and the richest soils often suffer the most. It attacks newly-broken or fallowed land as well as land frequently cropped. It especially attacks the slopes of hills—not so often the table land on the top, nor the flats in the valley, as the slopes and sides. All cereals fall before it; even native grass disappears. It works in patches, selecting certain spots or centres—thence radiating, often succeeded by cocks-pur or Grant's thistle, the takeall in following seasons reappearing in other spots. Its movements being so little reducible to rule, experience and observation are at fault in endeavoring to explain it, and hence conflicting ideas. This difference perplexes the inquiry, whilst the rapid spread of the pest, and the fear that it will every year encroach upon wider tracts of country, render close observation and study a duty of the utmost importance. The appearance of the cereal, above ground, as it fades away and perishes under the influence of this insidious invader, needs no description, being but too well known.—The root has been examined, and appearances detected, leading some observers to conclude that the disease is caused by a vegetable, and others by an animal parasite. Dr. Muecke has magnified and photographed fibres of the roots of wheat plants suffering from takeall, exhibiting a number of minute white threads of a woolly appearance, which he considers to be the *mycelia* of a fungus causing the disease. Mr. Ey, who has also examined it microscopically, says that it is not a fungus, and that the supposed fungoid may be found attached to all roots, healthy or unhealthy. He considers that the disease is caused either by animalcule attacking the plant in the first instance, or by the growth of a sort of a lichen at the bottom of the stalk, which serves as a nest for animalcule. He says: "What I recognise under the name 'takeall,' is the *Vibrio tritici*, or eel of wheat. A plant taken from a diseased spot will be found black on the stem, from the roots to the first internode; and on pressing, a thin film of lichen or moss will come off. In this will be found a number of animalcule coiled up, apparently dead; but on being moistened with a drop of water, on a glass slide under the microscope will come to life in an hour, moving about with great rapidity. They are like eels of wheat, which, as yet, have only been found in the grain. I have not yet satisfied myself

whether the eel or the lichen is the primary cause; but one of the two is takeall. The animalcules might be sown with the seed; it is sometimes the case that one grain of wheat will contain 4,000 to 5,000 eels of wheat."

The witnesses, however, whilst giving expression to their opinions, or their conjectures, were all (with the exception of Dr. Muecke, who strongly adheres to the fungoid origin of takeall) very careful to avoid any final or positive avowal. It is scarcely probable that the takeall results from the development of *vibrions* sown in the seed wheat, because the disease has been just as bad in crops from seed pickled in strong dilutions of sulphuric acid and other mixtures fatal to insect life, as in crops not pickled at all. The Victorian Committee make no reference to takeall—the very name in fact being an admission that the nature and cause of the malady are not as yet found out. The use of sulphur has been found beneficial, and land rendered barren by takeall has been recovered where the ashes of a bush fence have been scattered; but it is doubtful whether the sulphur acted specifically upon the supposed spore or egg of the takeall, or chemically upon the soil, nor is it certain whether the ashes of the bush fence destroyed the takeall by acting chemically upon the soil, or whether the change noticed where the hedge was consumed might be attributable to the heat of the fire. It is exceedingly desirable that this most vital question should be thoroughly sifted, as there is imminent danger of our wheat lands succumbing section by section to this mysterious visitor, and the Commission are, therefore, of opinion that a series of experiments in the application of diluted sulphuric acid, and also of sulphur in its various combinations, both as a pickle for the seed and as a top dressing for the diseased spots in the land, might be of great use, inasmuch as the only generally available remedies for takeall described in the evidence as having been successfully used are diluted sulphuric acid, applied by Mr. Ey as a top dressing, and sulphur and lime, used by Mr. Martin as a pickle for the seed.

VI. PICKLING SEED WHEAT.—Although experience shows that pickling seed wheat is no security against red rust, it does not follow that it has no effect at all upon that disease. Apart, however, from this formidable enemy to cereals there are other foes to be met and vanquished only by a proper system of pickling the seed, and hence the inquiries made and evidence taken by the Commission on the subject. It is not necessary to dwell upon a practice so well known and generally observed; but it may be remarked that the evidence taken discloses great difference of usage in this particular. Whilst some farmers only let their wheat remain in pickle for a few minutes; others allow it to be in the solution for hours. The chemical witnesses recommend six or eight hours' steeping; Dr. Muecke says eight if the weather be wet, and twelve if it be dry, giving four ounces of bluestone to the bushel. Some farmers do not soak the wheat at all; but merely sprinkle it with the liquid solution, turn the heap over a few times, and dust it with dry lime. It is doubtful, however, whether the fungus spores adhering to the grain are effectually destroyed in this manner, and as the power of wheat to retain its vitality under certain conditions of pickling can easily be ascertained by experiments, it would be worth while for agriculturists to make a set of trials. There is much

reason to fear that in many instances, from the weakness of the solution and the insufficient time allowed for the grain to absorb it, the operation is null and void, so far as regards the destruction of the parasitical spores. It has been shown that sulphur, either in form of flowers, or milk of sulphur, or in that of sulphuric acid, has been employed with very excellent effect. The sulphuric acid if used, four ounces, by weight, to each bushel of seed, diluted with as much water as the wheat will take up; the latter, after a few hours' solution, being dried with slacked lime. Sulphur and lime also make an excellent combination most effectual in destroying fungi. The milk, or flowers of sulphur, in powder, to be mixed with twice its weight of fresh slacked hot lime, ten gallons of water to each pound of sulphur; this forms a sulphuret of calcium with which the whe it is to be well moistened, and afterwards dried with fresh slacked lime. It is to be hoped that a few practical experiments will be made during next seed-time, with a view to determine the double question of the proper strength of pickle and the length of time that the seed should lie in it.

VII. STUBBLE BURNING.—On the subject of stubble burning, in connection with the rust disease, the evidence is conflicting. From the prevalence of the rust last season it follows, however, as a matter of course, that the country is covered with rust spores to a far greater extent than usual, and that a large proportion of them adhere to the straw and stubble that lie on the stubble lands. These spores would necessarily be destroyed by the burning of the stubble, although enough would still remain in other places to spread the disease next year, should we have a return of last season's weather—a contingency, however, which, to judge from the past, is highly improbable. Still, as we have had rust in several previous years, although to nothing like so fearful an extent, the Commission recommend the burning of stubble, and the collection and burning of hedge clippings and other refuse matter, in which the seeds of the rust fungus will have found shelter.

VIII. EXHAUSTION OF THE SOIL.—Although not immediately connected with red rust, your commissioners have taken evidence with reference to the constituent elements of the soil in this province, and have to report that this important branch of agricultural science has been almost wholly neglected. Not more than half-a-dozen analyses of the soil appear to have been as yet made, so that science has so far lent practically no aid at all in instructing South Australian farmers as to the adaptation of their lands to the growth of particular crops. It is, in the opinion of this commission, highly desirable that an agricultural chemist and analyst be appointed, in order to carry on a regular and continuous system of experiments upon soils and manures, and also to conduct microscopical and chemical observations bearing on the subject of the growth and disease of our cereals. The vast tract of country annually cropped with wheat is being gradually robbed of its phosphates, and other constituents essential to the formation of a healthy growth; and as there is scarcely anything returned in the shape of manure, the grain-producing power of the soil is every year becoming less, involving a sure diminution of average yield, even though we may escape the plague of red rust. The appointment of an official agricultural chemist would not involve any serious expenditure,

whilst it would afford to farmers generally the means of obtaining reliable analyses of their wheat-lands at a nominal charge, thus guiding them in the choice of crops, and in the adoption of measures calculated to restore to the soil those fertilizing elements of which it may stand in need. It cannot be too constantly borne in mind that soils are not always to be correctly judged from appearance, even by the most practised eye. Land that appears rich, and which, as regards most of its constituents, may really be so, may, notwithstanding, be deficient in some one element indispensable to the growth of a vigorous crop, or of some one element necessary to render the other constituents of the soils soluble and capable of assimilation by the plants. This knowledge can only be acquired by chemical experiment. In other countries, and in the sister-colony, especial attention is directed to this branch of agricultural science, which, though pre-eminently necessary in South Australia, is neglected with an indifference as reprehensible as it is unaccountable.

IX. CONCLUSION.—On the whole, and especially as regards the red rust, your commissioners, though, necessarily unable to discover a specific remedy for a disease, the germs of which are universally diffused and brought into active vitality by atmospheric causes, have much pleasure in submitting to your Excellency the inquiry. If a positive cure is not discovered, several very serious mistakes are corrected; mistakes which would be costly in their operation and disappointing in their results. It is shown that the extraordinary ravages of red rust last season were not caused, as many asserted, by exhaustion of the soil; and, that therefore, expensive manurings—however beneficial in other respects—are useless as a preventive of rust. It is shown that there are some wheats hardier than others; the farmer thus having, in some small degree, the means within his own power of diminishing the extreme destructiveness of the disease by avoiding those varieties that are most easily overcome by it. It is also shown that, as the red rust is not propagated like smut, from diseased seed, shrivelled grain, of little value for milling purposes, will produce both healthy and abundant crops, under ordinary favorable circumstances of soil and climate. It is shown that agricultural chemistry has scarcely made a start as yet in this colony, although of so much importance to a proper system of cultivation. And finally, your commissioners hope that the attention which has been so widely directed in all parts of the provinces, not only to the sad visitation which has befallen it, but to the general condition and prospects of agriculture, will have the effect of leading to closer habits of observation, and to more careful experiments on the part of farmers themselves; and on the part of the Legislature and government to a corresponding appreciation of the claims and requirements of an interest which, without exaggeration, may be represented as the cardinal industry of the province, and the chief foundation of its prosperity.

JOHN H. BARROW, *Chairman.*
THOS HOGARTH,
WM. EVERARD,
JNO. CARR,
W. CAVENAGH.

Committee Room, Parliament House,
April 9th, 1868.

CULTURE OF THE SOIL FOR WOMEN.

We have often repeated the assertion that, if a woman has only the chance, it would be a pleasure to cultivate fruits or flowers for a livelihood, sooner than be held in irredeemable bondage to the needle. Still women are like sheep—hard to get out of the old paths, and to follow new leaders. Now and then instances come to our notice where women have made a forcible emancipation of themselves from city life, and hurried into the country with some rural occupation suitable for their tastes. Vineland, New Jersey, contains many such cases. A maiden lady of forty years went there, who had been a school teacher in Massachusetts for sixteen years. She got weary, as she said, of being a slave for others, and thinking a farmer's life more to her heart, came to Vineland and bought ten acres. She has been there three years and has five acres in good bearing condition. All the work, except the clearing of the land, has been done by herself and a boy thirteen years old; and from being weak she has become strong and healthy.

There is another lady, same age, formerly educated as a physician; but as her health gave way, she bought ten acres there, and, with the assistance of a boy only, she has been able to cultivate five acres nicely. Her health also returned to her.

There are said to be quite a good many widows there, who take all the care of large gardens, and make them literally abound in delicious fruits and beautiful flowers. One lady was observed one week-day painting her house, and the next Sunday filling the pulpit, in the absence of the regular minister, acceptably.

Last summer, in our editorial travels up and down the Erie railroad, we saw a corn-field, plowed, harrowed, planted, cultivated, and gathered, the whole work, from beginning to end, done by three sisters, and most excellent it was too.

We have known of many a happy husking-bee in which the ladies were the busiest helpers.

Yet in the garden, in the culture of fruits and vegetables, how suitable a field for woman's hands and woman's labor! The work is light, pleasant, a relief to indoor cares, and healthful; puts new bloom on the cheek, and gives her a place to call her own—her delight and pride.

How well women can manage large farms remains yet to be seen. We have known a few instances of success of this nature; but the limit to woman's activity can be bounded between the hedge-rows of a few acres. Better do a little well, than attempt to grasp too much and fail.

The Orchard and Garden.

SEASONABLE HINTS.

THE GARDEN.

Hot-beds are to be closely watched, to see that the tender plants do not suffer from too great concentration of the more vertical rays of the sun. Give plenty of air, to harden off the plants, and transfer to cold frames and the open air as fast as it is safe to remove the plants, so that the bed may be broken up and the manure used for other crops. A little negligence in giving air or shading now, neutralizes all previous care and attention.

Prepare hills in warm locations, by excavating large deep holes, and put in two shovel-fuls of fine old manure; mix and cover it with fine soil, and into this transfer your cucumber, squash, and melons started in the hot-bed on sods the last of the month. Set three plants in each hill, cover them with hand-glasses, or make a square box without top or bottom, and set these boxes around the plants, and cover with a light of window glass, and shade till the plants get established, when the glass can be lifted or removed days, to be replaced nights. These boxes are excellent, covered with thin muslin, in protecting from the striped bug, &c.

Plant peas, according to requirements, once a week during the month for succession crops. Early in the month plant Champion of England, N^o 1 row-fats, and other late sorts, giving them a good generous soil to grow in; fertilize with rotted compost, or guano, using care to mix it well with the soil before sowing the seed. Put brush to them as soon as a growth of two inches is attained, as if left to fall over they seldom recover, and the earlier the brush are put up the more naturally the vines incline to them. Set them firm in the ground, and weave the tops together neatly, forming a thin even row, which will resist the effects of wind or storms when the vines have attained their growth, and cover them.

Sow seeds of all crops desirable as succession, such as radish, lettuce, &c. A quick, warm soil grows the best radishes, as unless they grow quick they are tough and woody. So lettuce needs to grow quick, and head up well, to be crisp and tender.

If the asparagus-bed has had proper care we may now have a supply. It is fit to cut when grown three inches; when larger, it is apt to be tough and stringy. Care is needed in cutting not to injure the buds, and to be sure and cut an inch or two below the surface. It is best to cut the shoots with a sickle-edged knife, for then the stumps of the shoots bleed less than if cut with a common knife with a smooth cut; although a common knife will answer if the shoot is cut with a slanting cut, and below the surface. From the hot-bed, cold-frames, and in sheltered warm beds we may now have a fair supply of lettuce, radishes, cress, and other salads, if care has been given to forwarding, &c.

Make beds in rich soil, in warm locations, and sow seeds of salads, mustard, spinach, &c., once a week to insure frequent, tender growth.

Now is a proper time to make the beds and plant artichokes; of these we have the true artichoke, produced from seed, which grows an edible head, thistle-like; and the Jerusalem artichoke, which produces, and is grown from a tuber similar to the potato; the first is one of the refinements of horticulture, recom-

mended only to the curious in such matters. The Jerusalem artichoke is grown for its tubers, which are used raw, pickled, or sliced and eaten with vinegar, similar to any salad. The culture is similar to that of the potato, but much more productive. It is always free from disease, and will grow in any soil, or almost any situation, and will endure our northern winter on dry soils; and when once planted and in the soil is apt to prove troublesome in exterminating, when desirable, as small tubers will be apt to be overlooked, and they will even send up their woolly stem and coarse harsh foliage from sprouts broken from the tubers. A field stocked with this vegetable would afford excellent feeding-ground for swine, as they are quite nutritious, and the swine would work busily in digging them.

Prepare beds in rich deep soil, and plant out horseradish sets. Take the small roots, one-fourth to one-half inch in diameter, and cut them in six-inch sets; make a hole with a dibble ten inches deep and eighteen inches apart, and drop one set in each hole, small end down, or it will form ill-shaped roots, and cover them, pressing the soil close around the whole length; planted thus, and fair culture given during summer, we may have good-sized roots for digging late in fall or early the following spring. It was formerly, and to a large extent is still, popularly supposed that to grow horseradish we must plant the crowns; but such is not necessary, as sets, as above, produce much smoother roots, and grow nearly as readily when well planted.

Sow in suitably prepared beds parsley seed; as this is to remain several years in the same spot, it should be planted in some place from whence it need not be moved, or interfere with other crops.

Sow turnip seed for early table use, using wood-ashes freely. If worms attack the root it will be better to dig up the ground and plant to other crops, as it is useless to attempt to grow turnips when worms make their appearance among them. The English white is the best variety. Early turnips are partial to an early, sandy or gravelly soil, made rich with decayed compost manure, ashes, and superphosphate. Sow in drills fourteen inches apart.

New plantings of rhubarb may be made early in the month; make the soil deep and rich: a rather moist than dry soil is preferable. Plant the roots four feet apart. A medium-sized variety is the best for family use. A variety which cooks tender and melts the most when stewing is preferable to the very large and coarse growing varieties.—Established varieties will furnish leaf stems ready for use during the month; pluck off the stems by a side-wise jerk, without injury to the plant left; do not pull too close to weaken the root unnecessarily. Keep the seed-stems cut out, not allowing any to run up.

As soon as settled weather comes, and the ground will work mellow, plant dwarf beans, for early, and once a week for succession; these being more hardy than the pole or running varieties, and easier protected from frosts, should be planted first, and early. After fear of late frosts set poles firmly in the ground, six feet high, four feet apart, and plant the beans around them six to a hill. In planting Limas, leave them till the last, as they are the most tender and difficult to start, and stick them, eyes down, three or four inches away from the pole—many fail from planting so close that the water dripping from the poles rots the seed—and cover them with half an

inch of fine soil; if the soil crusts, look to it and break it as the bean begins to germinate. Transplant those started on sods, in the hot-bed, the last of the month.

Where not already done, transplant early cabbage into well-prepared rich soil, as soon as the ground can be made ready for them. Unless the soil is impregnated with lime, it will be advisable to apply it in moderate quantities. The tendency to produce club-foot is remedied by a fair proportion of shell-lime in the soil, as we find by experience and the record of others. Seed may be sown in the open ground for medium and late crops.

Make beds in the open garden, enriched highly with hen manure or guano, and sow seeds of capsicum, peppers, cayenne; there is yet time for the ripening, from seed, the bell, squash, and sweet mountain varieties, if planted early in warm, rich soil. Transplant those started in the hot-bed, pots, &c., the latter part of the month, when late frosts are past. The pepper is a tropical plant, consequently must be treated as a tender plant in a northern climate.

Well-grown cauliflower is a refined cabbage, and can only be grown in rich, well-prepared soil, and then only when good seed is used and good culture given. The gardener who produces perfect cauliflowers may well be proud of his achievement; the excellence of a good dish of this vegetable is well worth the risk of several failures. The culture is the same as that of the cabbage. It must be grown early in the season before dry weather.

Repeat plantings of sweet corn in the open air once in two weeks, after the soil will work dry. Transplant that started in the hot-bed soon as safe from frosts. Mexican, Crosby's, New Early, and Trimble's are good newer varieties and excellent. We have tested Mexican and Trimble's, and can ask for no better either for eating or productiveness. There are two varieties of the Mexican—one a white cob, and the other red; the white is the sweetest and best.

Sow seed of celery in rich mellow soil, thoroughly pulverized and well filled with fine stable manure, as soon as the ground will work dry.

Sow seeds of the Kohlrabi—another variety of the cabbage tribe—in the open ground for the main crop. Care for, and cultivate in every way same as the cabbage.

Sow seeds of the Okra plant in drills, two feet apart for the dwarf sorts, and double that distance for the tall kinds. This is a tender plant, and the seeds should not be sown till the soil is warmed up somewhat. It is a free-growing plant of the easiest culture, and an abundant bearer in ordinary garden soil.—This plant is grown for its long pods, which, used when young, are tender and nutritious, in soups, stews, &c., for which purposes they are used.

When the ground is dry and warm, and late frosts are past, plant seeds of all kinds of melons, squash, &c., giving a good shovel-ful of well-fermented compost to each hill, after broad-casting and plowing under a good dressing. Put the seed over the manure, in the hill, first covering an inch of soil over the manure; put in seed enough to guard against the contingencies of failure to germinate, worms, bugs, &c., and plant at distances according to growth of vines, 4 to 9 feet.

Toward the close of the month transplant into the garden tomato plants, set them four to five feet apart, mixing a shovel full of fine old compost to the hill in the soil. Shade till

established, and then keep the soil fresh stirred, applying a sprinkling of guano round each plant.

A very good pickle is made from the pods or fruit of the *martyria*, which it produces in great abundance. Seed are sown in the open ground early in the month, and when good strong plants are grown they are transplanted to hills two feet apart each way.

A good sharp, light, and bright hoe in good hands in the garden is one of the best antidotes for weeds, which so often prove the bane of good crops, if used by one who goes with his eyes open.

The great secret of success in the garden, after a good location, is in plenty of good manure judiciously applied, constant working and good seed, though last named, is not the least, but should stand first.

In all garden operations we should have an eye to the future, and few things conduce greater to success than a good compost heap, which the thoughtful gardener will not fail to commence early, and add to it everything capable of being converted into plant food.

FRUIT GARDEN.

If, from any reason, planting should have been delayed, no time should be lost in planting out all sorts, as in many localities plants will have commenced their growth.

Plant out strawberry plants.—early planted generally make the best beds. Mulch old beds with cut straw, having first cleaned them of weeds, grass, &c., and raked in a good dressing of woodashes. In planting new beds it will be found that the more delicate varieties of fruit are not always the best for general culture, however desirable they may be for the table. Sow a sprinkling of guano over old established plants.

Set out raspberry beds, first having cut back the canes to four or five eyes. Select plants with an abundance of fibrous roots; set the roots four or five inches deep in the soil, planting at the same time stakes, if to be used, so as not to injure the roots in driving. The best variety depends on the location, soil, and care accorded them; what proves the best in one locality, and under the care of one, may prove the poorest in another soil and cared for by another.

Put up and tie to the trellises grape-vines, using care not to injure or break off the buds; use soft twine or bass matting for tying. Cuttings, if not already planted, should be done at once, but layering is a superior mode of propagating. Preparation for layering can be made as soon as the buds begin to start. Take a strong cane, which has been previously cut back to about five feet, open a trench six inches deep and the same width, lay the cane in the bottom, pegging it in place. When the shoots have started three or four inches, select the strongest, put stakes to them and cut the cane about half off with a slanting cut, fastening it open midway between the shoots, and fill in about two inches of soil, covering the cane; in about a week fill in as much more soil, and in a week or two after fill up level.

Transplant currant bushes before they start into leaf. It is said—with how much truth we do not know—that covering the ground around and under the bushes with an inch or two of coalashes will tend to prevent the ravages of the "currant worm." A trial would lead to no harm, but result in good even if it did not prevent their attack.

Finish up planting of dwarf fruit-trees soon as possible, giving them ample room to extend

their roots. Head back and prune to keep them dwarf, compact, and even balanced.

Great vigilance is necessary to keep insects in subjection; on many kinds of fruit trees, vines, &c., they commence an early depredation, or provide for an increased number by depositing their eggs, so that they should be looked for daily, and every means used for their destruction.

The fruit garden should be kept clean of weeds. The hoe properly used is a good encourager to the development of both fruit and vine, while it keeps out of sight all unsightly weeds.

ORCHARD AND NURSERY.

The pruning over, there remains to hunt out the caterpillars, destroy the nest-worms, fight the canker-worms, and do up the grafting, &c. The present month is as good a time for grafting pip fruit as any during the year, as the sap is in full flow. The art of grafting is not a difficult one, and there is no particular reason why any farmer may not qualify himself, and do his own. The main secret is to place the scion in the stock so that the bark of each will come in contact, and cover the cleft with wax, so as to exclude the air and wet. Use only such scions as are fresh and plump, with full fresh buds.

The little clusters of insect eggs glued to the branches and twigs overlooked, deposited last year, will be hatching out now that warm weather has come, and the worms will be forming their nests, scarcely perceptible at first, and defoliating the trees. Close attention will be needed to wipe them out while it may be done with the least trouble. Moths of various kinds will begin to fly evenings, and be providing for continuing their species by depositing their eggs where, when the young come out, they may gain their sustenance without travelling far. Great numbers of these moths may be destroyed by placing bottles of sweetened water about the orchard, or fixing burning lamps in pans of soap suds about the trees they frequent evenings; but there is danger of destroying insect friends as well as foes, for both will seek the light and destruction.

If the stocks of budded trees have not already been cut back, if the buds are plump and sound, cut back to three inches of the bud, the portion left furnishes a fine support to tie the new shoot to, if necessary, when it starts into growth.

All newly set trees will be benefitted by a mulching of some kind to protect their roots during a dry time, which frequently happens during the spring or early summer; saw-dust, spent tan, chip dirt, or litter of any sort, is good; but best of all a frequent stirring of the soil; this gives the most effectual mulch and prevents all drying out, while it is a great encourager to growth.

The careful orchardist will seldom find use for the saw and hatchet in pruning, for he will be on the look out, and when a shoot starts where it will be likely if allowed to grow, to mar the proportions of the tree, or interfere with other branches, the pocket knife is sufficient to remove all such.

Apply ashes to peach trees, and dig out the borer with a sharp-pointed knife. If affected with the yellows, dig them up and burn root and branch, or, if disposed to experiment, remove the soil about the trunk to expose the roots, and apply on the exposed roots half a peck to a peck of hot ashes, right from the hearth; no matter if there should be some

live coals of fire mixed with them, return the soil, and note the result.

Finish up planting and cleaning up in the nursery, and set the cultivator going to keep down the weeds, and encourage the growth of the young trees.

LAWN AND FLOWER GARDEN.

The better time to transplant evergreens is when they begin to make a growth, but it should be done with the least possible exposure of the roots; for, unlike deciduous trees, they seldom recover from exposure. Too much pains can not be taken in preserving the roots entire, keeping them moist and in re-setting.

Deciduous trees and shrubs should have been set by this time, but some kinds may yet be transplanted, if due care is used.

The lawn will need mowing as soon as the grass has made two or three inches growth, or sooner. Keeping the grass cut close tends to keep it thick and soft, giving it the look of a soft, green mat.

In selecting plants, seeds for the lawn and flower garden, regard should be had to the purpose to be served. As much depends upon the selection and arrangement as upon the plants themselves, and frequently more. We want plants adapted to particular purposes, plants that will give us a constant brilliant show, plants to mass, plants for hedges, plants for their fragrance, for their foliage, plants for climbing to cover unsightly objects—buildings, covering fences, &c.—plants for early and late flowering; and when we get them, if they are not arranged so as to best serve the purpose desired, we are disappointed. If trailing plants, adapted for hanging baskets or pots, are put in the ground where show is desired, disappointment results.

Many are abandoning the culture of annuals from the trouble involved, and are substituting bedding plants, &c.; but there is yet great beauty and show that we can not get from other plants that may be had from the annuals, so we would advise a fair proportion of annuals, and, for most varieties, May is quite soon enough for sowing the seed; and here comes a very delicate task.

In order to be successful in having seed germinate and grow, we must understand the nature of the seed planted, its requirements, and follow to a certain extent natural laws in planting. If the seed is from a hardy plant, little trouble is usually experienced; if a half-hardy or tender plant, much more pains, and much good judgment is required in planting, and at the right time. Half-hardy or tender plants must not have their seed planted in cold or wet soil; tender plants should be started in the hot-bed or green-house; half-hardy should not be planted in the open air till the soil becomes warm, so that the seed may germinate and grow, and not rot, as it would in cold soil.

A failure frequently, perhaps the most so, results from planting flower seeds too deep or too early, before the soil comes into proper condition; it is either too wet and cold, or too dry. Nature requires warmth and a suitable degree of moisture, as well as air, in order that seed may germinate. If a seed is buried too deep, it will not germinate; if put in a wet soil it rots; a dry one, it fails, or if it germinates at all, it perishes before the young plantlet can get hold on the soil or ascend into the sun and air. All seeds have stored up food to support the young plants to a certain extent; if this be expended before

the plumule can reach the sun and air, a failure results; seeds usually have this food stored in proportion to size, so that generally they should be covered in soil in proportion to size.

Annuals started under glass may be turned into the open border the last of the month, or early in June; and most varieties may be sown in the open air during the month; and here the question arises, What annuals shall I plant? The catalogues will present a long list, so that the novice is puzzled in selecting, and even the amateur is at fault, frequently, to select from the novelties presented. The following list will embrace some of the varieties that may be safely recommended for general culture: Sweet Alyssum, Snap Dragon, Asters in variety, Clarkias, Convolvulus, Dianthus or Pinks, Gillias, Martynia, Linnæa grandiflorum, Mignonette, Marigolds, Nemophilas, Pansy, Phlox Drummondii, Portulacæas, Petunias, Stocks, Nasturtium, Whitlavia, Zinnia, Candytuft, with some of the following as everlastings: *Acroelinum rosem*, *Rhodanthe Manglesii*, *R. maculata atrosanguinea*, *maculata alba*, *Helichrysum* or straw flower, in colors, *Xeranthemum* in variety, *Ammobium alatum*, and the old Globe Amaranth, *Gomphrena globosa*.

Some of the more hardy bedding plants, such as verbenas, petunias, &c., may be put out the last of the month.

Bring out the dahlia bulbs and plant them in sand in a warm exposure, and when the sprouts have made three to six inches, take them off and pot or plant out where they are to grow.

Plant out Gladiolus and other spring bulbs, not already put out; give Gladiolus good exposure to the sun, and plant in clumps of half a dozen in good soil.—*Horticulturist*.

CULTIVATION OF THE RASPBERRY.

Next to the grape, there is probably none of the small fruits that require such good judgment in choice of varieties, soil, and method of cultivation as the raspberry. And yet there is no fruit which, if well cared for, gives such a genuine pleasure to the horticulturist, as a fine luxuriant row of healthy raspberry plants, their deep green leaves glistening in the sun, or hiding in each other's shade, graced with the long pendent stems of beautiful fruit of vari-coloured hues. Both as a market and as a family fruit, there can hardly be anything more choice or delicious. City visitors to the gardens of their country friends have been accustomed to the sight of strawberry-beds, and rows of blackberries, or apple and pear trees here and there; but when they discover by the side of the fence a row of raspberries, the berries large, round, plump, with such beautiful colours of orange, or white or scarlet, and when the delicious taste justifies the expectation of their eyes, nothing can excel their admiration. Their praises we think are well bestowed. The raspberry is, without doubt, the choicest family and garden fruit now grown. The raspberry is easily grown if the right kind and the right soil are selected: but how difficult it is to

make a right choice! The Hudson River Antwerp may be desirable to grow, by any one throughout the country; and yet out of the latitude of the Hudson River the instances of success are so few as to scarcely deserve notice. The Brinckle's orange, or Fastolf, or Francoonia may seem desirable, and splendid berries they are if successful; but if the soil is sandy and burns them up, or if their canes are not protected during winter, the cultivator may look long for that delightful crop he expects, and never see it. The fact is, that raspberries can not be grown in any place under the sun without a good rich, moist soil. The purple cane and red raspberries particularly need a good rich soil; the black-caps may be grown on sandy loam and produce fair crops, but a richer soil will fully double the produce. Sandy, gravelly soils invariably need frequent and abundant manuring. Deepening the soil and frequent cultivation, too, are requisite; lastly *mulching*. Perhaps no part of the culture of this fruit is so important and has so great an influence on the success of the crop as a careful mulching. This supplies moisture—moisture is a partial fertilizer; all combined give to the plant the right elements of growth, and cause it to attain a vigour and a luxuriance it might long look for in other ways. The experiment was tried last season at the Wallingford Community, Ct., as to the comparative benefits of mulching or not; and it was found that the produce from the *mulched* portion exceeded three-fold that of the other not so treated. Mulching should be applied invariably during the fruiting season. It can afterward be removed, the ground carefully cultivated, and then replaced for fall or winter protection. The *distances* for planting are unimportant. For market uses we would prefer rows 4 to 5 feet apart and 3 feet in the row, carefully trained to stakes. With the black-caps, a trellis will be found advisable, as their long stems are often unmanageable and in the way. It pays to treat even black-caps well. We saw last season two different systems of culture—one in the field, the other in the garden. The first was not manured, the second was richly. The first hardly yielded 15 bushels per acre, the second yielded a bushel from only one trellis *ten feet* long. The growth and production was simply astonishing.

If the soil is rich and heavy enough to admit of a relief from the expensive process of mulching, then resort must be had to good cultivation, keeping the soil mellow and free from weeds. Keep the plant well pruned by cutting out all the old wood, and also all young and weak shoots, that can be spared. The height of the red and purple cane raspberries should be $3\frac{1}{2}$ to 4 feet. As to time of planting, we have always preferred the

fall; for the best of reasons, that the plants gain a growth the next season fully fifty per cent over those planted in the spring. Black-caps must invariably be planted in the fall, as they are earlier in their growth than any other variety. The profits of raspberry culture are yet undetermined, rarely or never exceeding \$500 per acre. Their culture is not so widely extended as to allow much opportunity for examination of this point, but the prices per quart obtained are certainly very remunerative. If a grower obtains \$250 to \$350 per acre for any of his raspberry crops, he can be contented. Instances of \$1000 per acre from new kinds are quoted, but the people generally never attain such figures. A fair rule in fruit-culture is to treat your fruits as well as your children or yourself, and it will not be necessary to make estimates, for the profits will come easily and be well used. Lucky is that fruit grower who treats his vines well.

FIRES IN ORCHARDS.

S. B. Johnston—I believe we can protect our peaches from frost by building fires in the orchard when there is danger of heavy frost. I kept fire in my orchard for five nights, and during two or three of the cold sleety days; I built the fires on the windward side every two or three rods. I have the largest crop of any one in this section, and think I can attribute my success to the fires; build the fires of old logs or any thing that will make a heavy smoke.

Mr. Stewart—I think sawdust to be the best to raise a smoke; have no doubt of the efficiency of smoke to keep off frost.

HOW TO PRESERVE FRUIT TREES FROM MICE.—Thousands of young trees are destroyed annually by these pestiferous young scamps. They seldom fail to give me their compliments, and in such a manner too, as to nettles my temper just a little. I have wrapped my trees with paper and twine, plowed the ground late in autumn, and cleaned the grass carefully away from around the trees; yet those little thieves steal into my orchard and garden and very coolly girdle my choicest trees. I put my wits to work to devise some sure remedy that would be cheaply and quickly done. Take equal parts of pine-tar and fish-oil, mix together thoroughly by warming, then take a brush and put on the trees close to the ground and twelve or fifteen inches up around the body. It will not injure the trees, and there will be no more trouble with mice. I tried the experiment on fifty trees, last winter, and it worked like a charm. My trees were never more thifty than during the present season.—*Dr. Nichol's Journal of Chemistry*.

VISIT TO KNOX'S FRUIT FARM.

Mr. W. E. Smith, having just returned from a visit to the celebrated Knox Fruit Farm, near Pittsburg, was called upon for a description of the place, method of culture, etc., and gave a very interesting account of what he saw. The place consists of 160 acres; about 80 acres in vines, 30 in strawberries, 10 in raspberries, etc. The most remarkable thing about the place is, that nearly all the work is done by hand power; there is no part of his ground that he runs a cultivator, with the exception of perhaps twenty acres. Mr. Smith, like all others who have visited the grounds of Mr. Knox has returned with the *Jurunda* on the brain, with seven hundred horse-power pressure, saw the berries $5\frac{1}{2}$ inches round; 20 to 24 fill a quart measure when ripe; sell in Pittsburg for fifty cents per quart, beside Wilson's at fifteen cents. In New York they bring one dollar per quart. Knox thinks that '7.00' is the proper name in more respects than one, as he thinks it will produce with him 700 bushels to the acre.

Mr. Knox thinks a heavy coat of manure deforms the berries; manures annually on the surface. Prefers to renew his beds once in four years. Mulches light with straw.

RAISING VEGETABLES BY ARTIFICIAL HEAT.

Yesterday afternoon we paid a visit to Mr. Power, of the Tanneries, for the purpose of inspecting a large vegetable house which he has just erected for the purpose of raising garden stuff from seed by artificial heat, instead of the ordinary forcing frame with manure. The house is in reality a large forcing frame, about 85 feet long, with an avenue of about two feet wide down the centre, and beds 4 feet 6 inches wide, raised four or five feet from the ground. Running along the right side on entering is a bed made on the ground, in which is a large quantity of fine rhubarb beneath the raised bed or shelf devoted to raising plants from seed. The roof and front are of course glass, the latter being three feet high from the ground. In the raised beds are about 1,386 healthy lettuce plants, and an equal number of radishes besides cucumbers, cauliflowers, and other plants. This house is heated by a brick furnace four feet square by six feet high, containing the coils of iron pipe in which the water is heated. It is sunk some five feet in the ground, and upon the top of it is a bed for growing mushrooms. From the coils of pipe contained in the furnace, two large main pipes proceed, carrying the heated water from the furnace along the vegetable house, the water again returning to the furnace by a number of

small pipes to be reheated, and thus being continually kept in circulation. It is ultimately intended to extend branch pipes from the same mains to three other frames 85 feet long and 11 feet wide. The heating apparatus was put up by Mr. Greene, of John street, Montreal, who has fitted up several large public institutions, private houses, &c., on the same economical principle. Since the 24th December last, 30 cwt. of Cow Bay coal, at \$1.50 a ton has been sufficient to heat the place. Under ordinary circumstances with manure which would have to be bought, and carted from town, operations could scarcely have commenced till the 8th of January, and it is calculated that the cost of purchasing and carting manure for two years would pay for the apparatus. The hot water, moreover, diffuses a more equal heat, and one more readily under control, as in mild weather the manure is apt to become too hot, and so burns the roots of plants, while in more severe weather it is apt to become too cold. The furnace-house also supplies a warm place where the glass sashes may be repaired during the winter, and the butt of warm water in connection with the pipes, used to allow of any undue expansion, is also useful for making warm washes for cattle, &c. Hitherto, Mr. Power has been generally first in market with fresh vegetables, but adopting the new system he hopes to be nearly a month earlier than usual.

We believe to-day a number of members of the Horticultural Society intend visiting Mr. Power's forcing frames, as well as some other gardeners in the neighbourhood, with regard to the hot-water apparatus erected by Mr. Green. We may state that all danger from the use of a steam boiler is entirely avoided, and all that it requires is to see that the fire is kept going. This renders it peculiarly adapted for private houses. The more especially as the same hot water is used over and over again with great economy.—*Montreal Gazette.*

EVERGREEN HEDGES.

BY WALTER ELDER.

Evergreen hedges should form inclosures to all the various departments of ornamental gardening where they will thrive. To put up *dead sticks* or *cold iron* as fences to pleasure grounds and gardens without linings of evergreens, is at war with good taste. It looks like setting up the dead to watch over the living. Notwithstanding the many wise suggestions written and spoken of the beauty that evergreen hedges impart to ornamental gardening, and the best mode of culture thereof, they are not yet so general as they ought to be. They should be uni-

versally used as inclosures. We have numerous species and varieties of evergreens that are well adapted for making good hedges—the many arbor vitae, biotas, junipers, hemlocks, yews, boxwoods, Norway fir, etc., some of which will thrive upon almost every kind of soil that is dry and not in marshes. Where such spots occur, they may be set with osiers, to continue an unbroken live hedge. For parks, the Norway fir is one of the best to make a strong and thick outside hedge, and for divisions and suburban gardens arbor vitae, hemlock, biota, juniper, tree box, yew, etc., are well adapted and give a pleasing effect. For parterres and small divisions, the dwarf boxwoods, dwarf arbor vitae, and many other dwarfs are suitable. Every department of ornamental gardening is a *picture*; and the fences or inclosures are the *frameworks*, which either add beauty to the picture or destroy its beauty. Evergreen hedges add richness and beauty to the grounds and all the various kinds of plants thereon: as ornamental frames of precious woods finely polished, and others richly gilded, give greater graces to the picture. The cost of evergreen hedges, including the price of plants and setting them out, is about twenty-five cents per foot for tree boxwood, yew, Siberian arbor vitae, etc., twenty inches high; and for American arbor vitae, hemlock, Norway fir, Chinese biota, etc., twenty inches high, is about fifty cents per yard; the after care the first three years, in cutting up weeds about them, is about the same cost as a row of Indian corn of the same length.

Besides the beauties of evergreen hedges, their shelter is of great value in breaking off the low currents of cold air in the winter which prove so destructive to the stems of many species of plants, which by their girth and density cannot yield to sudden contraction by cold and burst open; or in other words, the compression of the air in their cells becomes so great by sudden and severe cold as to cause explosion, just as the compression of air by fire and gunpowder rends rocks asunder. The branches being higher are not so injured by low cold currents, and being smaller and less dense, they give way to compression more readily and remain uninjured when the stems are rent. On the contrary, they are more exposed and suffer more severely from spontaneous evaporation, and are often killed by that when the stems remain sound. So as evergreen hedges save the stems, belts of trees protect the branches by checking the force of spontaneous evaporation.

It is a moderate estimation to say that evergreen hedges and belts of trees are worth ten times their cost in these respects. All horticultural improvers, for these reasons, should make fences of evergreen hedges universal, and the *dead*

sticks and cold iron will be useful upon the railroads, etc.

From the first of April to first of June, north of Virginia, is the best time to plant out evergreen hedges, and from middle of September to the first of November in the autumn is a favorable time.

Reports of Agri. Societies.

LOWER STEWIAEKE AGRICULTURAL SOCIETY.

The Lower Stewiaeke Agricultural Society beg leave to report as follows:—At our annual meeting last year, it was thought best to sell the stock belonging to the Society under certain restrictions, to the highest bidder in the Society, the purchaser binding himself to keep them two years for the benefit of the Society. The purchaser of the Ram to be entitled to 25 cents per ewe, and the purchaser of the Boar to 50 cents per sow,—members of the Society only to be allowed the privilege the first year. The Bull being five years old, it was thought best to sell out and out to highest bidder either in or out of the Society, free from any and all restriction, which sale took place on the 9th Dec. Unfortunately the Ram sickened and died last Spring, but we have some very fine lambs from him though, and the Boar is giving good satisfaction and we believe will be a great improvement in our breed of hogs. A special meeting was called on the 6th of April, and the Directors were instructed to purchase two young Bulls of the best breed they could find as soon as practicable, but being unable to find what they considered suitable animals, they did not make any purchases, consequently another special meeting was called on the 28th September, prior to the great Exhibition in Halifax, thinking that a favorable opportunity of getting stock. The following persons, viz: E. C. Banks, R. J. Pollock, and Robt. Kent were appointed a committee to lay out the funds of the Society, and the Treasurer was also instructed if necessary to hire \$120, and expend the same as they might consider most advantageous to the Society; accordingly 2 Bulls and 6 Ram lambs were purchased at a cost of \$76.50. One of the Bulls was Durham and the other three-quarter Durham and one-quarter Ayrshire; the rams half-bred Shropshires.

Our Annual meeting was held on the 1st Dec., our officers appointed and dues paid up to the amount of \$42.00 and we expect quite a number yet to join. Our Society is now in good working order and we have good reason to believe a lasting benefit will be derived from it.

E. C. BANKS, Sec'y.
R. J. POLLOCK, Presdt.

Lower Stewiaeke, 29th Dec. 1868.

MIDDLE RIVER AGRICULTURAL SOCIETY.

In compliance with the terms of the Act, this Society held its annual meeting on the day fixed by law. And in reporting the state of the Society, the Directors and Office-bearers beg leave to express their gratitude to the Hon. the Board of Agriculture at Halifax for

the unlimited privileges bestowed on this Society in liberally allowing a bounty from year to year, and also for the efforts put forth by the Hon. Board for the furtherance of agriculture in this Province.

Your Directors have much pleasure in reporting the state of the crops for this year within the bounds of this Society, notwithstanding the distress which threatened Cape Breton, and was in a great measure felt by a number of its inhabitants during the last winter and spring, still your directors are enabled with safety to state that within the bounds of this Society nothing of the kind has been felt, and that each member has succeeded in putting an average crop into the ground which when harvested on the whole proved a fair average crop, and in reporting each separately, we here begin with: Hay—this crop has turned out well, and about one-third over the average of last year. Wheat—this crop has been for years very sparingly sown owing to the ravages of the fly, but this year our Society having procured about sixteen bushels of the Fife wheat imported by the Board of Agriculture, which having been distributed among some of the members of our Society, have turned out something like one-third below the usual average, being slightly affected by the fly, but what grain is saved looks well and consequently in another season this crop will be sowed on a larger scale. Oats—this crop is lighter in straw than in previous years, particularly what was sown in light sandy soils. This is entirely attributable to the great drought of July and August, but the grain is of an excellent quality. Barley—this crop is an average crop. Buckwheat—the cultivation of this crop has been sadly neglected in this locality, but small samples sown this year have proved very satisfactory and yielded fifty returns to the one sowed, so that this crop is likely to become very general in this locality. Potatoes—this crop far exceeds the average of former years, so that for the last twenty years such quantities of potatoes have not been raised in this district, yielding from ten to fifteen returns to the one planted, and of superior quality. Other Root crops.—The cultivation of turnips, carrots, beets, &c., was formerly very much neglected here, but the farmers now are awake to the advantages derived from such root crops, so that particular attention is now paid to the raising and growth of such crops, and this year they have yielded well.

This year our Society having sent John McLennan, Esq., its Secretary, to attend the sale of cattle, sheep, &c., at the Provincial Exhibition in October last, for the purpose of purchasing some live stock, the prices asked for such were too exorbitant to warrant him to make such purchase, but he succeeded in getting a superior Bull of the Akerney breed, which took the first prize among the Akerney cattle at the Exhibition, as also two fine Rams. Much credit is due to Mr. McLennan for the selections he has made. He has also arranged with a man from Dartmouth, for four young pigs of a superior breed, to be forwarded as soon as the navigation opens; as also a number one Buckeye Mowing Machine, together with a barrel of red clover seed, some Horse field peas and winter rye.

At the annual meeting it was unanimously agreed that the former office-bearers of this Society be re-elected for the ensuing year, 1869, viz:—John McDonald, President; K.

McDonald, Treasurer; Hector Campbell, V. P.; John McLennan, Secretary; and John G. McLeod, Edw. McLeod, Wm. Cain, K. McLennan, John McDonald, Directors.

Balance in Treasurer's hands \$214.92½.

J. McLENNAN, Sec'y.

Miscellaneous.

(From The Farmer, Edinburgh.)

PRESERVED MEAT FROM AMERICA.

A meeting of the Food Committee of the Society of Arts, London, was held at the Society's House, on Wednesday afternoon, 13th January—Mr. Benjamin Shaw in the chair.

Mr. Hardwicke, of 192 Piccadilly, attended for the purpose of informing the committee as to the results of Professor Gamgee's process of preserving meat in accordance with the patents taken out by him before leaving this country for America. Professor Gamgee's process is thus described in his patents: "The animals whose flesh are to be preserved are, when this is possible, killed by causing them to inhale carbonic oxide gas, which may be generated by the action of heat on a mixture of sulphuric acid and ferrocyanide of potassium, or by any other method which yields carbonic oxide gas. The animals are then bled and dressed in the usual way, and the flesh may then be sold as human food, and even if it has travelled any distance it will retain a fresh and bright appearance longer than ordinarily killed meat. The flesh of animals slaughtered with the aid of carbonic oxide gas, or of animals slaughtered in the usual way, may further be preserved as follows: First, by being placed in a closed chamber or vessel containing carbonic oxide gas alone, or a mixture of carbonic oxide and air, or other gas or vapor, for a period varying from two to twenty-four hours with a view to a complete action on the meat and its juices. Secondly, by simple fumigation of the entire carcase or portions of the carcase, after the action of carbonic oxide, by means of sulphurous acid gas alone or in combination with hydrochloric acid gas."

Portions of the meat sent from America by Professor Gamgee, prepared by his process, having been tasted by the members previous to the meeting of the committee,

Mr. Hardwicke informed the committee that on the 4th December, 1868, Professor Gamgee, having had the animals killed in the manner described above, caused a large airtight tank to be filled with two quarters of beef, two hams, eight sheep, and a large hog, when they were subjected to his process.—This was done in New York. On the 12th the tank was opened, and the meat removed from it. On the 16th the carcase of four sheep (whole), a quarter of beef, and half a hog, were wrapped in cloth separately, put into one large, rough, packing case, and forwarded to England in the Royal Mail Ship "Cuba." It arrived in Liverpool on 29th December, whence it was despatched by the London and Northwestern Railway to Mrs. Gamgee, at Baywater, arriving there on the 30th December. The meat exhibited before the committee that day was part of that so sent, and was preserved in accordance with Professor Gamgee's patented process. Mr. Hardwicke added that a letter he had received from Professor Gamgee informed him that

the cost of preserving the carcase of a bullock was from 2s. to 3s.; that two men could preserve as many carcasses as fifty men could slaughter; and that the cost of apparatus to slaughter and preserve one hundred bullocks a day would not exceed £10,000. The cost of conveyance of the package of meat referred to, which weighed about 400 lbs., was stated to be £2 7s. 6d., which was accounted for by its being brought by a mail steamer, the freight of which was much higher than that ordinarily charged by trading ships. Professor Gamgee believed, from inquiries he had made, that the cost of transit would be considerably under a half-penny per pound. With reference to the prime cost of the meat, of the quality of that sent from New York, Mr. Hardwicke said it probably cost within 1d. per pound in that city of what it could be bought for in this country; but, he added, in the event of the process succeeding, the supply of meat would be obtained from much cheaper markets. He was informed, he said, that in Kansas a bullock in condition for killing could be purchased for £1, and to that had to be added the 3s. for curing, and the cost of conveyance to this country. That would enable the meat to be sold at 3d. or 4d. per pound here, and leave a good margin of profit to the adventurers.

Mr. Michael observed, that working out the £10,000 capital for setting up an establishment of the capacity stated, the cost would be 3s. 4d. for slaughtering and preserving a carcase of beef. That would leave 6 per cent for interest and depreciation. On the general question as to the probability of the meat reaching this country in such a condition that people would eat it, and also on the commercial prospects of the matter, Mr. Hardwicke had expressed a favorable opinion, and a desire to see the experiment carried out on a sufficiently large scale to test the success of the process, both scientifically and commercially.

The committee recorded their opinion that the beef and mutton produced that day was untainted and well preserved. Some members detected an acid taste in the beef, and others noticed nothing peculiar. The mutton was pronounced to be slightly flat. It was, however, the opinion of the committee, that the mutton exhibited was an inferior quality of meat.

THE ROSE, THISTLE AND SHAMROCK.

Chambers's Journal gives the origin of these national emblems, as follows:

THE ROSE OF ENGLAND.

In the early part of the reign of Henry VI., about the year 1460, a few noblemen and gentlemen were discussing who was the rightful heir to the English crown. After a time they adjourned to the Temple Gardens, thinking they would be more free from interruption. Scarcely, however, had they arrived when they perceived Richard Plantagenet approaching. Unwilling to continue the conversation in his presence, a great silence ensued. He, however, asked them what they had been so anxiously talking about when he joined them, and whether they espoused the cause of his party or that of the usurper Henry of Lancaster, who had filled the throne. A false and absurd politeness preventing their making any reply, he added, "Since you are so reluctant to tell your opinion by words, tell me by signs, and let him that is an adhe-

rent of the House of York pull a white rose as I do." Then said the Earl of Somerset, "Let him who hates flattery, and dares to maintain our rightful king, even in the presence of his enemies, pull a red rose with me." When Henry VII., married Elizabeth of York, the rival houses were blended, and the rose became the emblem of England.

THISTLE OF SCOTLAND.

In the reign of Malcolm I., in the year 1010, Scotland was invaded by the Danes, who made a descent on Aberdeenshire, intending to take by storm Staines Castle, a fortress of importance. The still hour of midnight was selected as the time for commencing the attack. When all was ready, and there was a reasonable hope that the inmates of the castle were asleep, they commenced their march. They advanced cautiously, taking off their shoes to prevent their footsteps being heard. They approached the lofty tower, their hearts beating in joyous anticipations of victory. Not a sound is heard from within. They can scarcely refrain from exclamations of delight, for they have but to swim across the moat and place scaling ladders, and the castle is theirs! But in another moment a cry from themselves rouses the inmates to a sense of their danger, the guards fly to their posts, and pursue the now trembling Danes, who fly before them. Whence arose this sudden change of affairs? From a very simple cause. It appears that the moat, instead of being filled with water, was in reality dried up and overgrown with thistles, which pierced the unprotected feet of the assailants, who, tortured with pain, forgot their cautious silence and uttered the cry which had alarmed the sleeping inmates of the castle.

SHAMROCK OF IRELAND.

One day St. Patrick was preaching at Tara. He was anxious to explain the doctrine of the Holy Trinity. The people failed to understand and refused to believe that there could be three persons and yet but one God. The holy man paused a moment, absorbed in thought, and seeing a shamrock peeping from the green turf exclaimed, "Do you not see in this simple little wild flower how three leaves are united into one stalk?" His audience understood without difficulty this simple yet striking illustration, to the inexpressible delight of St. Patrick. From that day the shamrock became the national emblem of Ireland.

ATTAR OF ROSES.

At Umritsur I first found myself in the true East, the East of myrtles, roses, and veiled figures with flashing eyes—the east of the "Arabian Nights," and Lalla Rookh." The city itself is Persian rather than Indian in its character, and is overgrown with date palms, pomegranates, and the roses from which the precious attar is distilled. Umritsur has the making of the attar for the world, and it is made from a rose that blossoms only once a year. Ten tons of petals of the ordinary country rose (*Rosa centifolia*) are used annually in attar making at Umritsur, and are worth from £20 to £30 per ton in the raw state. The petals are placed in the retort with a small

quantity of water, and heat is applied until the water is distilled through a hollow bamboo into a second vessel, which contains sandal-wood oil, a small quantity of pure attar passes with the water into the receiver. The contents of the receiver are then poured out, and allowed to stand till the attar rises to the surface, in small globules, and is skimmed off. The pure attar sells for its weight in silver.—*Greater Britain.*

THE CATTLE PLAGUE.

In the March number of the *American Stock Journal* is a long and valuable article by Prof. John Gamgee on the Lung Plague in Cattle. Of all the cattle diseases pleuropneumonia is in the long run the most destructive, because the most insidious and the least likely to rouse a people to united action for its suppression. To ignore its presence is, however, to insure that the cattle mortality of America like that of England will be at least doubled in a few years' time. Rational means, energetic action, and earnest cooperations between the different States and the central government may, with a moderate expenditure now, save many millions annually in the not distant future.

There are at present no proper restrictions on the sale of infected stock, and in another year or two, unless some definite and immediate action be taken, the disease is likely to find its way in so many parts of the country that its eradication will be almost a matter of impossibility.

The Editors of the *Journal* being extensive breeders and dealers in cattle, have printed an edition of over half a million copies for gratuitous distribution among our Farmers. We hope all will avail themselves of this generous offer and send for a copy. Address.

N. P. BOYER & Co., Publishers,
Parkesburg, Chester Co., Pa.

COOKERY.

TO PREPARE FOWLS FOR COOKING—Professor Blot, in his lectures on cooking, gives the following directions for preparing fowls:—Never wash meat or fowls. Wipe them dry if you choose, and if their is anything unacceptable it can be sliced off thinly. In cooking a chicken whole, no washing is to be done, except the gall-bladder be broken, when it is best to cut the chicken up and wash it thoroughly. Again, in cleansing chickens never cut the breast; make a slit down the back of the neck and take out the crop that way. Then cut the neck bone close, and after the bird is stuffed the skin of the neck can be turned up over the back, sewed down, and the crop will look full and round. Further, the breast-bone

should be struck smartly with the back of a heavy knife, or a rolling pin to break it. This will make the chicken lie rounder and fuller after it is stuffed. The legs and wings should also be fastened with thread close to the side, running a long needle through the body for that purpose. A good stuffing for baked or roast chicken may be made by chopping an onion fine, and stirring it with 2 ozs. of butter in a saucepan on the fire. It is taken off a moment, and bread which has been soaked in water and the water squeezed out is added, with salt, pepper, a little nutmeg, and some parsely chopped fine. Then one yoke of an egg, mixed in thoroughly on the fire for half a minute. This stuffing is then inserted in the chicken.

OILING HARNESS.—A correspondent in the *Scientific American* communicates his practice and experience in regard to the best mode of preserving harness:—In the first place, I subject the harness to one or two coats (as the leather may need) of lamp-black and castor oil, warmed sufficiently to make it penetrate the stock readily. Then I make about two quarts of warm soap suds and with a sponge wash the harness. When dry, rub it over with a mixture of oil and tallow, equal parts, with sufficient lamp-black to give it colour, or, what is better, Prussian blue, which gives it a new and fresh look. This compound should be applied sparingly and well rubbed in, which can be quickly done, and will leave a smooth and clean surface.

The young should have courage to live within their means; to have more pride in the consciousness that they have a little spare money at home, than living in a style which keeps them all the time cramped in maintaining. Better to live in one room, with all the furniture your own, than occupy a whole house, with scarcely a chair or table paid for.

BRAN FOR MILCH COWS.—Plain bran or ship stuff, says the *Stock Journal*, is one of the very best kinds of food to increase the milk. It is not fattening. A steer could not be fattened on bran, alone, and a cow, if fed on the best of hay and bran alone, might fall off in her yield, unless her strength and condition were kept up by Indian meal or stronger food. If there were anything in which there would seem to be no strength, it is bran, the mere hull of wheat. It is not stimulating, like brewer's grains, and can certainly do no harm, if it does no good; and yet any farmer who will make the experiment, will find—or, at least, we have found—that a cow being otherwise kept in a proper condition, her yield of milk will be very considerably increased by giving her twice a day a feed of pure bran. The fact is patent, although we are not able to explain it. If there is any one article, which, while keeping up the health and strength of the cow, will also increase the supply of rich, healthy milk, in our experience it is cotton seed cake meal. We have found this to have a great effect on the milk-secreting organs. The cows at first do not seem to relish it, and it should be mixed with some other seed, but they soon come to like it, and we have never seen any bad effects in any way.

SHADE FOR BEES.—We are persuaded that shade is an advantage to bees. We have seen the best success where hives have been set among trees, not dense, but scattered sufficiently, however, to form a tolerable shade, enough to break the strong rays of the sun; and it stands in reason, the extreme of heat is avoided. There is also not that invitation to fly early when the air surrounding the hive is cold, and snow perhaps lies on the ground. It is in this way that bees in the forest are situated—not in the densest shade, but in the tops of trees where there is light, air, and sufficient warmth without great heat. The direct heat of the sun striking the hive is our doings, not the bees; and we do not blame them when they show a disposition to leave such a place and go to the woods. Another confirmation that shade is favorable to bees is the fact that they do best in a temperate latitude, say 40°.—*Journal of Agriculture.*

HOME-MADE GUANO.—A correspondent of the *American Agriculturist* says he made a nice pile of guano by putting a few shovelful of dry muck over the droppings from his hen roosts once a week, during the fall and winter months. In the spring the mass was turned over several times, and soon finely pulverized, dry and odourless. He applied a handful to each hill of corn, and found it made the corn grow so fast that the cut worm did not touch it, and he had a splendid crop ripened early. This is a simple way of making a valuable manure, by having the fowls confined to one place at night, and expending a few minutes' time once a week.

Two tons of good hay is not thought too much for the winter-feed of a cow, even if roots and a little grain are occasionally added. It is supposed to be economical to keep all stock warm, clean, their apartments ventilated, and their feed given to them at regular times. No one now doubts that all the animals should be kept continually growing in winter as well as summer, and, if possible ready for the shambles at all times. In short, true economy, it is believed, consists in liberal feeding, cleanliness, regularity, mild temperature and kind treatment in every respect.

SAUCE FOR FOWLS.—An excellent white sauce for fowls may be made of 2 oz. butter, two small onions, one carrot, half a small teacupful of flour, one pint of new milk, salt and pepper to taste. Cut up the onions and carrots very small, and put them in a stew pan with the butter; simmer them till the butter is nearly dried up; then stir in the flour and add the milk; boil the whole gently until it thickens, strain it, season it with salt and cayenne, and it will be ready to serve.

ARTIFICIAL EBONY is made in Europe by an ingenious process, from sea-weed. After treating it with diluted sulphuric acid, it is dried and ground, mixed with glue, gutta percha and india rubber, the two latter substances dissolved in naphtha, coal tar, sulphur, alum, and rosin. It is then heated to 300° Fahrenheit, and on cooling, it is said to be in every respect equal to ebony.

LAMB CUTLETS AND SPINACH.—Eight cutlets, egg and bread crumbs, salt and pepper to taste, a little clarified butter. Take the cutlets from a neck of lamb, and shape them by cutting off the thick part of the chine-bone. Trim off most of the fat and all the skin, and scrape the top part of the bones quite clean. Brush the cutlets over with egg, sprinkle them with bread crumbs, and season with pepper and salt. Now dip them into clarified butter and sprinkle over a few more bread crumbs, and fry them over a sharp fire, turning them when required. Lay them before the fire to drain, and arrange them on a dish with spinach in the centre, which should be previously well boiled, drained, chopped, and seasoned. Peas, asparagus, or beans may be substituted for the spinach.

THE APIARY.—To show that honey-bees instead of being an injury to farmers are a benefit to them, the fact is cited as well known to observing bee-keepers that when we have a fine yield of honey from the buckwheat, or the orchard, that we have a corresponding yield of grain or fruit, unless prematurely destroyed by frost or other causes. There are seasons when bees work very little on buckwheat, and the result has been, with scarcely an exception, a small yield of grain.—*Colonial Farmer.*

Mr. Chauveau introduced a bill for the establishment and encouragement of Colonization Societies, and explained its provisions. It provided for the formation of one Society in each electoral division, whose duty would be to encourage actual settlements; to spread information respecting Colonization Lands among people of its division; to encourage foreign immigration, and to facilitate the return of those who had left the Province. The Commissioner of Agriculture would have, however, to issue certificates, on application, authorizing the formation of said societies, and giving them a charter of incorporation for three years; each society would receive grants from the Government, and if, by that time, Government found the finances would permit it, grants would be continued; each society would have a certain tract of Crown Lands allotted to it, over which it would exercise certain privileges for a certain time. Provisions also are made for the formation of a second society in each district. But the second society would receive no grant.

In reply to Mr. Jolly, Mr. Chauveau said, grants would be in money; that care would be taken to have an equitable distribution of grants. The societies would be under the Department of Agriculture.

LARGE FRUIT FARMS.—The farm occupied by Mr. Hyde, near Alton, and owned by L. B. Sidway, of Chicago, consists of 400 acres; 100 acres of which are in fruit, planted as follows: 2000 apple trees, 3000 pear, (2300 of which are standard), 1500 peach-trees, and ground prepared for 1000 more next spring; 500 cherry, 3000 grapes, one acre of Lawton blackberries, 600 gooseberries, 600 currants. The place is intended exclusively for fruit, no other farm products being raised except for home consumption.

Mr. Starr, of Monticello, has one of the largest fruit farms in this section, planted as follows: 2800 apple trees, mostly winter apples; 2000 peach trees, about 4000 pear, 7000 grape vines, of which 800 are Catawba, 175 Delaware, the rest of various kinds, including Ives's and Norton's Virginia.

Mr. Chaplin, the sportsman whose name has so often been brought before the public in connection with the late Marquis of Hastings, has announced his intention to sell the whole of his racing stud, with the exception of *Hermit*, and two or three mares, which are to be kept for breeding purposes.

ROUGH BISCUITS.—1 lb. flour, five eggs, leaving out two of the whites; 1 lb. sugar; beat the eggs and sugar together half an hour; mix with the flour 1 oz. ground ginger and 1 oz. caraway seeds; then mix all together; drop upon tins, so as to look rough when baked.

ANTS' NESTS IN GARDENS.—A correspondent informs us that by burying a few sliced onions in ants' nests he has caused them to abandon their quarters. We learn from an experienced horticulturist, that two or three table-spoonfuls of kerosene poured into the holes in their nests will produce the same effect.—*American Entomologist*.

At the Surrey Sessions, the other day, a young man was found guilty of stealing a shovel. When asked if he had any one to speak to his character, a person came forward and declared that he had known the prisoner (who is only twenty-four) for the last thirty years.

The imported sparrows at Quebec are good colonists. In spite of the tremendous snow storms down there they still manage to keep up undiminished numbers. There are now about twenty birds, which may be seen daily in and about the Artillery barracks; their utility is more particularly observable at this season of the year; the hot sun vivifies insect life for several hours of the day, when from their semi-torpid state they become an easy prey to the birds; the eggs, too, of the caterpillar tribes are approaching maturity. A little bird, therefore, such as the sparrow or black-capped tit-mouse, can commit a great havoc amongst what would become insects at a later period.—*Globe*.

Everybody ought to get married who can boast of three things: First, a sound body; second, a sound mind; third, a good trade. This as to men. And as to women, they should possess good health, tidiness, and industry. With these, any young couple can get as rich as they ought to be, or as rich as is necessary to an enjoyable life, if they will only go to housekeeping a little below their ability.

READING FOR FARMER'S BOYS.—An intelligent and thrifty farmer says: "But for the co-operation of my boys I should have failed. I worked hard, and so did they. The eldest is near twenty-one, and other boys in the neighborhood, younger, have left their parents; mine have stuck to me when I most needed their services. I attribute this result to the fact that I have tried to make home pleasant for them. I have furnished them with attractive and useful reading; and when night comes, and the day's labor is ended, instead of running with other boys to the railway station and adjoining towns, they gather around the great lamp, and become absorbed in their books and papers." Such is substantially the testimony of a farmer who has known how hard the struggle for a footing on free soil without capital is, and how valuable and comparatively cheap are the aids which good reading brings to him.

THE Commissioner of Agriculture says, that if our soil were cultivated one inch deeper, \$150,000,000 would be added to the wealth of the country.

DUTCH CAKE.—6 oz. butter and lard mixed, four eggs, $\frac{1}{2}$ lb. flour, $\frac{1}{2}$ lb. sugar; beat the butter and lard to a cream, mix it with the eggs well beaten; then add the flour and sugar, both warmed, and a little nutmeg and cinnamon; when well beaten, add a spoonful of brandy, and bake a full hour, in a buttered mould, in a quick oven.

WASH FOR SUNBURN.—Take 2 drachms borax, 1 drachm Roman alum, 1 drachm camphor, $\frac{1}{2}$ oz. sugar candy, 1 lb. ox gall; mix, and stir well for ten minutes or so, and repeat this stirring three or four times a day for a fortnight, till it appears clear and transparent. Strain through blotting-paper, and bottle up for use.

TO RESTORE LINEN THAT HAS LONG BEEN STAINED.—Rub the stains on each side with wet brown soap. Mix some starch to a thick paste with cold water, and spread it over the soaped places. Then expose the linen to the sun and air; and, if the stains have not disappeared in three or four days, rub off the mixture, and repeat the process with fresh soap and starch. Afterwards dry it, wet it with cold water, and put it in the wash.

Charlie pared and sliced six medium-sized Baldwin apples, one-third of which I placed on the bottom of a pudding pan, then scattered over a few slices of canned quince, some raisins, cut in two, a tablespoonful of raw rice, and two tablespoonfuls of sugar; this was one layer. Two more layers were made in the same manner, and at last a pinch of salt and a very little nutmeg were added. The pan was filled up with new, rich milk, and the whole baked slowly from two to three hours. It is a dish fit for a prince and perfectly healthful.

TO PROLONG FLOWERING.—By cutting off the seed vessels of flowering plants, as soon as the petals drop, the plants will be kept in greater vigour, and the season of flowering be considerably prolonged.

"POUND PARTIES" are now fashionable in Boston. Those invited are expected to contribute one pound at least of something to eat.

WOMEN AND NEWSPAPERS.—The Rev. Brook Hereford delivered a sermon in England recently, on the "importance of Newspaper Reading to Women." He said: Let me specially urge the reading of the newspaper as a distinct means of self-culture upon women. Women, in their quiet household-life, may go on for weeks hardly hearing a word of what is passing in the great world outside, and the little that they do hear conveying no living meaning to them. I think this is a great evil. It not only narrows the range of woman's life, but she loses a great deal of happiness which would come of intellectual companionship and community of interest with men, with a brother, a father, a husband. I would have every woman read the newspapers for herself not merely for an hour's amusement, but with a definite object of escaping the natural danger of her quiet home-life, and keeping an open eye and an understanding mind for the passing history of nations, and the great interests which are stirring the heart of the world."

ADVERTISEMENTS!

FANCY POULTRY AND EGGS For Sale.

Brahma Pootra, Black Spanish, Algerine Houdan, Grey Dorking, Gold and Silver Pencilled and Black Hamburg and

GAME FOWLS.

—ALSO—

EGGS for hatching of the above and other choice Fowls and DUCKS.

Apply, POST PAID, Box 116, Post Office, Halifax, March, 1869.

Western Halifax Agricultural Society.

FOR SALE:

The Society's celebrated thorough-bred Durham Bull "LOBO LAD."

"LOBO LAD" was imported from Canada two years ago.

PEDESTAL.—"Lobo Lad," red and white, calved 9th November, 1867; bred by Thomas Douglas, Lobo, Co. Middlesex, C. W.; entered in Upper Canada Stock Register, No. [2008]; got by Baron Renfrew, [1227].

Dam—Miss Maude, [353], by Belted Will the 6th, [68], bought from John Snell.

g. d. Red Rose, (265), by Young Briton, (275.)

g. g. d. Lady Jane, (imported) by Sir Walter (2639.)

g. g. g. d.—by a son of W. Booth's Jerry, (4087.)

g. g. g. g. d. by Young Star, (5319.)

g. g. g. g. g. d. by Roseberry, (507.)

g. g. g. g. g. g. d. by a son of Comet, (155), &c.

For farther information, apply to the sub-Committee, Messrs. Joseph J. Northup, Anderson, and Lawson.

March, 1869.

ALFRED SAUNDERS,

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