Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- [ ] Coloured covers/ Couverture de couleur
- [ ] Covers damaged/ Couverture endommagée
- [ ] Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- [ ] Cover title missing/ Le titre de couverture manque
- [ ] Coloured maps/ Cartes géographiques en couleur
- [ ] Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)
- [ ] Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur
- [x] Bound with other material/ Relié avec d'autres documents
- [x] Tight binding may cause shadows or distortion along interior margin/ La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- [ ] Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/ Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

- [ ] Coloured pages/ Pages de couleur
- [ ] Pages damaged/ Pages endommagées
- [ ] Pages restored and/or laminated/ Pages restaurées et/ou pelliculées
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached/ Pages détachées
- [x] Showthrough/ Transparence
- [x] Quality of print varies/ Qualité inégale de l'impression
- [x] Continuous pagination/ Pagination continue
- [ ] Includes index(es)/ Comprend un (des) index

Title on header taken from:/ Le titre de l'en-tête provient:

- [ ] Title page of issue/ Page de titre de la livraison
- [ ] Caption of issue/ Titre de départ de la livraison
- [ ] Masthead/ Générique (périodiques) de la livraison

- [ ] Additional comments:/ Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
								✓			

THE NOVA SCOTIAN JOURNAL OF AGRICULTURE

Published under direction of the Board of Agriculture of Nova Scotia.

VOL. I. HALIFAX, N. S., MARCH, 1870. No. 55.

CONTENTS:

BOARD OF AGRICULTURE.

OFFICIAL NOTICE.

Moved by Mr. Longley, seconded by Dr. Hamilton, and

Resolved,—That no new Society shall be entitled to qualify for drawing any portion of the Legislative grant from the Board unless three months' notice has been given of the intention to form such Society; and, where there already exist four or more Societies in one county, no extra Society shall be formed without the permission and approval of the Board.

GEORGE LAWSON,
Secretary.

The above Resolution came into operation on 1st January, 1870, and will be strictly enforced.

BOARD OF AGRICULTURE.—HALF-YEARLY MEETING.

AGRICULTURAL OFFICE,
New Provincial Building,
March 3rd, 1870.

The Half Yearly Meeting of the Board was held to-day.

PRESENT:—The Hon. Alex. Macfarlane, President; The Hon. Sir. Wm. Young, Kt.; The Hon. R. A. McHeffey, M. E. C.; Rev. A. S. Hunt, M. A., Supt. of Education; Hon. J. McKinnon, Antigonish; J. B. Calkin, Esq., Principal of Normal School; Henry Yeomans, Esq.; H. A. N. Kaulback, Esq., Lunenburg; Dr. C. C. Hamilton, Canard; Joseph J. Northup, Esq; George C. Lawrence, Esq, Port Hood; Avard Longley, Esq., Paradise; Professor Lawson, Secretary.

The votes of the Office Bearers of the various Agricultural Societies throughout the Province having been laid before the Meeting, it was found that the Board for the ensuing year was constituted as follows:

District No. 1—City and County of Halifax—Sir W. Young, Henry Yeomans, William Cunard, Joseph J. Northup, Esqrs.

District No. 2—Kings, Annapolis, Digby—Dr. C. C. Hamilton, Avard Longley, Esq.

District No. 3—Lunenburg, Queens, Shelburne, Yarmouth—H. A. N. Kaulback, Esq., Lunenburg; A. C. A. Doane, Esq., Barrington.

District No. 4—Hants, Colchester, Cumberland — Hon. A. MacFarlane, Wallace; Hon. A. McHeffey, Windsor.

District No. 5—Cape Breton, Richmond, Inverness, Victoria—Henry Davenport, Esq., Sydney; G. C. Lawrence, Esq., Port Hood. Members *ex officio*—Rev. A. S. Hunt, Supt. of Education; J. B. Calkin, Esq., Principal of Normal School.

Mr. Northup presented the Report of a Committee appointed at a former meeting to regulate the distribution of grants to Agricultural Societies for 1869, from which it appeared that forty-three societies qualified for participation in the grants. The total number of members is 2299, and the number of attested subscriptions actually paid for the year $2540.50. The total amount of grants voted for the year is $3001.00.

Minutes were read of an informal meeting of the Board held on 21st Jan. last, in accordance with which certain arrangements were approved of (on motion of Dr. Hamilton, seconded by Mr. Kaulback), with a view to the encouragement of hemp culture in the province.

A large quantity of hemp seed has been ordered, and is daily expected to arrive. It is offered for sale to Agricultural Societies and others, at $2 per bushel, in bags of two bushels each, which will be enough for an acre.

On motion of Sir William Young,—*Resolved*, That the following prizes be offered:—A prize of $50 to be awarded

to any person who shall grow the greatest acreage of hemp in the province during the ensuing season, notice to be given to the Secretary of the Board by intending competitors in time to allow inspection of the standing crop, and not later than the 1st of July, 1870, and a fair sample of the crop to be sent to the Board not later than the end of September, 1870.

A prize of $50 for the best sample of prepared Hemp fibre, in quantity of ten hundred weight to be exhibited at Halifax.

A prize of $10 for the best bushel of Hemp Seed, raised by the competitor in Nova Scotia, and sent to the Board at Halifax not later than the end of Sept., 1870. The fibre and seed will remain the property of competitors, whether successful or not.

Mr. Calkin gave notice of a resolution having reference to the encouragement of County Exhibitions, which will be taken up to-morrow.

The Board occupied some time in conversation on various proposed means of promoting the advancement of Agriculture. but being desirous of conferring with the Agricultural Committee of the House of Assembly before taking decided steps,—the Meeting adjourned till to-morrow, (Friday) morning at 10 a. m., when a joint meeting will be held.

ADJOURNED MEETING.

AGRICULTURAL OFFICE.
New Provincial Building,
4th March, 1870.

An adjourned meeting was held this day, when the Board met in consultation with the Agricultural Committee of the House of Assembly. Present, of the Agricultural Committee:—Amos Purdy, Esq., Chairman; David M. Dickie, Esq., Elkanah Young, Esq., David C. Landers, Esq., Alex. Campbell, Esq., John Ross, Esq.

Of the Board of Agriculture there were present:—The Hon. Alex. MacFarlane, President; The Hon. Sir Wm. Young, Kt.; The Hon. R. A. McHeffey, M. E. C; Hon. J. McKinnon, Antigonish; Rev. A. S. Hunt, M. A., Supt of Education; Dr. C. C. Hamilton, Canard; Joseph J. Northup, Esq.; J. B. Calkin, Esq., Principal of Normal School; Henry Yeomans, Esq; Avard Longley, Esq., Paradise; H. A. N. Kaulback, Esq., Lunenburg; George C. Lawrence, Esq., Port Hood; Prof. Lawson, Secretary.

Col. Laurie was likewise present by invitation.

Mr. Ross, Mr. Campbell, and other members of the Agricultural Committee, as well as of the Board, expressed strongly their opinions as to the importance of importing seed grain, to meet the wants of our farmers this spring. Thereupon it was moved by Dr. Hamilton, seconded by the Hon. Mr. McHeffey, and

Resolved,—That the following quantities of Seed Grain be obtained without delay, and sold to Agricultural Societies, or others, at cost prices, viz—

300 bushels Canada Fyfe Wheat,
100 do. Norway Oats,
50 do. Surprise Oats.

It is expected that the Seed Wheat will arrive at Halifax before the end of March, and will be sold to Societies and others at a dollar and a half per bushel. Persons desiring supplies are requested to send their orders immediately to the Secretary of the Board.

Moved by Dr. Hamilton, seconded by Mr. McHeffey, and

Resolved, That the Board import a number of Sheep and Swine, or other desirable stock, of pure breed, and have them for sale in November.

Moved by Mr. Calkin, seconded by Mr. Longley, and

Resolved, That with the view of encouraging Exhibitions of Stock and Agricultural and Horticultural produce, in the various Counties of the Province, the Board resolve that where any Society or number of Societies shall hold an Exhibition, the prizes of which shall be open for competition to all persons in the Province, either free or at a reasonable entrance fee, the Board shall give in aid of such Exhibitions a premium to the extent of 25 per cent. on the amount of the Prize Fund subscribed and paid in the locality, irrespective of the regular subscriptions of Societies,—provided that such premiums shall not in one year, exceed $1000. And should this sum of $1000 be insufficient to yield 25 per cent. on the various prize funds, then the premiums will be awarded by the Board in rateable proportion to the amount of fund raised in each locality. Societies desiring to participate are required to make application and send in a copy of their prize list and subscription list, not later than 1st June, 1870.

Mr. Northup exhibited specimens of several new potatoes from Mr. Alfred Saunders, Argyle street, viz;—

Reilly or Worcester; Climax—a very fine sort; Early Rose; Bresee's Prolific.

BEET SUGAR.

The growth of beet for the manufacture of sugar and spirit forms the most important branch of farming in France, Belgium, and Germany. It has proved to be such a source of national wealth to those countries, that it naturally takes precedence of all other agricultural topics. For the past ten years, the growers and makers have supported a newspaper (*Journal des Fabricants de Sucre*) devoted to beetroot culture and sugar-making. I mention this as an indication of the importance of the trade. That sugar could be extracted from beetroot was known as early as 1747. The discovery was made by Margraf, a chemist of Berlin; but his discovery excited but little attention. About the close of the last century, another Berlin chemist, Achard, gave to the world an account of the process carried on at his beetroot sugar factory in Silesia, by which he extracted some 4 per cent of sugar. The scientific men of the Continent from that time were aroused to the importance of the subject. The attention of Napoleon having been directed to it, he determined upon introducing the manufacture on an extensive scale, his view being the breaking up of the Colonial prosperity of Great Britain, by excluding from France and the Continent the important Colonial produce of sugar. The first factory was established about 1809, since which time it has made steady and, considering the difficulties, fiscal and otherwise, rapid progress. In less than thirty years from its introduction, no less that 50,000 tons of sugar were made from beet; and, according to the last return, there are now in France 470 beetroot sugar factories; in Belgium, 116; and in Prussia, 255. In the Zollverein, 2,500,000 tons of beet are annually converted into sugar. In Austria, Hungary, Russia, and other parts of Europe, the process is also successfully carried on. To France, that which was commenced as a military expedient has proved to be not only an important department of national industry, but the most powerful stimulant to French agriculture.

The late Mr. Frere wrote six years ago as follows:—"When we see what a mighty agent the introduction of beetroot, as an industrial crop, has proved for the regeneration of agriculture in the north of France, we may see reason to note and ponder such statistics in our minds, even if at present we cannot advantageously turn them to practical account." To show the appreciation in which this branch of industry is held in France, at an agricultural meeting held a few years ago at Valencieunes, a triumphal arch was erected, on which appeared the following inscription:—"The growth of wheat in this district before the introduction of beetroot sugar was only 122,000 qrs., the number of oxen 700; since the introduction of this sugar manufacture, the growth of wheat has been 146,000 qrs., and the number of oxen 11,500." Since I have looked into this subject, I am surprised that it did not sooner occupy the serious attention of English agriculturists. Perhaps the indifference arose from the failure of early attempts made at Chelsea, Wandsworth, Minely, Belfast, and other places, as well as from a settled belief that our climate was not adapted to the growth of the particular kind of beet required for the manufacture. That the climate and soil of the drier parts of

England are well suited to the growth of the root is clearly set at rest, not only by the analytical tests made by Professor Voelcker upon roots grown in England, in Belgium, and in France, but by practical results obtained by Mr. Duncan at the sugar factory in Suffolk. The percentage of sugar in beet is, upon an average, estimated on the Continent at about 10 or 11 per cent, whilst the roots analyzed by Professor Voelcker, grown at Barking with London sewage only as a manure, contained 13 per cent, equal to the very best Silesian. That the sugar-beet requires for its perfection a better *climate than ours, will, I believe,* be proved by further experience to be a fallacy. The temperature of the north of France and Germany is far more suitable to its growth than that of the southern parts of those countries. What I learned to be of most importance is, that the months of August, September, and the early part of October, should be warm and sunny; for it is in the latter stages that the sugar is formed. To ensure the best results, great care is necessary with the manuring and proper tillage of the soil, the choice of seed, the subsequent cultivation, and the harvesting. At Cologne, I visited a large concern belonging to the Rhenish Beetroot Sugar Company, a firm composed of three partners. In addition to the roots grown on their own extensive farm of 7200 imperial acres which I shall notice presently, large quantities are bought of the surrounding farmers, at 20s. per ton, the pulp being given back free. The firm has issued printed instructions for the guidance of the farmers in the neighbourhood.

"1. In order to grow good sugar-beet it is necessary that the land intended for the roots should be ploughed at least 10 inches deep before the winter; as the frosts render the soil as fine as ashes, it enables the farmer to work the land readily in spring, and the rapid growth of the plant is greatly facilitated. 2. From experience it is proved that roots planted in ground freshly manured, either with farm-yard dung or compost, suffer from *unequal growth and various kinds of insects.* The quality also, in most cases, is inferior. It is better, therefore, to highly manure the previous crops and avoid the direct application of manure to the beet-field. 3. As soon in the month of April as the land has become sufficiently warm (say 45 to 50 deg. Fahrenheit) the sowing of the seed should commence, for according to all experience, the earliest planted beet are always the best. Drilling in all cases is to be preferred to sowing by hand. The cultivator should always bear in mind that the soil should be as fine as meal, yet not too loose, so that the seed is not deposited too deep. 4. If sown by hand, the roots should be in 14 inch squares, within the radius of the Cologne fortification, a rich district; the rows should be 12 inches wide, and the roots 8 inches apart, so that they do not become too big. If drilled with a machine, the distance should not exceed 15 inches, and thinned out at 10 inches. 5. As soon as the plants are visible, hoeing between the rows should commence. The growth of the weeds is thereby checked, and also, the ever-forming crust which shuts out the air, is broken, and insects and vermin are destroyed. When the plants have six leaves, the thinning or singling out should *be begun. Frequent hoeing subsequently* is also necessary to keep the land from becoming bound. When, in the month of July, the heads of the roots show above ground, which heads are totally useless for the sugar manufacture, their developement must be checked by moulding-up, which operation also facilitates the getting up of the roots when ripe. 6. Leaves are to a plant what lungs are to an animal; therefore, nothing damages the beetroot more than taking off the leaves before harvest. Such a senseless course reduces the value of the crop one-half. 7. Roots, which are to be kept for several weeks, perhaps months, before being taken to the factory, should be quite ripe when gathered, should not have been exposed to frost, and should have been harvested in a fresh or moist condition. The roots are seldom ripe before the middle of October, yet frequent frosts occur at the beginning of November; the beetroot cultivator must, therefore, make haste to harvest his crop before the frost commences, and postpone all other work until the crop is secured. If a long drought has occurred, the growers should wait until a good rain has fallen, for roots which are harvested in dry weather, and after a long drought, will not keep. 8. The raising of the roots is best performed by means of spades or shovels; forks are not suitable for this operation, for, from experiment, too many roots get pricked, and pricks are a certain cause of decay, whereas a smooth cut with a shovel is not so injurious. In any case, however, wounding of the roots must be most carefully guarded against. 9. the leaves of the gathered roots should be cut off with a sharp knife close to the crown, also the under leaves, which in most cases are decayed, must be removed by the hand or the knife, because they induce rottenness, and if left on are troublesome during the washing process. 10. Roots which are to be conveyed to the factory within three or four days of gathering should be plentifully covered with leaves, because the sun's rays beget decay of the roots, and rotten roots produce dark-coloured juices which are valueless. If the roots have to be taken to the factory later, they must be thoroughly well covered with earth, either in pits or heaps, so as to protect them as well from the heat of the sun as from the frost, and thus prevent their losing quality or quantity. The beetroot cultivator should remember the well-known proverb, 'Out of the earth, into the earth,' *i. e.*, the earth not only produces but preserves. 11. The pits or heaps should be 3 feet wide, and one spit deep, and of any convenient length. The roots should be laid with the heads outwards. The work of covering up as well as the removal to the factory should be carefully performed, so as to avoid the bruising or wounding of the roots, as their *soundness is of the utmost consequence.* Heaps which are three feet wide should not be more than three feet high, so as to keep the roots cool and prevent their sprouting. The roots should be covered up *immediately,* with at least 2 feet of earth, in order to avoid thoroughly the admission of air, for every change of temperature is injurious to the roots. Ventilation by straw chimneys or other methods must be most strictly avoided. If the heaps cannot be completed before night, a thick layer of leaves should be used as a temporary covering to prevent damage by night frosts. 12. In carting the roots to the factory, great care must be taken against bruising or breaking off the tap-root (the tap-root is the richest in sugar), for roots handled roughly soon show black spots and quickly rot. 13. That the foregoing rules are attended to properly, the inspector appointed by the sugar factory will satisfy himself from time to time by actual observation."

If I do not mistake, these rules contain matter for reflection, and may suggest to the thoughtful English farmer some useful lessons in the cultivating and harvesting in the ordinary mangold crop. The processes pursued in the sugar factories of the Continent are very simple. The roots, being first washed in a machine, are dried and pulped, the juice pressed out by hydraulic machines, followed by the usual refining process. At the great manufactory I have referred to at Cologne, at which 150 tons of beetroot are converted into sugar daily, the process of extracting *the sugar is unique, and far more perfect* than any other factory I had the opportunity of inspecting. Indeed, the whole arrangements are most complete. Every department was thrown open to me, and every process explained, without the least reserve. When the inspection of the factory was finished, a carriage and pair, belonging to one of the partners, was politely placed at my disposal for a drive round their extensive farm. To return, however, to the sugar-making: Instead of extracting the juice from the pulp by pressure, as is the general practice, the pulp is put into a kind of collander, placed inside of a cylindrical vessel; when filled, the collanders are put in action by

the steam-engine, and a rapid rotatory motion is imparted to them. The juice is therefore thrown off by centrifugal force. The result of this plan was said to be that 2 or 3 per cent more sugar was obtained than could be extracted by the process of pressing. In Prussia, the manufacturer has to pay the Government duty of 14s 6d per ton on the roots, instead of 17s. 8d. per cwt. on the sugar, as in France. The Prussian maker has, therefore, a greater inducement to extract every particle of sugar. This arrangement, again, has led the German cultivator to be much more particular in the choice of his seed. The best description I met with is the "Improved Vilmorin," propagated by M. Louis Vilmorin, of Paris, who claims to have had recourse to the process of selection and the establishment of pedigree in plants long before Mr. Hallett was heard of. M. Vilmorin informs me that the Vilmorin beet is more highly prized in Germany than in France, and accounts for it by the fact of the duties being levied in the different manner I have described. The refuse of the beetroot after the sugar has been extracted forms an important article of cattle food, and is held in high estimation. About 18 to 20 per cent is the proportion of pulp left; the worse the quality of roots, the smaller the quantity of pulp. It is preserved in deep pits, generally bricked like a grave—very often the expense of bricking is avoided—a covering of earth is laid upon the top. The pulp is generally consumed within the year; but if well covered up it can be kept sweet and good for two years, or, as I was assured, even for three years.

Much controversy has taken place both as to the relative value of pulp as feeding stuff and as to its real money worth. Many practical men maintain that a ton of pulp is equal in value to a ton of roots. I think the money worth is best settled by the price it fetches. The average price at the factories I visited will amount to about 13s. per ton. Although horses do not like it, bullocks, which cannot be fattened on the root alone, can and are sometimes fattened for the English and foreign markets, without any other food than the pulp. Pigs do well upon it when cooked. Sheep will eat about 12 lbs. a day of raw pulp. It is unquestionably more easily digested than the root itself; but cows kept upon it are said not to produce much milk. I was fortunate enough to obtain a debtor and creditor account of a sugar factory upon the Continent, the locality of which, for obvious reasons, I am not at liberty to indicate. The proprietor is a large farmer. In it between 13,000 and 14,000 tons of root per annum are made into sugar. The total expenditure, exclusive of the interest upon the money embarked, was £19,500, the total receipts about £33,000, leaving, as will be seen from the subjoined statement, over £13,000 for profit and interest of money:—

SUMMARY OF EXPENSES AND RECEIPTS OF A BEET-ROOT SUGAR FACTORY DURING ONE YEAR.

Outgoing Expenses.

14,000 tons of beetroot at factory, including cartage, maintenance of carts, seed, at 19s. per ton.	£13,300
2600 tons of coal, at 12s. 6d. per ton	1,625
130 tons of coke, at 24s. per ton	160
350 tons of lime, at 8s. per ton	140
12½ tons granulated charcoal / 2½ tons powdered charcoal } at £11 per ton	165
1200 sacks	250
1500 filtering bags for hydraulic presses	50
1600 pulp bags	100
Cloth and canvass	25
Baskets	20
Workmen's wages	2,060
Salaries of manager and foreman employed all the year round	600
Expenses of carriage outwards and in connection with sales	450
Gas	80
Grease and oil for lubrication	75
Acids and soda used in process of manufacture	15
Insurance	70
Various other expenses not before included	400
	£19,585

Receipts.

912 tons of sugar, at £25 per ton	£22,800	0	0
123 tons of sugar, free of duty, at £42 10s.	5,227	10	0
49½ tons of sugar, at £36 per ton	1,782	0	0
1084½ tons	£29,809	10	0
Pulp, 2800, at 11s. 4d. per ton	1,586	13	4
Molasses, 105 tons, at £5 per ton	525	0	0
" 105 " at £5 10s. per ton	577	10	0
" 120 " at £7 per ton	840	0	0
Scum used as manure	50	0	0
	£33,388	13	4
Outgoing expenses	19,585	0	0
Balance	£13,803	13	4

In addition to the sugar factories I have alluded to, there are immense numbers of distilleries for extracting spirit from the beet. In France, the number reaches 500. The distilling of spirit is said to be far more profitable than the manufacture of sugar. On many farms both processes are carried on, and a few years ago—stimulated by the high price of raw spirit, the result of the vine disease—many sugar factories were converted into distilleries. I learned the other day, from a French engineer interested in a new patent still, that he is engaged in the erection of a large distillery near London, for extracting spirit from beetroot. The whole cost of the distillery is estimated at £16,000. As the partners are people of experience, they have doubtless satisfied themselves that the difficulties experienced by other persons are to be overcome. Hence the question as to making spirit from beetroot being a profitable process will speedily be put at rest.

THE BEST TIME TO SKIM MILK

Is a subject that still remains ill-understood. Of course we have dairy women among our readers. We advise them to cut out the following and paste it up in a conspicuous place in the dairy:—

When milk is allowed to sour before it is skimmed, the layer of cream appears more bulky and of greater consistency, but it does not produce so much nor so good a quality of butter as cream properly raised and skimmed from milk before it sours. On this point we possess some interesting experiments by Sannet, who put aside two equal quantities of milk, of which the first, skimmed after 30 hours, yielded 30 lb. of butter, and the second, skimmed after a lapse of 60 hours, only 27 lb. of butter. In another experiment, two equal quantities of milk yielded—the one skimmed after 30 hours, 31 lb. of butter; and the other, after 60 hours, 29 lb. of butter. In both experiments in which the milk was skimmed after 30 hours' standing, the skim-milk was still sweet, and the cream not so thick and in less bulk than that thrown up after 60 hours' standing. The cream which rises first is always richer in butter than that which is thrown up later, and it also possesses more of that peculiar aroma which gives to butter that rich nutty flavour and smell which impart so high a degree of pleasure in eating it. Of one thing we may all be assured—the quicker cream can be made to rise the better the quality; for cream, like all perishable substances, does not preserve its original properties for any great length of time. Choice keepable butter can only result when the milk has been kept sweet, as the souring develops curds. But while the cream should be taken from the milk before it is sour, the cream, on the contrary, is allowed to have a pleasant acid taste before churning.—*Western Rural.*

THE RAT-TAIL RADISH AGAIN.

(RAPHANUS CAUDATUS.)

In the December number of the *Gardener's Monthly* I notice the prediction of the Nova Scotian Journal of Agriculture, that the time will come when the "Rat-Tailed Radish" will be grown in every garden. My experience with this curious vegetable satisfies me that, owing to its strong propensity to hybridize with other varieties, it cannot maintain for more than one season its distinctive character when cultivated in the same garden with the common radish. The pods of the hybrid are short, stiff, tough, and utterly unfit for eating. To succeed with the Raphanus caudatus it will, I think, be necessary to procure imported seeds every year, or to abandon entirely the cultivation of the old and more valuable variety—the Raphanus sativus.—*McK, Jeffersonville, Indiana, in the Philadelphia Gardener's Monthly.*

[In reference to the preceding we may observe that this is the first instance made known of the hybridising of Raphanus caudatus with R. sativus. The circumstance that the two will form crosses can form no objection to the cultivation of either, for we know very well that all our varieties of garden vegetables are prone to become crossed if proper pre

cautions are not used in the way of saving of seed. It is not improbable that much bad seed has been sent out for Raphanus caudatus, and that in this way the attempts to introduce a new and valuable salad have been neutralized.—Ed. J. A.]

RASPBERRY CULTURE.

These should be planted from three to four feet apart, if the canes are sufficient in number and in length. One-half of the canes should be taken from one stool, and placed with a half of another stool, and be tied together, a stake driven down in the middle being the support. They will then form an arch, which should be continued throughout the rows. I ought, however, to have first said that five or six stout canes are enough to leave when thinning them out. I find this plan of arching them better than tying them upright. My reasons are—1st, the stake cannot injure the roots when driven down; 2nd, the fruit is more easily gathered, and has a better chance of ripening; 3d, the young wood for the next year's supply can be more easily taken away, and will be more exposed for ripening the wood than if growing around the fruiting canes. These plants like good deep soil, and good mulchings with manure from a pigstye. They like to make roots near the surface of the soil; therefore, the less they are disturbed the better.

Communications.

HEMP, MAST, &c.

Halifax, 4th March, 1870.

I am pleased to see that your Board is taking some steps for the encouragement of Hemp cultivation, and trust some good will come of it, though I think the Government will make a mistake if it does not provide the necessary machinery in a few favorable localities.

I am sorry there is no Bureau of Acclimatisation, as well as of agriculture. Does it not properly belong to the functions of your Board?

The planting of mast bearing forest trees does seem not at all to attract the attention of the people in these provinces, and they remain in ignorance of its great importance. A few seed put into the ground would in time yield an immense profit. I have already called your attention to the Chestnut, Walnut, and Filbert, as among the trees well suited to this climate. Unfortunately, our climate will not suit the Palm, one of the most profitable of trees; but I read in Somerville's Physical Geography, page 349, Philadelphia edition, 1850:—"Large forests of Araucaria imbricata grow in the Andes of Chili and Patagonia. This tall and handsome Pine, with cones the size of a child's head, supplies the natives with a great part of their food. It is said that the fruit of one large tree will maintain eighteen persons for a year."

If this tree thrives in Patagonia, it ought to do well here. Why not try it? The province is not too poor to do it, and I trust our legislators are not too short-sighted and mean.

I well know that your time is fully occupied, and with matters which you may deem more profitable; but I feel sure you will excuse my calling your attention to matters which in the end may be quite important.

Are you going to be able to induce your Board to put up a set of Hemp-cleaning machinery at Bedford, or some place equally convenient to us?

William Grove.

[We cordially thank Mr. Grove for his valuable suggestions, and hope they will receive attention. The Araucaria imbricata was destroyed by frosts in Scotland a few years ago, and is too tender, we fear, for our Nova Scotian winters.—Ed. J. A.]

EARLY POTATOES.

By Alfred Saunders.

THE FOUR BEST VARIETIES IN CULTIVATION.

"*Climax*" seedling of Early Goodrich originated with *D. S. Hefron, Esq., in* 1864.

Description—Stout, erect stalk, large leaves, tuber medium sized, smooth; form cylindrical, eyes shallow but strongly defined, skin russet netted, flesh white and solid, boils quickly, no hard core, is mealy and of floury whiteness, superior table quality, as productive as early rose, but a few days later, earlier than the "Goodrich," while keeping qualities are as good as "Peachblows."

Bresee's Prolific.—This remarkable variety originated with Albert Bresee, Esq., of Hubbardston, Vt., who was also the originator of the justly celebrated "Early Rose;" both varieties produced from the same seed-ball of the "Garnet Chili."

Vines medium height, bushy and spreading, tubers large and regular in shape, smooth, slightly oblong, skin inclined to russet, eyes little depressed, and slightly pinkish, flesh white, very mealy, and of excellent quality, yield very large, after exceeding one hundred fold, a most valuable variety.

The Rev. C. Granger, of Hubbarton, Vermont, says:—"I planted two rows of 'Bresee's' Prolific' across my garden, which yielded me nine bushels."

Worcester, or Rielly, has proved to be mealy, dry, and of most delicate flavor, fair size, roundish, colour light pink, flesh very white, skin thin, eyes very deep, and of superior quality, will mature in ninety days and yield enormously, and will be found dry and mealy, when but two-thirds grown.

Early Rose.—This popular potato has proved all that was claimed for it, when offered last spring It is very productive, and produced with us in Halifax, under ordinary culture, fifty fold.

Skin, a dull rose; flesh white, and one of the best varieties for flavour, in cultivation—highly recommended for its earliness, being at least two weeks earlier than the "Goodrich," and on account of its large uniform size and productiveness.

The Rev. Arthur Wilkins, Book Rectory (England), says:—"I cut the one pound of 'Early Rose' into forty-two (42 sets); the produce was 105 lbs. 12 oz. I never ate a better potato."

[Specimens of the above were shown at the recent meeting of Board of Agriculture, from Mr. Saunders, who has them for sale.—Ed. J. A.]

NORWAY OATS—LUCERNE.

Yarmouth, March, 1870.

Your reference to us for Norway oats led to numerous applications, from Societies mostly. The bulk of them we have engaged to Avery, Brown & Co., (30 bushels), who will be situated favorably for distributing them. We have none now not promised. I would like to say this to all who try them the coming season:—when you sow in your field, try, say two ounces, in a sheltered part of your garden, in good, deep, drained soil. Sow 12 inches apart, in drills, 12 inches apart. The yield will be from one to two bushels. In field culture, the nearer approach you make to these conditions, the nearer approach you will make to the crop.

DO YOU KNOW ANYTHING OF LUCERNE?

Several articles have been recently published in the "Country Gentleman," which have claimed the first place for it as a soiling plant, and for hay; that one acre will keep five cows from 1st May to 1st October; and that an authenticated crop of twenty-five tons of hay to the acre in one season is on record; that there is no better food for stock, cows yielding more milk from it than from any other grass, &c. In a recent order for seed, I did not omit lucerne.

I shall try to persuade some of our sea-shore farmers to give hemp a trial this season. Many of them are within easy reach of inexhaustible quantities of sea manure.

Charles E. Brown.

Miscellaneous.

EFFECTS OF CLIMATE UPON TREES.

Horticulture has contributed more than any other branch of natural science to our knowledge of the effects of climate upon life. It is natural that it should have done so. For every animal that has been removed from its native home, and subjected to a new climate and phase of life, thousands of plants have been so treated, and as plants are more manageable and more easily observed than animals, it was inevitable that more facts bearing on the influence of climate on life should be accumulated by the observers of the vegetable kingdom, provided only that they were as competent, as diligent, and as numerous as the observers of the animal kingdom,—qualifications which, we presume, no one, at any rate no reader of our journal, will dispute that they possess.

It is not therefore as depreciating the merits of what has been done, nor as complaining that more has not been done, that we invite our workers to additional exertion in this branch of scientific labour. It is that their very diligence in the past, and the magnitude of the material which they have accumulated, has rendered the acquisition of more information necessary to enable us to understand that which we have. The special point to which we at present desire to direct the attention of our readers, and more particularly those in foreign lands, relates to what we may call reciprocity in climate. At first sight one might think it safe to assume that wherever plants of one country thrive in another, those of the latter will also thrive in the former. Generally speaking they do. But it is not a rule. Sometimes the reciprocity fails—and it is especially where it does so that information regarding the circumstances attending the condition of the plant, both in its old and its new country, is wanted. For it is plain that there must be identity, or close similarity, in the apparent conditions of life, before we can look for reciprocity in result. It is no want of reciprocity on the part of America to England for example, if in return for supplying her with English plants which thrive, we find that some desert plant from her sandy, waterless wastes, does not thrive here when planted in a bog, or that a sea-side plant does not thrive on the top of a highland mountain. But what we want to know is, why, when the conditions are apparently the same in both countries, the plants do not equally thrive? Of course we know that there must be some important difference in condition—the very fact of non-thriving implies as much; but although it implies as much, it does not tell us what the difference of condition is, and it is from a study of these exceptional cases that we look to learn not only the cause which has prevented reciprocity, but also indirectly to learn something of the nature of the subtle influences which go to make up "condition of life," and of the still more mysterious element of life on which the individual "constitution" of organic beings depends.

If, for instance, we compare the north and middle of the United States with England, we find some of these anomalies. Although the climate is so nearly the same that most of the plants of the one country thrive in the other, a certain number do not. The American Lime thrives in England, but the English Lime does not in the United States. The Canada Poplar is common and thriving in this country, but the Lombardy Poplar, although long established in America, is now dying out. There are plenty of large old trees, but they are all going back; at their best, and in their most leafy season of the year, they are no better clothed than ours are in the month of November, when half their leaves are withered and gone. On the converse side, we may instance our Scotch Fir and Spruce, which do well in America, but the American Pinus resinosa and Balm of Gilead are unsatisfactory in England; the former never makes much way, and the latter, although healthy and thriving when young, never lives longer than about 30 years.

Of course for these and all other unusual cases we have an explanation ready. Who ever caught a horticulturist without his answer? As the old saying has it—for every hole we have a pin.

As regards the Lime its failure is accounted for by a beetle, Saperda candida, which attacks its roots; and which, after the tree had been well established, has nearly exterminated it. It is true that beetles do not generally attack healthy trees. Their mission is rather to remove those which are moribund, and likely soon to decay, and it is rarely that they leave native plants for exotic species. The latter have very generally an immunity from insect attacks. The Lombardy Poplar, again, is going, because only one sex of the tree was originally introduced; and all the trees in the country are from cuttings of that stock, and they are now all dying because the stock is worn out. But this ingenious explanation is open to the answer that the truth of the theory that all the cuttings, buddings, or other reproduction of a tree (other than by seed), die about the same time, is not yet proved or admitted; and if it were, it seems strange that, knowing or believing it, and with plenty of nurserymen in every town of America, and fortnightly communication with Europe, plenty of seeds of the Lombardy Poplar should not long since have been imported into that country. The short life of the Balm of Gilead in Europe again is disposed of by the assertion that the tree is naturally shortlived, and that it is not more so in England than America.

All these explanations may be true, but it would be satisfactory not to have to take them on trust and *ex cathedrâ*, but to have them dealt with, as all statements on matters of science should be—held to be wrong until proved to be right.—Every statement, assertion, explanation, or theory, ought to be treated as disputed, and all imaginable objections started to it, and fairly met and discussed. Most of them must be capable of instant solution by those on the spot. In Nova Scotia every one must know whether the Balm of Gilead is shortlived or not At New York every botanist can tell whether all the Lombardy Poplars are of the same sex, and every nurseryman can say whether the young plants of it are raised from seed from Europe, or from cuttings from the old ones. At Philadelphia, anyone who sees a dying English Lime (if any remain to die), should be able to say whether the tree is sound at heart or not.

We invite observation to such facts. If horticulturists, and more especially the nurserymen in Canada, the United States, both east and west of the Rocky Mountains, Chili, Australia, New Zealand, and any other country which has supplied England with hardy introductions, would only give us a list of the English plants they have introduced, or tried to introduce, in their respective countries, with the amount of success which has attended their efforts, we should at once have a great amount of valuable information. Nay, if they would only note their failures, which would not take much time to do, even that would be of importance. We trust some may be induced to do so; and we are sure none who do will repent the trouble.—*Gardeners' Chronicle.*

In reference to AQUILEGIA TRUNCATA, of Fischer and Meyer, referred to in Dr. Lawson's paper on Ranunculaceæ, as figured in the Russian publication, Sertum Petropolitanum, 2nd decade, 1852 (not 1846), the following communication from Prof. Asa Gray, of Harvard, is published by the *Gardeners' Chronicle*, London, 1st January, 1870:—

An Aquilegia from California is in the gardens, or was so a year or two ago, under the name of A. eximia, Van Houtte ("Flore des Serres," Jan., 1857, with a coloured figure). Mr. Thompson, of Ipswich, who knows so well most herbaceous cultivated plants, ascertained that the same species had been published by Lindley in the *Gardeners' Chronicle*, in 1854, as A. californica. Accordingly, I called attention to it under that name in

the "Proceedings" of the American Academy, 7, p. 328. But I find since that there is a still earlier and characteristic name, and a good description and figure of the species, *i. e.*, A. truncata, of Fischer and Meyer, in "Index Sem. Petrop.," suppl. 1843, which is copied into the 18th volume of the "Linnæa," also in "Walpers' Repert." 5, p. 6 (1845), and finally, the second fasciculus of the huge "Sertum Petropolitanum," which purports to be issued in 1846, contains a good figure. The species is perfectly recognisable by its reflexed spreading sepals and truncate petals, these reduced to a spur, with hardly a vestige of lamina.—A. *Gray, Cambridge, Mass., U. S.*

HISTORY OF THE WHITE WEED.

"Here (Salem), if tradition be correct, he (Capt. J. Endicott) introduced for medicinal purposes, as well as by way of ornament to his garden (about 1632), the white weed or Chrysanthemum Leucanthemum, which has since become so detrimental to hay-fields."—*History of Danvers, p.* 47.

FLYING STRAWS.

The Royal Agricultural Society of England has got into trouble through the exertions of its chemist in protecting farmers from the ravages of chemical manure merchants.—The *Gardeners' Monthly* publishes a coloured but rather stiff drawing of a hemlock hedge of great beauty. Why is the hemlock not used more extensively as a hedge plant with us? No hedge is more beautiful. An elegant variegated variety of the tulip-tree, with yellow edged leaves, has been obtained in France.—The ice crop is very poor this season.—The Yarmouth Agricultural Society has no more Norway oats for sale.—Although the fields have been bare during a large portion of the winter, the grass roots have not suffered. Timothy and Clover are green under the snow.—Royal Horticultural Society of London has resolved to "disestablish," that is abolish the old garden at Chiswick, which has for so many years been the scene of its scientific labours. It appears that, notwithstanding all the money spent in creating a perfect earthly paradise, and erecting buildings of a most permanent character on another man's land, the Society now opens its eyes to the fact that the lease is nearly run out, and England has no "Tenant Right!"—Dr. Thudicum has manufactured six varieties of wine from tea leaves and sugar, and treated the London Society of Arts, at a recent meeting, to "samples." The peculiarity of the tea wines is that they are not liable to a second fermentation, and thus champagne may now be sent to China and Japan.—The Halifax Society for Encouragement of Arts and Manufactures is taking active steps to spread information and stir up the energies of capitalists throughout the province.—Branch Societies have been formed at Truro and elsewhere.—A case of cheese poisoning is reported, the poisonous character of the cheese depending not upon any metallic poison, but upon the "decaying" condition of the cheese; putrefaction is the right word.—A chemist of Grenoble has patented a process for purifying spirits, by agitating with olive oil or other fatty substances, which absorb the volatile oils and carry them to the surface.—Prof Simmonds has issued the first number of the Journal of Applied Science, London, monthly, about a dollar per annum.—The Bunch grass of Alaska is the latest Agricultural novelty; it grows twice the height of a man, and the crop is so thick and tall that it seems likely to smother the men and horses that mow it.—"Lie Teas" are now largely exported from China, to be used in Europe in mixing with genuine teas.—Mr. Northup has introduced a bill to incorporate the Cotton Manufacturing Company of Halifax.—Several Agricultural Societies have indicated their intention of going into hemp culture. Wherever a sufficient quantity is grown the Board will encourage the erection of machinery. Hair still increases in price, and the *Pall Mall Gazette* advocates beard culture for profit.—The Trinidad Society of Arts recently held an exhibition, which brought the people together from all parts of the Island.—Hardy clematises are now used for bedding purposes in English gardens, and have a remarkably fine effect.—In France frogs are giving way to beef and mutton, roast horse, and dead donkey, but large numbers of the Batrachian are still used; one dealer sold 200,000 in three weeks. The legs only are eaten, and are very like chicken; the heads are used for hospital soup, and the skins for —— turtle soup.—The Virginian Creeper, or "Ivy," as it is often called here, is now used as an edging to flower borders, trained along a wire raised three inches from the ground; the effect is said to be very pretty.—A consignment of Kangaroo sausages is expected in England.—Both the wheat and meat markets are dull in England and prices tending downwards.—The "Saddle and the Sirloin" is the title of Mr. Dixon's new book on thorough bred stock.—Mr. Bishler, of San Francisco, who owns 200 mares, has on the way from England a number of short horns and two fine, entire dray horses.—All the homestead buildings on the Prince Consort's Norfolk farm are wooden and thatched; they date from the reign of George III., who was for many years tenant of the farm, and the land has nearly always been in the occupation of the Crown. It consists of 700 acres, 200 of which are arable.—The total number of live horses in Great Britain in 1859 was two millions; in Ireland there were 500,000. The number of cattle, sheep, and pigs, were fewer in 1869 than in 1868.—The Retreat Bridge, lower end of Old Windsor Road, is ticketed as "not safe."

KING'S COUNTY AGRICULTURAL SOCIETY.

It is gratifying to report that the Society has fifty-five members, including Honorary Members, and its affairs are in a flourishing condition.

The two bulls belonging to the Society were sold at the annual meeting.

The Society owns two boar pigs and one Canadian ram, and several farm implements.

The crops for the year 1868 were an average, except the fruit, which was a light crop here.

At the annual meeting in December the following officers were elected for the ensuing year, viz.:—*President*, Stephen Gould; *Vice Pres.*, John Simpson; *2nd Vice Pres.*, Joseph B Bowser; *Sec'y and Treas.*, George Hamilton; *Asst.*, Thomas Tuzo; *Committee*, Wm. Stewart, Charles Reed, George Falkner, James H. Dile, William Falkner.

GEORGE HAMILTON,
Secretary and Treasurer of the King's County Agricultural Society.

TO CORRESPONDENTS.

O. M. T, Middleton, Ann.—The Eastern Annapolis Agricultural Society contributed $30 to the Provincial Exhibition of 1868. The amount was retained from the Society's grant for that year.

Communications for the editor, and exchanges, are to be addressed to Prof. Lawson, Dalhousie College, Halifax.

The Journal of Agriculture

—is published monthly by—

A. & W. MACKINLAY,

No. 10, GRANVILLE STREET,

HALIFAX, NOVA SCOTIA.

TERMS OF SUBSCRIPTION:—

Fifty Cents per annum—payable in advance.

A limited number of Advertisements in connection with Agriculture will be inserted on application to the Publishers.