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

Omnium rerum, ex quibus aliquid acquiritur, nihil est agriculturâ melius, nihil uberius, nihil homine libero dignius.—Cicero: de Officiis, lib. I, cap. 42.

VOL. IV.

HALIFAX, N. S., JULY, 1884.

No. 47.

THOSE of our readers who take an interest in questions of vegetable physiology or organic chemistry will read with attention the article on Chilled Potatoes, whilst those who regard Potatoes merely as food material for cattle, or a commercial commodity that may be exchanged for money will be equally interested in the practical information which it contains.

Notices of the formation of several new Agricultural Societies will be found in our columns,—one in Cumberland, one in Guysborough, and By-Laws of one in Lunenburg County.

The Weather and Crops in Manitoba, from the Departmental Bulletin, dated Winnipeg, 17th June, gives a fair idea, not only of the season, but of some of the striking Agricultural peculiarities of the Prairie Province. It appears to be as difficult to raise Winter Wheat there as in Nova Scotia, probably more so. There is an increase in Spring Wheat of nearly 40,000 acres over 1883. Red Fyfe appears to be the favourite Spring Wheat. Fall ploughing is insisted upon to ensure an early harvest, and thus avoid fall freezing. A good deal of frozen seed has been sown, but in only one case has it failed to germinate. 30 per cent of the crop of 1883 is still in the hands of the farmers. Frozen oats, unlike wheat, do not appear to be fit for seed, and, where sown, have failed. There is a decrease of 40 per cent. on the

amount of Oats sown, attributed to want of markets and railway facilities, for the same reasons there is a falling off in Barley of 33 per cent. The report on Live Stock is highly favourable.

The Reports of Field and Orchard Crops in our own Province, which we are enabled to give through the kindness of correspondents in the several counties, will be read with interest. The gloomy forebodings of spring time and early summer have been dispelled by the timely and warm rains; and we now look for sunshine to temper the too succulent growth of roots and grains, and to ripen the swelling fruit.

CENTRAL BOARD OF AGRICULTURE OF NOVA SCOTIA.

ARRANGEMENTS FOR LOCAL VISITS OF THE PROVINCIAL VETERINARY SURGEON FOR 1884.

W. JAKEMAN, Provincial Veterinary Surgeon, will visit the several localities arranged for, and will be prepared to treat cases of Domestic animals suffering from Disease or Accident, or requiring Operations performed.

Scale of Fees (modified under arrangement with Board):

Visits, advice and prescription, \$1.00 for first, and 50 cents for each succeeding visit, Medicines extra at reasonable rates.

Operations from \$1 up to \$5, according to nature and circumstances.

When called specially to a distance at

places or times not advertised, the charge will be \$5 per full day, and actual necessary travelling expenses.

Mr. Jakeman will visit the several places mentioned in the following list, at the dates noted:

	June.	July.	Aug.	Sep.	Oct.	Nov.
Windsor	25	30	20	19	29	11
Doran's Hotel.						
Bridgetown		14	11	9	6	3
Beckwith's Hotel.						
Kentville		15	12	10	7	4
Lyons' Hotel.						
Annapolis		16	13	11	8	5
Dominion Hotel.						
Digby		17	14	12	9	6
Daleys' Hotel.						
Yarmouth		18	15	13	10	7
American House.						
Truro	9	...	7	17	16	14
Victoria Hotel.						
New Glasgow	10	21	26	23	21	25
Norfolk House.						
Pictou		22	27	24	22	26
Hevere House.						
Antigonish		23	23	25	23	27
Cunliffham's Hotel.						

By order of the Central Board of Agriculture.

THE July Quarterly Meeting of the Nova Scotia Fruit Growers' Association will be held at Bridgetown on the 21st inst., at 2.30 and 7 o'clock, p. m., when business of importance concerning the exhibition of Nova Scotia fruits at London and New Orleans, as well as other subjects, will be discussed. The usual railway arrangements have been made, We notice that the London *Gardener's Chronicle*, and the *Country Gentleman*, of Albany, N. Y., are quoting largely from the Association's last Report.

REPORTS ON CROPS.

ANTIGONISH COUNTY.

Antigonish, July 9, 1884.

DEAR SIR,—In response to your request I would say the spring which opened later than that of 1883 was cold and comparatively dry. Seeding though late was earlier in the main than last year. Vegetation, owing to the continuous cold and dry weather, was two weeks later than in '83. Grain and Roots of all kinds at this writing look well, and with a continuation (for ten days to come) of the very favorable growing weather of the past week a full average hay crop will be secured. Haying will commence from the 24th inst. to the 1st of August, in contrast with the 15th to 18th of July in 1883. From present appearances the farmers of this County may expect satisfactory returns for their labor.

Yours very truly,
C. B. WHIDDEN.

ANNAPOLIS COUNTY.

Round Hill, Annapolis, July 12, '84.

DEAR SIR,—The cold and wet weather during May retarded planting and sowing on wet lands until June, since which vegetation has been rapid and crops generally give promise of a good yield. Hay, except in the old fields and light sandy soils, promise an average yield. Grain—more sown than last year and looks well. Turnips, mangolds and other roots came up well and (where not injured by the late heavy rain) give promise of a good yield. Potatoes—less planted than last year; crop prospects good. Fruit generally good. Apples—there was an abundant show of blossoms, and notwithstanding the late frost and apple worm injuring some varieties, the yield promises to be above the average.

Very truly yours,
GEO. WHITMAN.

Maple Grove, Paradise, July 11, '84.

MY DEAR SIR,—In reply to your circular I have to state that the season opened very unfavorably for the farmer. The month of May, till near the end, was cold and wet, and in consequence the most of the planting was done on the last days of May and first of June, which gave our farmers but a short time to prepare the ground and put in their seed; but we worked with a *will* and to *win*, and with the present favorable weather I have to report crops of all kinds looking well. The early potatoes planted on dry soil are already in bloom and give promise of a good yield.

The fruit trees were fully two weeks later than usual in leafing and blossoming, which has proved for the best, they having escaped the early frosts; the

bloom was unusually full and healthy, being the admiration of all, and with the present favorable weather more than an average crop is expected.

The Grain crops present a beautiful appearance and the indications are that we will have a heavy yield.

The Hay crop has not been so encouraging, but the recent warm weather with occasional showers has forced it along very rapidly, so that a better feeling is now being manifested among the farmers than was a few weeks previous.

I must not forget to mention about the horse-beans. I planted mine in drills; they came up well and have grown very rapidly—standing at the present writing about two feet. I hope to have them ripen that I may test their quality as a feed for cattle and horses.

Very truly yours,
W. E. STARRATT.

COLCHESTER COUNTY.

Lower Stewiacke, July 12, '84.

All crops promise an abundant yield. *Gratitude to the Giver.* Grass at present growing well,—a little late in flower. Cereals full and strong; a good breadth sown. Fruit good. Potatoes do. Farming operations much extended lately.

SAMUEL KELLEY.

Lower Londonderry, 12th July, '84.

DEAR SIR,—Your favor of the 8th inst. requesting information in reference to present condition and prospects of crops in this district to hand.

Hay which was an abundant crop here last year will be far short the present season. There seems to be a great amount of winter killing,—this was not a little augmented by the cold wet weather that prevailed during May. Oats are making a fine appearance. Barley—a larger quantity sown than for many years past, looking fair, except the early, which seem to have been injured by the heavy rains. Buckwheat promises well. Potatoes though late are looking splendidly, notwithstanding many fields were planted when the land was quite too wet. The present indications are that we will have an excellent yield. Turnips, etc., are making a good show.

Yours, etc.,
A. R. FULTON.

CUMBERLAND COUNTY.

Amherst, July 12th, '84.

Great general alarm was manifested respecting hay crop before late warm and wet weather. Grass on dry lands growing very rapidly and will be good. Unusually heavy rains have overflowed hundreds of acres of grass land and must injure it, and the extremely short growth on damp and poorly drained marsh and

uplands must certainly cause a light crop. Large areas of grain and potatoes sown and planted, but owing to lateness and wet of spring a large proportion was put in late and in land unfit to work, and the crop must suffer from it and from excess of rain since. Where not too wet vegetation very rapid now; but still I think persons working wet land this year must suffer materially from rains, and the crops will be light. We grow so little fruit, not worth while remarking about it.

HIRAM BLACK.

HALIFAX COUNTY.

Middle Musquodoboit, July 11, '84.

The season was very cold up till the last of June. The prospect of a hay crop never was worse up to that time. Lately we have had warm showers and heat; there is now a prospect of a fair hay crop, though it will be a fortnight later than usual.

Very little wheat sown. Oats are coming on rapidly and look well, also buckwheat. Potatoes are strong and healthy. Turnips and mangolds have got a fair start. We had a visit from a hail storm, the most severe one we have had for 50 years; it destroyed a great deal of glass. As it was early in the season it did not do much damage to the crops, excepting the crop of chickens and turkeys which it slew right and left.

C. N. SERRON.

Upper Musquodoboit, July 10, '84.

DEAR SIR,—Wheat, early sown, looks beautiful. Hay prospects in many localities poor, particularly on lands not well cultivated. The warm weather with showers of the past eight or ten days will doubtless work wonders for the hay crop, and may on well cultivated lands bring the crop up to an average. Oats backward for the season, but color good, and standing close on the ground. Buckwheat—appearance just now indicate a full average. Potatoes in appearance give promise of a large yield. Prospects for the season never better. Mangels, not many sown, good. Turnips coming up well, growing strong, and but little damaged by the fly. The weather is everything that the farmer could wish for in forwarding the interests of agriculture in this locality.

Your humble servant,
DAVID ARCHIBALD.

HANTS COUNTY

Maitland, July 12, '84.

The spring being cold and wet, there was but little farming done in wet land during May; farmers who had dry land did better, a proof of the benefit of underdraining, which benefit our farmers are slow to take advantage of. During

June the grass looked very backward, so much so that a failure in hay was predicted, but the last ten days has made a complete change and now it promises a good crop. Potatoes, especially those planted early, look very well, the potato bug, however, has put in an appearance though not in very great numbers. Grain is growing rapidly; the vegetable gardens are looking finely, and strawberries are abundant.

Yours,
STEPHEN PUTNAM.

KINGS COUNTY.

Wolfville, July 10, '84.

DEAR SIR,—Your card of 8th inst. to hand. The weather this season has been and is quite up to the mark in every respect. Grass on dykes good—on neglected uplands, thin—there is a little too much of that sleight of hand. A good deal of hay being carried over. Other crops all to be desired. Small fruits are toing the mark. Apples and plums around these diggings a pleasant picture. No caterpillars; no canker-worms; no currant worms, the birds have made a clean sweep of the vermin. The only cause for regret is no chance for grumbling.

Yours truly,
W. H. HALIBURTON.

PICTOU COUNTY.

New Glasgow, July 10, '84.

The month of May was cold and wet which kept seed late without being put in the ground. June was dry and vegetation slow, but July, so far, is all that could be desired. The hay crop will be below the average, the fine rain we had this week was too late for the hay crop, but it will derive a certain benefit from it. Cereals something late, but promising. Potatoes so far very promising. Very few turnips sown in this district; several have sown corn which they intend to put up in silos.

Yours truly,
JOHN ROSS.

YARMOUTH COUNTY.

Weymouth, July 14, '84.

DEAR SIR,—Yours to hand. The crops for the most part in this locality are doing well. Potatoes, wheat, oats and barley look very well. Buckwheat was injured some by late frosts. Root crops look well. Hay will be below an average crop owing to the dry weather last fall which so parched the grass that it winter killed badly. June was remarkably dry, but this month has been marked with copious rains.

Yours truly,
N. E. BUTLER.

Yarmouth, 11th July, 1884.

Circular 8th inst. received. Hay crop supposed light; up to date fog or rain every day this month; clear to-day. Potato, grain and root crops considered promising. No potato bug or blight so far. Early potatoes in the market at 5 cents per pound. Pasture early and good, favouring dairy products. Butter 20 to 25 cents per lb. Fruit bloom abundant and set well; late wet weather may be adverse to maturing. No damage to small fruits in this county from frost. A large crop of cultivated strawberries now coming to market, chiefly Wilson.

CHARLES E. BROWN.

WEATHER, CROPS, AND AGRICULTURAL PROSPECTS IN MANITOBA.

We extract the following from the Crop Bulletin of 17th June issued by the Department of Agriculture at Winnipeg:—

THE WEATHER.

The weather during seeding time was most favorable for continuous and rapid work. The season opened very early in the western and central divisions, and with the exception of a fall of snow on April 29, which caused a cessation of work for three or four days, seeding went on uninterruptedly to the close. The dates of the beginning of seeding in the western and central divisions are earlier than in the eastern. Throughout the whole Province the season is fully ten days ahead of last year. In the eastern division work did not fairly begin till after the snow-fall of the latter part of April, consequently no delays were experienced through unfavorable weather. Dry and windy weather characterized the seeding season, and many correspondents complain of the difficulty of sowing grain owing to the great force of the wind. The month of May was an extremely dry one, only one fall of rain during the whole period being at all general in the Province, and at some points none fell.

PLOWING.

Farmers are fully alive to the necessity there is of getting the largest possible amount of their plowing done in the fall. On comparing the figures received this season with those received of the work done in the fall of 1882 it is found that the increase is 85 per cent. in advance, shewing the total acreage prepared for crop last fall to be 167,163 acres. The acreage too plowed last spring for crop this season shows an equally largely increased percentage, the total being 190,209 acres. These totals do not by any means give the entire acreage under crop as a great many townships have not been heard from.

FALL WHEAT.

The only reports received of fall wheat having been sown are the following:—Township 6, Range 15, west (Rock Lake), one acre sown; killed by frost last fall. Township 11, Range 17, west (Brandon), twenty-five acres; good. Township 7, Range 22, west (Brandon), half an acre; failed; not a fair trial; sown too late. Township 13, Range 23, west (Shoal Lake), one acre; very poor. Township 19, Range 28, west (Russell), two acres; failure; cause not known. Township 15, Range 29, west (Shoal Lake), one and a half acres; almost all killed by frost. A great diversity of opinion prevails as to the possibility of growing fall wheat successfully in this Province. A number of correspondents think it doubtful, more say it can, while others in the same localities say it cannot. All agree that they do not think it can be grown on the open prairie. In the eastern part of the Province, where the land is more wooded, the prevailing opinion is that the grain can be grown, and the same opinion is generally expressed from all parts where sheltered spots can be obtained for it. Although very little fall wheat has been tried, the reason given by several correspondents for thinking it could be grown is that where spring wheat got shelled out on the ground during harvest, it came up in the spring, looking strong and healthy. Some say that if it were sown early enough in the season it would succeed; more maintain that it would be better to sow it late, giving as their reasons their experience with spring wheat that has lain in the ground all winter. A number would not express an opinion, but would like to see it tried. There is certainly an increase and a considerable one of the acreage under fall wheat this season reported over that of last year, which only amounted to some ten and a half acres. This season thirty-one acres are reported and from all that can be gathered it is possible that a much larger acreage will be put under crop next fall, as several are proposing to sow. The principal reason given for fall wheat not being more generally sown is that spring wheat yields so largely and is so successful that farmers do not feel disposed to run any risks from the uncertainties which many feel are likely to follow the sowing of fall wheat. The prevalence of prairie fires too, is given as a reason for not sowing. It is to be hoped that many will try it and more satisfactorily settle the question of its suitability for the Province than has hitherto been done.

WHEAT.

With very few exceptions reports speak flatteringly of the wheat crop. The experiences of last year gave farmers to understand that more attention had to

be paid to fall plowing and early seeding, and as a result the wheat crop has been put in from seven to ten days earlier than in 1883. Ground plowed in the fall retains the moisture much longer than spring-plowed ground, hence the advantages to the wheat crop during the dry month of May have been most beneficial. The crop was reported from several points, though not suffering, to be in want of rain to give it fresh impetus. Of the quality of the grain used for seed it will be seen that in one hundred and ninety-seven townships the average of frozen wheat sown was fifty per cent. Though almost all the seed sown was more or less touched by frost the seed was of that quality which was graded as No. 1, frozen. At the time the reports were sent in no perceptible difference was observable in the appearance of the fields where frozen and unfrozen seed had been sown side by side. A few reported the frosted seed as looking better than what had not been touched by frost. From only one point, viz., Township 2, Range 10, west, has the report come in that the seed failed to germinate and had to be resown. From all points the feeling is expressed that fall plowing is necessary for successful wheat raising, as it secures early seeding, a good and substantial bottom for the grain, a sufficiency of moisture during the usually dry month of May, and also early harvesting, which has come to be looked upon as so important. The average per centage of the 1883 wheat crop still in the hands of the farmers is thirty per cent. for the whole Province. This is much larger than last year, and can be accounted for by the much larger yield, the quality being impaired by frost, and the want of railways and markets in several places. The total acreage made up from three hundred and twenty-three townships is 247,306 acres, an increase of nearly 40,000 acres over 1883. The average dates of the beginning and ending of seeding were April 24 and May 17 respectively. The average quantity sown per acre was 1.80 bushels. Of the several varieties Red Fyfe has been sown in 242 townships; Fyfe in 36; Lost Nation in 3; Red Chaff in 2; Golden Drop in 20; White Fyfe in 34, and White Russian in 18.

OATS.

Reports generally spoke of the oat crop as being in want of rain and a few spoke of them as suffering severely from drought. The several late rains no doubt have done very much to refresh and strengthen the crop and as rain was what was required the outlook will be now much brighter. With one or two exceptions no complaint was made of the seed sown, but where in one or two cases mistakes had been made and frosted seed sown the ground had to be resown. Unlike frozen

wheat, frozen oats do not appear to be fit for seed and have failed where they have been tried. The acreage under crop this season in oats is not so large as last year, the reason given being the unsatisfactory condition of the markets and the want of railway facilities in many localities. The acreage will no doubt be further increased as a larger amount has no doubt been sown during the early part of June on new breaking. The total acreage reported from 328 townships is 108,972 acres, being a decrease of nearly 40 per cent. from that sown last year. The percentage of the 1883 crop still on hand appears to be 15 per cent. The average quantity sown per acre was 2.55 bushels.

BARLEY,

like oats, appeared to be in want of rain at the time reports were sent in, but the anxiety which then existed will have been materially removed by the frequent showers which have since fallen so universally throughout the Province. The crop was generally reported in a backward state, but the cause was attributed to the want of rain. The seeding time runs on quite a distance in June and in consequence the acreage is only given imperfectly. The acreage shows a falling off from that reported last year of about 33 per cent., the causes being the same as those given for the decrease in the oats acreage. The total acreage reported from 299 townships is 32,963 acres. The average quantity sown per acre was 2.26 bushels.

FLAX,

as reported this season, shows a large falling off in acreage but from what reason is not known. No remarks have been made by correspondents in reference to the flax area, consequently the falling off in the quantity sown cannot be now accounted for. The acreage reported is 4,180 acres against 10,817 last season. The respective dates of the beginning and ending of seeding were May 14 and May 18 and the average quantity of seed .49 bushels.

POTATOES

also show a falling off in acreage, but this may be accounted for by the fact that several correspondents did not report potatoes while there must certainly have been quantities planted in the townships and again that potatoes would be planted after reports were sent in on June 1. The total acreage reported is 8,847 acres as compared with 12,168 acres last year. The average dates of the beginning and ending of seeding were May 4 and May 24 and the average quantity of seed used per acre was 12.38 bushels.

FIELD ROOTS

show a falling off in acreage as compared with last season. The total acreage

reported is 2,180 acres, being made up as follows: Turnips 1,585 acres; beets 120; mangolds 275 and carrots 200 acres.

GENERAL PROSPECTS AND CONDITION.

With respect to the condition and prospects of the crops the same reports have come in from all points. The early sown grains invariably looked well, they having benefitted by the moisture of the ground in the absence of rain. Wheat, being generally sown earliest, was reported looking well and at least ten days ahead of last season. Though, at the time when reports were mailed to the Department, none of the crops were actually suffering, still a desire for rain to freshen and infuse vigor into them was expressed from all points. Since May 30th several rains have fallen pretty generally throughout the Province, and all reports received since speak of the great good they have wrought on the crops. Oats and barley did not seem so promising as wheat, but all those crops appeared to want was a sufficiency of rain to renew their growth and color.

HAY AND CLOVER.

The general appearance of the hay and clover meadows, considering the very dry weather of May, is very encouraging. In some places the frost interfered to a certain extent in destroying the clover, but the cases were very few. The reports of timothy meadows vary from "poor" to "promising," "good," and "splendid." The native hay is promising, and taken altogether, there does not appear to be any reason to doubt there being a good crop when haying time arrives. From almost every point a surplus of old hay is reported. As the season had been so dry no very definite idea could be given of the prospects of the hay and clover crops on June 1, but no doubt from the quantity of rain that has fallen during the present month the reports which will come in on July 1 will be much more satisfactory.

LIVE STOCK.

The reports received of the condition of live stock are of a most satisfactory character. With but a few exceptions they were invariably housed during the winter, and where they were not the cattle were young ones. Fodder of the very best kind seems to have been in abundance, and so universal has this been the case that from only three points has a scarcity been reported, and all those cases were occasioned by the hay being destroyed by prairie fires last fall. Stock is reported from all points as being in excellent condition and as not having suffered in any degree from the severity of the past winter. Another source of gratitude is the absence of anything approaching a dangerous disease existing

largely among cattle. Many report a swelling on the throats of cattle during the winter months, but these all disappear as soon as they are turned on the grass. A few cattle have died from anthrax, lumps on the throat and bad management. Among young pigs several have died, but no satisfactory causes could be given, although one correspondent gave as his opinion the feeding of too much wheat to the sows. A sort of paralysis prevailed among hogs in a few localities with some fatal results. The disease seemed to attack them first in the legs and finally extended to their backs. No disease is reported among sheep, but several young lambs have died. This is an occurrence that must always be expected.

The operations of the Veterinary Sanitary Service of the Department have been confined entirely to horses and mules, no cases of infectious or contagious diseases among cattle having been reported to district veterinarians. During the five months ended May 31, 1884, district veterinarians paid eighty-five visits of inspection, sixty-six being first visits and nineteen periodical. The time occupied in these inspections was 75 6-8 days, 2,728 miles being travelled, 1,936 by road and 792 by rail. The number of animals inspected was 309, of which 208 were horses and 101 mules. Fifty horses were condemned as glandered and destroyed, and ten horses and eight mules were placed in quarantine to be treated for mange. Of the fifty cases of glanders Portage la Prairie and Manchester counties each had nine; Brandon and Selkirk eight each; Dufferin, seven; Lisgar, Russell, Marquette and Souris River, two each, and Rock Lake, one.

NOTE ON COMPTONIA ASPLENIFOLIA AND MYRICA CERIFERA.

(From the Gardeners' Chronicle, London.)

Next to the pleasure of working up the botany of plants in their native country, is that of seeing or hearing what is being done with them in other lands. English gardeners do treat some of our Canadian and American plants unmercifully, stewing in stove houses, between 60° and 80°, Pontederias, Sarracenias, Water Lilies, and Brasenias, whose whole winters are spent at home in a temperature ranging between the freezing temperatures of water and mercury. But, then, we are grateful that these same gardens succeed so well in rendering attractive, as ornamental plants, so many species that, in their native haunts, are rather plain and monotonous. I am often tempted by your notices, happily not infrequent of late, to hunt up the past history and early introduction to Europe of our plants, and have thus been led to collect some interesting facts.

One of the latest American plants you referred to is *Comptonia asplenifolia*. It is one of our common dwarf shrubs, often hid by the taller growth of other shrubs, but becomes conspicuous on Blueberry barrens (where the vegetation consists mostly of dwarf *Vaccinia*), and in cleared spaces in the woods where the soil is dry enough, and not too rich for taller plants. In old clearings it may be seen monopolising spaces of several acres in extent, forming a crop that might be mown for its tannic acid. Its distinctive form and mimicry always ensure attention from the botanist, and the city wanderer picks it and enjoys its fragrance; but the rural resident's interest in it is too often limited in range to its use for the bedding of cattle. That notice in the *Gardeners' Chronicle* (n. s., xxi., p. 182), from *Hortus Collinsonianus*, of the "Gale with Spleenwort leaves," which "makes a fine tea and gives a good flavour to beer," introduces the plant to us here in a new role. You properly object to Loudon's "English" name (as it has become customary to call translations of botanical names), as cumbersome, and, while approving of the one given in Gray's *Manual*, viz., "Sweet Fern," you add, with a delicately mingled touch of dubiety and reservation, "only the plant is by no means a Fern." The benevolent object of my writing now is to ease the editorial conscience on this matter. (I feel also that a note ought to be here interpolated to the effect that if there are some of Loudon's English names that we do not care to use now, it is not because we have forgotten the great services which he rendered to natural science in the way of promoting its study at a time when its students were comparatively few and far between, by the attention which he gave to English names and the accentuation of Latin ones in the *Magazines*, of *Natural History*, and of *Gardening*, as well as in his stereotyped works.) It is no doubt unknown in England that *Comptonia* is familiarly recognised wherever it grows in America as "Sweet Fern." This is the true Anglo-American name of the shrub, long established and in common use in the country, not a "popular" name given by a writer on plants, but one that has originated with the people themselves. In *Webster's American Dictionary of the English Language* (ed. 1865), we find: "Sweet Fern, n. (Bot.) A small North American shrub, having sweet-scented or aromatic leaves resembling Fern leaves." Whether the *Dictionary* took the name from Gray, or Gray from the *Dictionary*, I cannot tell, not having the first edition at hand, but both are correct. I ought to add, however, that "Sweet Fern" sounded oddly enough to me when I first heard it in this country, just as Christmas Rose sounds oddly to

an American or Canadian as the name of an unfamiliar Ranunculaceous plant. Such names are cherished when they are suggestive of pleasant ideas; when we first hear them we are apt to interpret them in a too exact and literal sense; as we become familiar with the plants intended the names cease to convey false notions. The use of the word "rose" as applied to the "Christmas" Hellebore we condone and rather like to use as a recognition of the plant's beauty, and as a pleasing reminder of the summer Roses that have come and gone; so the name "Sweet Fern" imposes upon no one who is familiar with the plant, but simply suggests a fragrant shrub, whose closely and regularly set leaves resemble the pinnæ of Ferns. The only inconvenience is that a botanical professor has often, in the course of one excursion, to explain half a dozen times that *Comptonia* is not a vascular Cryptogam, but an angiospermous Phænogam!

Referring to *Hortus Kewensis*, ed. 2, vol. v., p. 254, I find that *Comptonia* was cultivated in 1714 by Her Grace the Duchess of Beaufort, *Br. Mus. H. S.*, 141, fol. 37, which (according to preface) "signifies the Sloanean *Hortus Siccus* kept in the British Museum, from whence much information, principally concerning the plants cultivated by the Duchess of Beaufort, has been obtained." I am not aware whether anything more has been published regarding Her Grace's botanical labours than the scattered notices in *Hort. Kew.*; neither can I quite make out whether the name *Comptonia* was first used in *Hortus Kewensis*. Aiton, Banks, Solander, are severally given as authorities for it in different works.

A nearly allied plant, and a frequent associate of the Sweet Fern along our Atlantic shores, is the fragrant *Myrica cerifera*, which has the corresponding names "Sweet Laurel" and "Sweet Bay." These names have no doubt been given originally by English people, who were reminded by its long, broad, shining leaves of the Laurels and Bays of English gardens. Dr. Gray, however, gives "Bayberry" and "Wax Myrtle," which, together with "Candleberry-tree," are given in Webster. It has no resemblance in foliage to *Myrtus communis*. In Quebec Province (formerly known as Lower Canada) the names are "Arbre à la cire" and "Cirier de la Caroline." In English books the plant is often called "Candleberry Myrtle," in allusion probably to the tradition of the wax having been used by the early missionaries for candles. (Small candles of this wax were sent from Nova Scotia to the London Exhibition of, I think, 1862.) I gave some account of this plant in the *Edinburgh Botanical Society's Transactions*, in 1864. *Myrica cerifera* was

also cultivated in England by Her Grace of Beaufort so long ago as 1699 (*Dr. Mus. Sloane MSS.*, 525 and 3349; *Ait. Ker.*, v.) It would be interesting to ascertain in what way these plants reached England at that early period, and from what part of the American coast.

GEORGE LAWSON.

Dalhousie College, Halifax, N. S.,
March 20. }

CHILLED POTATOES.

WHY THEY TASTE SWEET.

Almost every one has at some time made personal acquaintance with the sweet taste of potatoes which have been exposed to a very low temperature. This matter has recently been the subject of an extended investigation,* and the results are interesting, not only because they suggest a way in which the sweet taste may be removed, but also for the light which they throw upon the chemical and vital processes which go on in this and similar tubers during their period of rest.

Potatoes which have become sweet are commonly said to have been frozen. One of the first results of the investigation referred to, was that *freezing does not make potatoes sweet*. Hundreds of frozen potatoes were examined, but not a single one was found to have become sweet! In these trials, however, the potatoes were frozen *quickly*, while in a cellar they would be likely to be subject to a low temperature for a comparatively long time before freezing. The actual conversion of the juices of a potato into ice, is always rapid when it once begins; but it has been shown that the temperature must fall 5° or 6° below the freezing point of water before the solidification takes place. The difference between potatoes frozen artificially and those frozen accidentally in a cellar, then, would be simply that the latter were chilled for some time before they actually froze.

This suggested the thought that it might be the chilling, and not the freezing, which made potatoes sweet. To test this, thirty tubers, as nearly alike as possible, were placed upon a table in a cellar, in February, and by occasional opening of the windows, the temperature was kept just above the point (26° to 27° F.) at which potatoes freeze. Every day for two weeks, two of the potatoes were tested; and from the seventh day on, the sweet taste became more and more manifest, although the potatoes never froze. In another trial, potatoes were frozen rapidly and preserved for a considerable time in this state. They did not become sweet. It is plain, then, that it is chilling,

just falling short of freezing, and not the freezing itself, which causes the sweetness.

The next step was to ascertain the cause of this effect. The sweet taste suggests at once the presence of sugar, since this is by far the most common vegetable sweet. Chemical analysis confirmed this conjecture. Normal potatoes contain, roughly, 0.5 per cent. of sugar, while chilled potatoes contain much more,—one per cent. rendering them decidedly sweet, and two per cent. inedible. Whence, now, comes the excess of sugar in the chilled potatoes? Here some knowledge of vegetable chemistry is required.

The larger portion of the solid matter of the potato consists of starch, and starch is easily converted by various means into a form of sugar familiar to us in these days as "glucose." Commercially, glucose is made by heating starch with dilute acid; but it is a popular error that the acid enters into the composition of the glucose. It is not even necessary to its formation. Starch is changed into glucose by uniting chemically with the elements of water, and the change may be effected by simple heating with water under pressure, though the process is more rapid when acid is used. Starch may be changed into sugar in many other ways. The starch of our food, for example, is changed to sugar during digestion, so that every human being and every herbivorous animal is a walking glucose factory.

More interesting for our present purpose, however, is the action of malt upon starch. In the preparation of malt by sprouting barley, a substance called *diastase* is produced in the latter, and when the malt is subsequently brought into contact with fresh grain or other starchy material, this diastase attacks the starch and converts it into a form of sugar closely resembling glucose. In the subsequent fermentation, this sugar yields the alcohol of the beer or other liquor.

But malt is not the only material in which diastase is found. It has been pretty well made out that the cells of all or most plants contain a ferment which is so nearly like diastase that it may be called by that name, and which changes starch into sugar. This is the source of the sugar of chilled potatoes. The diastase in the cells has formed it from the starch which is present in such abundance. That this is so is shown by the fact that as a potato becomes sweet, its content of starch diminishes to an extent rather more than sufficient to produce the sugar which is found.

The utility of this change for the growth of the potato in the spring is obvious. It changes the insoluble starch into soluble sugar, which can be carried by the sap into the growing shoots, where it is needed for their nourishment. But

of what use is it in the winter, and why should it manifest itself only when the tuber is cooled below a certain point? The answer to this question involves considerations of a different character.

We do not commonly associate the idea of life with such a thing as a potato and yet, if we stop to think, we know it is alive if it is sound. Now, every living thing breathes; this is as true of plants, as of animals, of a potato as of a man. Moreover, the chemical processes involved are in general the same. Both breathe in the oxygen of the air and use it to oxidize or burn some of the materials which they contain. This burning furnishes to the animal, heat and the force of its motion; to the plant, heat and the force of its (sometimes hidden) motion. Both exhale carbonic acid and water as the products of this internal combustion. Both too, perish sooner or later, if their supply of air is cut off, although plants may be deprived of air for a very much longer time than the higher animals, without being killed.

Now one object of the diastase in the cells of the potato, is to prepare fuel for this burning that is continually going on. The sugar into which it converts the starch, is burned up by the oxygen of the air which the potato breathes. It is true that the process is indirect, and by no means so simple as this bold statement would seem to make it. It is very different from the burning of sugar thrown into the fire, for example; it is a vital and not a merely chemical act. Nevertheless, the result is much the same. The sugar is destroyed, and a corresponding quantity of carbonic acid and water produced, in both cases.

This change of starch into sugar, and the burning up of the sugar, go on all the time in the living potato, though with different degrees of energy in different specimens and at different times. Ordinarily the sugar is burned up as fast as it is formed, as we know from the fact that it does not accumulate. When the potato is exposed to the low temperature for some time, it does accumulate, as we have seen, showing that the two processes are unequally affected by cold. As a matter of fact, the breathing of plants at the freezing point of water is reduced to a minimum; it is almost nothing. The action of diastase, on the other hand, though probably weaker, still goes on, sugar is formed faster than it is needed, and the potato becomes sweet. Actual freezing stops all these processes and kills the potato.

The sweetening of chilled potatoes, then, is not caused by any new action excited by the cold, but simply by the fact that the balance between two processes, formation and oxidation of sugar, is disturbed. This suggests a remedy, if one's

* Mueller, Landw. Jahrbuecher, XI, p. 751.

stock of potatoes has been affected in this way. It is simply to endeavor to tip the balance the other way, and make the oxidation of sugar so rapid as not only to consume it as fast as produced, but to use up the excess which is present. This can readily be done by raising the temperature. Potatoes which had become sweet, when afterward exposed to a temperature of 70° to 85° F. for a few days, lost their sugar, rapidly at first and more slowly afterward, and in a week or less were perfectly palatable. The remedy is certainly simple and easily tried.

The influence of the age of the potatoes on the formation of sugar is interesting. Sweetening is more often observed late in the winter than in the fall, and experiments showed that old potatoes become sweet much more rapidly than new at the same temperature. This seems to be due to the fact that the old potatoes contain more diastase than the new. As they grow older, the diastase accumulates and toward spring it produces sugar in sufficient amount not only to supply the respiration, but to furnish material for new growth, and then the potatoes begin to sprout.

Finally, it is not without interest to notice that these phenomena are by no means confined to potatoes. They have been observed also in germinating hemp, in the leaves of the grape, and in kohl rabi, and doubtless other plants, would show the same behavior if specially investigated.—H. P. ARMSBY, *Agricultural Experiment Station, Wisconsin University, in Cultivator & Country Gentleman.*

MR. GEORGE M. PATTEN writes, under date Yarmouth, June 6th, 1884:—"I am glad to inform you that my Jersey cow has given me a fine heifer calf this Spring, it being the fifteenth calf since I owned her; thirteen have been bulls and two heifers. She had a heifer nine years ago, bulls every time since until this Spring. She is a great butter cow and fine stock-getter. I think Yarmouth can boast of her fine Jerseys. People are taking great pains, finding it pays better than wasting money raising poor grades for dairy purposes.

APPLICATION has been made to the Board of Agriculture for organization of a new Agricultural Society at Wentworth, in the County of Cumberland. Upwards of forty members have joined. Bye-laws have been prepared for submission to the Board at next meeting. The following Officers have been elected:—President, William Swallow; Vice-President, Jos. Ogilvie; Secretary, D. R. Henderson; Treasurer, Hibbard Purdy; Directors, R. A. McLean, William Swain, David Teed, Ernest L. Higgins, Herbert Ogilvie.

CONSTITUTION AND BYE-LAWS OF THE CHESTER AGRICULTURAL SOCIETY, IN THE COUNTY OF LUNENBURG.

Rule 1st. This Society shall be known as the Chester Agricultural Society, and shall consist of Farmers and others interested in Agriculture.

2nd. This Society shall be managed by a President, Vice-President, Secretary, Treasurer and five Directors, to be chosen annually; and the Officers and Directors may be re-elected.

3rd. The Society shall hold an Annual Meeting on the first Tuesday of December in each year; such meeting and business to be conducted in accordance with the Agricultural law and instructions of the Central Board.

4th. The Society may hold Special Meetings when deemed necessary for the interests of the Society, or general Agricultural purposes.

OFFICERS' DUTIES.

1st. The President, or in his absence the Vice-President, shall preside at all meetings of the Society, maintain order, regulate discussions, state and put questions when called on, decide votes when a tie occurs, endorse orders drawn on Bank, call Special Meetings on a requisition of five members, and perform all duties belonging to his office. When absent, the Vice-President takes his place.

2nd. The Secretary shall attend all Regular Meetings of the Society, keep a correct account of all proceedings, collect all monies due, and pay it into the Treasurer's hands, and perform all other duties lawfully belonging to his office.

3rd. The Treasurer shall safely keep all monies, and pay out the same on orders endorsed by the President, and make returns to the Directors through the Secretary.

4th. The Directors shall have charge of all property, stock, &c., belonging to the Society, for the benefit and best interests of Agriculture in general, and the Chester branch in particular.

PRIVILEGES.

1st. Any person may become a member by paying annually one dollar in advance.

2nd. No member shall be entitled to the privileges of the Society, or be allowed to vote, until all dues are paid.

3rd. No discussions foreign to the Society's interests shall be allowed in its meetings.

4th. Seven members shall form a quorum.

5th. At Annual Meeting the Rules and Bye-Laws may be changed, subject to the approval of Central Board.

BYE-LAWS.

The order of business shall be as follows:—

- 1st. Minutes of last meeting.
- 2nd. Collection of dues.
- 3rd. Report of Secretary and Treasurer.
- 4th. Report of Directors.
- 5th. Report of Finance Committee.
- 6th. Report of Special Committee.
- 7th. Discussion.
- 8th. Miscellaneous.
- 9th. Annual Meeting—Election of Officers.

10th. No member shall speak more than twice on any subject, except by request or permission from the Chair.


All resolutions affecting the Constitution and Bye-Laws must be submitted in writing, and passed by a two-third vote of those present.

Passed March 31st, 1884.

CHARLES LORDLY, *Secretary.*

The following glimpse of home farm life in India is from Sir James Caird's recent work:—

We found the rice crop being harvested. It was various in yield; some not over 400 lbs. an acre, some over 1,200 lbs. It is reaped with a sickle, the reapers sitting on their heels, and laying it down in sheaves, which, later in the day, are then tied up and placed in bundles of about twenty sheaves, tied neatly with a thin straw rope, and all carried home every evening on the heads of the reapers. Nothing is left loose in the field. We followed it to the threshing floor, and here seven oxen in a row, tied together, were walking over it round a fixed centre, and treading out the corn, the oxen "not muzzled." A little further was the heap, previously threshed, being winnowed by being skilfully held aloft and lightly shaken in the wind, while the chaff and dust were blown away. In the outhouse of the owner was a woman husking the rice, by standing on the end of a pole balanced so that the other end gently hammered the grain and separated it from the husk. In another outhouse was an ox grinding oil-seed for the supply of oil to the family; and still further, but out of doors, a small sugar mill pressing the sweet juice from the cane, which was then poured into the heated pan and evaporated and boiled into sugar. All these various industries we saw going on amongst these intelligent villagers, all of whom seemed to have their own special work to do.

 Catalogues of the Great Sale of Thoroughbred Short-Horn Durham Cattle, to take place at Richmond Depot, Halifax City, N. S., on 13th August, are now ready, and may be obtained by sending card of address to Prof. Lawson, Halifax, or personal application at the office of Messrs. J. Duggan & Sons, Auctioneers.

A NEW Agricultural Society has been organized at Sherbrook, in the County of Guysborough, and the Declaration, in accordance with the Act, filed through D. Matheson, Esq., the member for the District. There are upwards of forty members, many of them subscribing \$2, others \$1. Secretary, Allen McQuarrie.

COMMERCIAL FERTILIZERS, THEIR COMPOSITION AND VALUE.

[From the Country Gentleman.]

The phosphate matter becomes more and more interesting and important, and when we give the farmer scientific facts, hitherto beyond his reach, as in the late statement made by Thomas J. Edge, the Secretary of the Pennsylvania State Board, we greatly add to this growing desire to know still more of the hidden elements of this enormously increasing business. If Mr. Edge could tell us, as buyers and users of superphosphates and commercial fertilizers, how to tell when the fertilizing ingredients, ammonia, phosphoric acid and potash are drawn from legitimate sources, and when taken from sources not worth 50 per cent. as much; if he can tell us how we can buy and know we are not throwing money away, then the table of comparative correctness or slight chemical differences between analytical stations, in the profession would be practical. Suppose there is a chemical value in phosphate, and it is locked up to the plant and the soil, what is its value to the purchaser who uses it? The general agent of phosphates boldly defies the chemist, and local agencies report it, saying they will furnish phosphates by analysis worth \$30 in these three ingredients, and another brand by the same chemist worth \$10, or 33 per cent. higher, which will cost the manufacturer less, and be less valuable to the farmer in a soil test. Now does this

mean that in analysis there is no safety, and that farmers can be ignorantly paying, in trusting science, one-third or one-fourth too much for phosphate?

E. S.

Answer by Dr. E. L. Sturtevant, Director State Experiment Station, Geneva, N. Y.

When a belief once gains currency, it is very difficult to change it. There was a time when adulteration was very common to be found in fertilizers, and accusations of fraud were well founded in very many instances. The increase of analytical stations, the publishing of the records of analyses, and the competition between dealers have now produced a change, so that whatever may have been the case in the past, at the present time we may say that adulteration is infrequent. There is no fine that a court could impose that would equal in severity the publication of an analysis of a spurious article, together with the name of the manufacturer or of the dealer. Among the manufacturers who are well known to the public, the idea of fraud in their goods would be repudiated at once, from motives of self-protection, even if other worthier motives did not come in. The danger to the public comes from irresponsible men, go-betweens as it were, between the manufacturer and the public, who sell brands as of their own manufacture, but which are made up for them according to their own directions. Some such dealers on a small scale are apt to select limited localities wherein to ply their avocation; localities in which there is little liability of their goods being questioned, and samples furnished to competent parties for analysis.

The articles which go into the composition of a fertilizer are original materials and the wastes of other industries, and so far as we know there is but one

waste which is occasionally used to furnish a product presumed to be fertilizing but yet unavailable to the plant—I refer to leather scraps. The original articles of fertilizer manufacture are Charleston rock, or allied natural products, and salts of potash.

Advertisements.

Resolution of Provincial Board of Agriculture, 3rd March, 1882.

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