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BOARD OF AGRICULTURE FOR LOWER-CANADA

Montreal, 11th November, 1858.

The Board met this day, at 12 O'clock, pursuant to notice given to the Members.

Present.—Messrs. E. J. DeBlois, Vice-President, J. C. Taché, R. N. Watts, Hon. P. J. O. Chauveau, F. M. F. Ossaye, P. E. Dostaler, Rev. M. F. Pilote.

Mr. DeBlois in the Chair.

1o. Proposed by Mr. Taché and resolved:

That the Assistant Secretary Mr. Chagnon, in the absence of Mr. the Secretary, be instructed to prepare in a few words an answer to the following questions :

1o. What is the amount of the expenses of the Board of Agriculture for the special object of the last Provincial Exhibition ?

2o. What is the amount paid, by approximation, for the Journal "*l'Agriculteur*" and the "*Farmer's Journal*" ?

3o. What is the general statement of the finances of the Board of Agriculture to this date ?

4o. What will be the probable debt of the Board at the end of the present year ?

The Board adjourned to 2 O'clock, P. M.

Present.—Messrs E. J. DeBlois, J. C. Taché, R. N. Watts, Major Campbell, B. Pomroy, F. M. F. Ossaye, Rev. M. F. Pilote, P. E. Dostaler, Rev. M. J. Guilbault, Hon. P. J. O. Chauveau.

Mr. DeBlois in the Chair.

2o. The Board takes into consideration the accounts produced, and postpones until to-morrow, the twelfth instant, the examination of the detailed accounts submitted.

3o. Proposed by Mr. Taché.

That the President and the Secretary of this Board be authorized to sign in the name of this Board a Petition to Parliament, asking an amendment to the Act which constitutes it, in order to leave the Board at liberty to hold or not Provincial Exhibitions for Lower-Canada ; that these Exhibitions shall not take place more frequently than every two years, and the place of each Exhibition be fixed by law alternately at Quebec and Montreal, provided the place appointed shall contribute towards the expenses of the Exhibition, the sum of four thousand dollars, which sum shall be deposited in the hands of the Treasurer six months before the holding of the Exhibition, and that when the Exhibition shall be held at Montreal, the grant of eight hundred dollars to the County of Hochelaga Agricultural Society, and when the Exhibition will take place at Quebec, the grant to the County of Quebec Agricultural Society, shall be contributed to the funds of the Provincial Exhibition.

4o. Proposed in amendment by Major Campbell.

That the place for the Exhibition, be fixed as at present, by the Directors of the Provincial Association and Delegates from County Societies at their assembly on the last day of the Exhibition.

Yeas.—Messrs Campbell, Watts and Pomroy, 3.

Nays.—Messrs Ossaye, Taché, Guilbeault, Chauveau, Dostaler and Pilote, 6.

5o. Proposed by Mr. Ossaye, in amendment to the Main Motion. That all the words after "two years" to "Montreal" inclusively be struck out and the following words put in their stead. That the Board of Agriculture be directed by law to fix itself and from its own authority, the place of the next Provincial Exhibition.

Yeas.—Messrs. Ossaye and Watts, 2.

Nays.—Messrs. Campbell, Taché, Guilbeault, Pomroy, Chauveau, Dostaler and Pilote, 7.

6o. Proposed by Mr. Watts in amendment to the main Motion.

That all the words after "two years" to "Montreal" inclusively be struck out,and the following words put in their stead.

"That the Board of Agriculture for Lower Canada be directed by law to fix itself,and from its own authority, the place of the next Provincial Exhibition, provided that the same locality be not selected twice consecutively.

That the words "at Montreal" in the main motion to the words "of Quebec" inclusively be struck out and the following words put in their stead "in any locality," the annual grant of eight hundred dollars be contributed to the Agricultural Society,the jurisdiction of which extends over such locality,— *Carried.*

The Main Motion as amended stands as follows :

That Mr. the President and Mr. Secretary of this Board be authorized to sign in the name of this Board a Petition to Parliament asking an amendment to the Act which constitutes it, in order to leave the Board at liberty to hold or not Provincial Exhibitions for Lower-Canada, that these Exhibitions shall not take place more frequently than every two years ; that the Board of Agriculture be directed by law to fix itself,and from its own authority,the place of next Provincial Exhibition, provided the same locality be not selected twice consecutively ; provided also the locality appointed shall contribute towards the expenses of the Exhibition a sum of four thousand dollars ; which sum shall be deposited in the hands of the Treasurer of the Board of Agriculture six months before the holding of the Exhibition, and that when the Exhibition shall take place in any locality the annual grant of eight hundred dollars to the Agricultural Society the jurisdiction of which extends over such locality shall be contributed to the funds of the Exhibition for the current year.

The Board adjourned to following day at 10 O'clock, A. M.

BOARD OF AGRICULTURE FOR LOWER-CANADA.

Montreal, 12th November, 1858.

The Board met this day at 10 O'clock, A. M. pursuant to adjournment.

Present.—Messrs E. J. DeBlois, Major Campbell, S. C. Taché, R. N. Watts, B. Pomroy, B. E. Dostaler, F. M. F. Ossaye, Rev. F. Pilote, Rev. J. Guilbeault.

Mr. DeBlois in the Chair.

7o. Proposed by Mr. Taché.

That according to the law passed in the last session, the Secretary of the Board be ordered to have in the ordinary way, to be transmitted to the Secretary Treasurer, L. N. Gauvreau, of the County of Temiscouata Agricultural Society, the sum they are entitled to, as it appears that this society has a right to claim it, by the documents furnished by Mr. Gauvreau.—Carried.

8o. Proposed by Mr. Taché :

That the Board of Agriculture for Lower Canada sanction for this year only, the formation of the two Agricultural Societies in the County of Temiscouata, as follows : Subject according to law to the approbation of the Minister of Agriculture.

The Society at L'Isle Verte is and will be the Agricultural Society, No. 1. of the County of Temiscouta, and the Society at Cacouna is and will be the Agricultural Society, No. 2. of the County of Temiscouata. —Carried.

9o. Proposed by Mr. Taché.

That the following paragraph be inserted in the Journal *l'Agriculteur* with the signatures which characterize the official documents of the Board of Agriculture viz :

The Board of Agriculture for Lower Canada by no means support the opinion expressed in the number 3, month of November, of the Journal *l'Agriculteur*, on a plan of an Agricultural Organization spoken of by Mr. Pilote, of the Seminary of Ste. Anne ; which plan is censured in an article of that Journal, page 52.

The Board of Agriculture condemns no plan, no system ; they see with pleasure all persons and institutions endeavouring to improve Agriculture according to their strength and their own ideas.—Carried.

Mr. Pilote declares he takes no part in the discussion and the voting on the subject.

10o. Proposed by Mr. Taché.

That thanks be tendered by the Secretary of this Board to Mr. F. Vogeli, who sent a copy of his pamphlet "*Almanach Vétérinaire*" and a manuscript on the section of Horses, as constituted at the last Exhibition.—Carried.

The Board adjourned to 2 O'clock P. M.

Present.—Messrs DeBlois, Taché, Watts, Ossaye and Pilote.

Mr. DeBlois in the Chair.

11. A letter from Mr. Dods, of Petite Côte, protesting against the appointment of the same Judges in the Class of Ayrshire Cattle at next Exhibition.

Resolved —That thanks be tendered to Mr. Dods, and that the Secretary inform him that his letter will be taken into consideration when the Judges will be appointed for next Provincial Exhibition.

12o. Petition from two Parishes of the County of Missisquoi, asking permission to organize a second Agricultural Society in that County. —Refused.

13o. Petition from three Parishes of the County of Compton, asking permission to organize a second Agricultural Society in that County. —Refused.

Proposed by Mr. Watts, That :

Whereas from complaints very generally made by Agriculturists in several parts of Lower-Canada of the difficulty of finding emigrant labour, although the attention of the Minister of Agriculture must have been called to the fact in the answers issued for several years to his circulars to different public bodies in Lower-Canada requiring the number of Mechanic servants who could find employment, it is clear that some alterations are necessary in the instructions to the emigrant Agents in Quebec and Montreal. The more so as emigrants appear to have prejudices against Lower Canada before their departure from Europe. Many well authenticated instances are known where emigrants having accepted engagements, have refused to fulfil them on learning they were in Lower-Canada, and have afterwards been forwarded to distant parts at the expense of the Province.

The Board therefore suggests that Emigrants arriving at Quebec or Montreal should not be forwarded to distant parts at the expense of the Province, while there are applications for their labour in the immediate vicinity.

That the President be instructed to communicate this resolution to the Minister of Agriculture.—Carried.

Proposed by Mr. Watts.

The consideration of the question of making rules for the meeting of the Board as well as the discussion of its difficulties, and its financial position, are postponed to the second Wednesday in February next, when a full attendance of all the Members of the Board is earnestly requested.—Unanimously Agreed.

Ed. J. D.

Vice-President.

16o. Proposed by Mr. Ossaye.

That the Board of Agriculture considering all the importance of having a special building for the Provincial Exhibitions in the Cities of Montreal and Quebec, appoint a Committee to take the necessary measures to ensure the erection of these two buildings, and to consist for Montreal of :

Messrs J. Yule, Major Campbell, Professor Dawson, and Mr. Ossaye.

And for Quebec of :

Messrs E. J. DeBlois, Rev. M. Langevin, J. C. Taché and Rev. M. Pilote, with power to add to their number.—Carried.

The Board adjourned to the second Wednesday of February next,

By order,

The Secretary

J. PERRAULT.

PULLING, STORING TURNIPS, &c. &c. &c.—COMPARED WITH INDIAN CORN.

Judge Peters says, that few directions need be given about this part of the business. The tops and tails should be cut off close to the turnips, or they will not keep so well. Some persons advise the tops to be hauled off and fed to the cattle on the fields. I have tried this, and am convinced it is a very bad practise. In the first place, as food, they are scarcely worth the labour of hauling off; they will keep cattle alive, but if they happen to be fat, they will reduce their condition, and if the milk cows get them, the butter will be unfit for market. But the great objection to removing them is, that it rids the land of what ought to be left to feed the succeeding wheat crop. A heavy crop of turnips is exhausting. In Britain a portion of the turnips is consumed on the land, by sheep. Our climate will not permit of this; therefore,as we have to remove the turnips, we should at least leave the tops. If you wish to feed them, and there is time to do so before ploughing, let them be eaten where they grew, or if not, plough them in, and, decaying in the soil, they will enrich the land; whereas removing them is not only a waste of labour, but your wheat crop will reproach you for having done so.

"Some complain of turnips being difficult to keep; those who find so, keep them too close. With proper management, there is no difficulty in any quantity. They should be put in piles in the field when first pulled, and covered up with tops or straw, and a little earth. Here they will sweat a little. A dry day should be chosen to cart them to the root house. My root house is dug four feet deep, and then the roof pitched from the earth, and covered with sea weed and earth, well sodded over; the floor formed of slabs and largou, raised six inches from the bottom; and divided into three divisions. It will contain about two thousand five hundred bushels of roots, and I generally fill it full, and have never lost any turnips. In the top there is a chimney, which is never shut night nor day during the winter; the vacancy below, and the partitions allow all the confined air to ascend, and as it is constantly escaping through the chimney, no frost comes down. Any one who will ventilate his root house in this way, will find the turnips as sound in June as when first put in. The situation of the root house is a matter of importance. It should be attached to the barn; this will save a deal of labour in carrying provender to the cattle during the winter. Some store them in their cellars, which is the worst place that can be selected, as they are generally too hot and close to preserve the turnips—too far from the barn for convenience, and the gas which escapes from the roots renders the air of the house unwholesome."

The storing of Root crops,—turnips, beets, carrots, mangold wurtzel, &c.. &c. has not the same importance in this country as in Great-Britain or Ireland. The severity of the winter prevents the possibility of feeding on the ground, which is a leadiug feature of old country practice. Twenty, thirty, sixty acres and upwards are frequently occupied by turnips, and we have frequently fed off that extent in the field. The plan generally is to pull three drills alternately, storing them, feeding off the remainder left in the field with sheep. Field

root crops generally contain 90 per cent. of water,—but the dry substance of turnip, for instance, is nearly equal in nutritive qualities to the dry substance of wheat. If we take a crop of wheat of 45 bushels, at 60 lbs. to the bushel, the weight of grain per acre would be 2,700 lbs. Land that would produce such a crop, should give 30 tons of turnips—which at 10lbs. in the hundred, would give 200lbs. of dry matter, and consequently 6000 lbs. per acre, or more than twice as much as was given by the 45 bushels of wheat. Indian corn compares better with turnips—giving 70 bushels of 60lbs. or 4,200lbs. per acre, superior either to turnips or wheat for feeding; and if the stalks were cured, and added to the grain, the nutritive matter would not fall short of that produced by an acre of turnips. But it would be advantageous to cultivate root crops, nevertheless as they are a valuable mixture with dry fodder of all kinds. The reason why they are less cultivated than they would otherwise be in this country is because of the high price of labour;—great part of the weeding being performed by hand. These crops in order to perfect success, require thorough comminution of the soil, and rich supplies of manure. And though we may expect a gradual and steady improvement in the agriculture of this country, we shall take an opportunity, at the proper season, of considering whether the production of these crops are equally adapted to this climate; and whether, if, with proper attention to the preparation of the soil, and after thorough cultivation, and keeping in view the indian corn crop, which is so admirabiy adapted for feeding purposes, prepared in so many ways—it would be the interest of the Canadian-Farmer, equally with the British, to occupy a large portion of his surface with the cultivation of root crops. It may perhaps be found that the Scotch mode of storing, if found to suit, with due care, in this climate, may effect a considerable saving in the winter feeding of these crops. They are in that country piled up in heaps —after topping and tailing—placed in ridges 15 feet wide drained on both sides —the heaps are made 10 feet wide of roots at bottom built up to a ridge of 4 feet high, and of any length, and placed as conveniently to the barn as possible. Straw is put over these for thatch, and kept down with straw ropes, fastened to pegs in the ground. The covering in this country would require to be thicker, and the turnips put up in smaller quantities,—so that the contents of one entire heap could be removed to the root house at a time. J. A.

THE POTATO DISEASE.

Last week we gave some illustrations of the potato leaf and tuber, and of the insect preying upon them, together with an account of Mr. HENDERSON'S discovery. We now place before the roader the discovery of Ma. REED, to which we referred in that article. Mr. Reed has laid before us a mass of evidences going to substantiate what he states, but for which we cannot find space. His statement is as follows:—Editor (*New England Farmer.*)

IMPORTANT MICROSCOPIC DISCOVERY SHOWING THE CAUSE—PATENT GRANTED FOR THE REMEDY.

MESSRS. EDITORS:—The miscroscopic examinations which I have made of the potato plant, during several summers past, has revealed facts of vast importance

to agriculturists, both in America and Europe. In 1845 the United States Patent Office published various communications, letters, extracts, &c., upon the potato disease. The first scientific examination in the United States was made in the State of New-York in 1844. The publication of this investigation induced many persons in this country to form opinions that fungi caused the disease. The same opinion also prevailed in Europe. Atmospheric influence was another theory. Insects upon the vines and leaves another.

My microscopic examination and experiments commenced at Waltham, Mass. in 1851. In June of that year, I found the under leaves on my potato stalks turning yellow—some quite dead—while the tops and leaves also the leaves and stalks of other hills continued quite thrifty and green. This peculiar circumstance, thus early in the season, induced close observation and careful examination into the phenomenon. A query naturally arose—can fungus or atmosphere act thus partially upon the plant? Is there not some other predisposing cause prevailing? From this investigation I felt confident that insects or worms had attacked these plants at the *roots*.

Acting from this impression I examined the roots, but with the natural vision no insects were found. The microscope, however, revealed myriads of insects on the seed tubers, roots and stalks *under ground*. The attack upon the latter, at the lower joint, was visible in spots or marks resembling *iron-rust*.

Potatoes which I had in jars and flower-pots in my shed, covered from any exposure,(experiment tubers) exhibited, under the microscope, similar insects—and tubers taken from my cellar, at this time, had insects on those which were sprouted. Thus in *three separate and entirely dissimular positions*, insects, similar in every respect, were found, evidently subsisting upon the sap of the sprouts and vines. This revealed to me unquestionable evidence, that, during the early growth of the plant, insects' ravages produced deterioration by the draining of the sap from the vital part—thus causing the disease. The insects, being only microscopic, rendered it extremely difficult to discover the nidus or hibernating spot of their eggs.

Early in my researches, however, I became satisfied, from the position of the *young* insects, that the eggs would be found near or under the eyebrows of the potatoes. This proved to be correct. It was not until 1856 that I *first* found the eggs. They are found imbedded in the very sprouts and in the skin near the eyes, but only with a powerful microscope and by the light of the unclouded sun can they be found. During the period 1851 to 1856 my experiments in cultivation and otherwise were continued. Since the latter date I have watched as before, (sealed in glass jars and otherwise,) the development of the tubers, and embryo progress of the eggs to the first animate motion of the tiny insects, and their attack upon the tender sprouts; the effects of their ravages, and the progress of their poison infused into the vines, causing the malady. This insect is the *Aphis*.

The particulars of my discoveries and my opinion on this subject were communicated to the Governor and Council of Massachusetts in August, 1851, answering a resolution of the Legislature, passed that year, soliciting information on this subject. And the fact is a matter of record in the State Department. For reasons of my own, my communication was to remain with the seal unbroken, unless at my request, until 1856.

I have thus placed before the reader the time, original circumstances of discovery, as also the final development showing the *cause* of the potato disease.

The facts and authenticated proofs attached thereto, and a multiplicity of other similar evidence, has been placed before the United States Patent Office, there to remain. They are deemed adequate to settle the question, positively,

as to the *cause* of the disease. I need say only a word more. Let me briefly add, that by repeated experiments, I have *discovered a practical remedy for the disease.* The tests of cultivation are shown by the evidence of my immediate neighbors, at Waltham, Mass., which proves the efficacy of my remedy.

After a thorough and most rigid investigation before the United States Patent Office, I have secured letters patent from the United States Government for the right to apply the remedy. I am prepared to dispose of rights to use the remedy. Individuals wishing to possess the same, for States or counties, will apply by letter, or otherwise, to the undersigned.

Baltimore, 1858. LYMAN REED.

EXAMINATION PAPER IN AGRICULTURE, UNIVERSITY COLLEGE, TORONTO, SESSION 1857–58.

Thinking it probable that a large number of our readers have no very definite motion of the nature and extent of the examination of students in Agriculture in our Provincial Collegiate Institution, it may not be devoid of use and interest to publish entire an examination paper belonging to this department. The one subjoined was written by Mr. J. E. Farewell, of Oshawa, in the County of Ontario, and obtained the first prize, The second prize was won by Mr. John Brown, of the County of Wentworth. Two other students had papers of nearly equal merit, and answered several of the questions quite as correctly, though not so fully, as their more successful competitors. These young men had been more or less engaged in practical farming, and availed themselves of several other courses of lectures in the College, besides Agriculture, during the winter season. Young men can enter the College as occasional students, without being subjected to any preliminary examination, and may attend such courses of lectures only as meet their more immediate wants. Agricultural students usually take in addition to the history, science, and practice of Agriculture, Chemistry, Geology and Mineralogy, Natural History, including Botany and Meteorology, History, and English Language and Litterature. Youths intended for the business of farming can annually go through such, or, if need be, a more extended course of study, and not be absent from their farms during the busiest and most important seasons of the year. All this can be done for a comparatively small expense; but little exceeding that for board and lodging. It is proper to state that the terminal examinations in the College are conducted on the principal of written answers to a series of questions, to each of which is assigned a numerical value; the students being strictly prohibited from any intercourse with books, notes, or each other, during the period of examination. The Agricultural examination occupied two sittings, of two hours each. We give of course the paper as it was written, with only an occasional verbal correction.

Question 1.—Define Agriculture as a *science* and an *art*.

How can a knowledge of its *Theory* and *Practice* be best acquired?

Answer 1.—Agriculture as a *science*, treats of the principles or laws which govern the operations of converting the inert matter of earth, air and water into vegetable productions for the support of animal life.

2.—As an *art* Agriculture treats of the *application* of these principles to practical purposes. The former gives the rules of the operations, and the reasons for them. The latter applies the rule advanced by science.

The best mode of acquiring a thorough knowledge of the science and practice of Agriculture, authors of high repute seem somewhat to differ.

Stephens—a good authority in practice—says, this can be best done by liv-

ing with a farmer, who is a good practical man, and who has in his house an instructor in a theory or science, daily pointing out on the farm the practical application.

On the other hand, Professor Norton is in favour of the plan adopted in University College—attending lectures on the theory and practice as given by a professor, and afterwards reducing their principles to practice on the farm during the active season of sowing, growth, and maturity. To such as have had some experience on a farm, this seems the most suitable plan ; or instead of this, attending some Agricultural School with a suitable farm attached, and learning both theory and practice at the same time.

Question 2.—Mention those branches of physical science which have relations to Agriculture ; with illustrations.

Answer.The various departments of Physics or Natural Phylosophy relating to agriculture are—

1o. Motion, the moving powers, their nature, laws and operation, and effects of machinery. Mechanics.

2o. The weight, pressure and equilibrium of fluids. Hydrostatics.

3o. The motion of fluids in pipes or otherwise, and their capability and value as mowing powers. Hydraulics.

4o. The action of light on vegetation. Optics.

5o. The nature, laws and effects of heat.

6o. The laws of electricity, and other meteorological phenomena.

7o. The nature of air as regards its properties of weight, temperature, motion &c., and the signs which foretell these movements. Pheumatics.

8o. Chemistry, explaining the nature and composition of all bodies, and the laws of their combination.

9o. Botany, treating of structure, uses and classification of plants. Also including vegetable physiology, explaining their functions, diseases, &c.

10o. Zoology, relating to the structure and classification of the animal kingdom, with which is connected comparative anatomy and physiology of the domesticated animals of the farm.

Question 3.—Give a general sketch of the History of Agriculture from the Egyptians, Grecks and Romans to the middle ages. In what way did the Church foster and promote this art during the later period ? What are the principal characteristics of modern agriculture ?

Answer.—Of the various branches of Agriculture, that, which relates to the raising of fruit, called gardening, seems to have been first practiced.

After the flood "Egypt's alluvial lands" seem to have been the seat of the beginning of Agriculture, which was subsequently diffused by the colonizing Greeks who regarded it with honour.

Rome subsequently becoming mistress of the world, carried a knowledge and love of this indispensable art to every portion of the earth which witnessed the triumphs of her victorious armies—Britain among the rest.

Different opinions prevail respecting the agriculture of Egypt, both as to its origin and some of its practical applications. The annual irrigation of the Nile richly manured the land,and great crops of grain—particularly pulse—were unquestionably raised. The pick was the first instrument used in cultivation, as would appear from the engravings on ancient medals and seals. The sacred Ox was the only animal used in agricultural labor. In Greece, agriculture was carried on extensively, and some of what we often imagine to be purely modern practices were well understood and followed, such as draining, &c. Xenophon and other writers, were acquainted with the art and wrote upon it. Mogo, the celebrated Carthagenian, wrote several books upon this important subject.

Rome afterwards encouraged it by every means, and many of her most eminent warriors, statesmen and citizens produced treatises on agriculture and practised it as a pursuit. Among them, Columella, Varro, Cincinnatus, Virgil, &c., from whose writings may be gathered many practical principles, that have never been improved.

Agriculture was introduced into the British Island by the Romans, but did not appear to have made much progress till the Norman conquest, 1066, when many Norman Barons came over and encouraged and cultivated it extensively. They are described by a comtemporary historian as being "exceedingly addicted to cultivating the land, and raising horses and cattle." When the dark ages came on, agriculture was preserved on the estates of the church alone, the Monks being the conservators of this art, as they were of manuscripts and litterature ; and when learning revived the practice of husbandry diffused itself, and the noble art sprang as it were into new life.

Modern agriculture has for some of its leading characteristics a more general and effectual draining of wet lands, deeper and more thorough cultivation by means of improved implements as sub and trench ploughing ; a more scientific rotation of crops ; the economising and more effective application of manures, and the proper adjustment of animals to the amount of land cultivated.

Question 4.—How is matter divided ? Define and illustrate *elementary, compound, organic and inorganic* substances ? What are soils, plants and animals composed of ?

Answer .—Matter exists in the following states, viz :—solid, liquid, gasseous and vesicular. A familiar example is water, which by being exposed to a low temperature, becomes a solid, [ice] which is liquified by heat , and by still further heat is converted into an invisible vapour [steam.]

An elementary substance is matter that cannot be reduced to a simple form ; *i. e.*, iron, oxygen, sulphur, &c. A compound body is that which is made up of two or more elementary substances ; *i. e.*, oxide of iron or rust, consisting of oxygen and iron, sulphate of potassa, composed of sulphur and potassium, &c.

Organic substances are the result of life, in the vegetable or animal, and by heat become decomposed and converted into invisible gases, *i, e.*, carbonic acid, oxygen, hydrogen, &c.

Whereas inorganic bodies do not consume by heat, were never the seat of any sort of life, being purely mineral ; *i. e.*, iron, silica or sand, iodine, manganese, &c.

Some are generally composed of a number of different substances, the principle being clay, sand, lime, potash, soda, magnesia manganese, &c., are more or less found in connection with organic substances in all fertile land.

Plants consist mainly of carbon, oxygen, and hydrogen, with small portions of nitrogen, combined with the several substances mentioned in soils.

Animals consist of the same organic elements constituting plants, but with a much larger proportion of nitrogen, and a very great amount of the phosphate of lime in the bones, so valuable as a manure.

Question 5.—State the compositiou and uses of *atmospheric air and water*, and their relations to vegetable and animal life ?

Answer.—Atmospheric air mainly consists of two gases, nitrogen and oxygen ; about 79 parts of the former and 21 of the latter in every 100 of common air. There are also diffused through the atmosphere small quantities of carbonic acid gas, ammonia, and some aqueous vapour.

Water consists of a chemical combination of oxygen and hydrogen, in the proportion of 8 of the former wrth 1 of the latter. This is pure rain water, but the waters of springs, rivers, &c., have in them a number of other ingredients, as lime, soda, &c., in varying proportions.

Neither plants nor animals can live without air and water. The former de-

rive much of their food from the atmosphere by means of their leaves; while water is necessary to dissolve the manuring substances in the soil that they may enter the plant in a fluid state by its roots. Air is essential to the breathing of animals; the nitrogen properly diluting the otherwise to powerful action of oxygen; while the carbonic acid exhaled in breathing forms the principal organic food of plants.

Question 6.—Give a brief description of the general *structure and functions of plants and animals*, and their relations to the soil.

Answer.—Plants consist of various kinds of matter held together by the chemical and vital forces, and arranged into what are termed cellular and vascular tissue. The principal parts are the root, stem and leaves. The root fixes the plant in the soil, and supplies it with inorganic food from the surrounding medium. The leaves expand, and catch and absorb, by means of their numerous and minutes pores, organic food, consisting of gaseous matter floating in the atmosphere. Every part of a plant is endowed with tubes, vessels, and cells, for the circulation and elaboration of the sap, which by a power and process, as yet but imperfectly understood, converts these fluids into the different parts of their own solid structure.

Animals are very differently constituted, having the power of locomotion, they can go in search of their food, if need be, and they digest it in their stomachs. Their structure and functions are exceedingly interesting; the blood, like sap to the plant, derived from food, freely circulates through the system, and repairs its waste and increases its bulk. Vegetables constitute the connecting medium between the mineral and animal kingdoms. Animals cannot obtain nourishment directly from the earth. The plant lives upon the mineral, converts dead matter into living organisms, and the animal subsists directly on the vegetable, a simple yet truly wonderful arrangement.

Question 7.—What are the essential conditions in the *germination, growth and maturity* of plants! What is plant food, and how is it assimilated? When is the proper time of cutting grass for hay, and also grain? With reasons.

Answer.—Warmth, moisture and air are each essential to the germination and growth of plants. Seeds, when thoroughly secured against these agents; by being buried deeply in the earth or otherwise, will remain for ages, but as soon as exposed to them will show signs of vitality and germinate. Wild mustard in our fields is an illustration in point.

Plant-food consists of the matter of which the structure of vegetables is composed; they get gaseous matters, such as carbonic acid, oxygen, and ammonia, by means of their leaves, from the air; and inorganic materials, such as lime, potash, soda, &c., through their roots from the soil, in a state of solution by water.

The grasses should be mown for hay as soon as in full blossom, when they contain the largest amount of saccharine and other nutritious substances. And the proper time for cradling grain is when it has got out of the milky state, and begins to harden, and the stems turned yellow. If either grass or grain is allowed to become dead ripe before cutting, the sugar of the former, and the starch of the latter are converted into woody fibre—the bran is encreased—and the flour diminished. In practice this truth is too commonly overlooked.

USE OF FAT IN ANIMAL ECONOMY.

The extraordinary abundance of fat in the bodies of animals inhabiting the intensely cold polar regions may be philosophically considered as a surplus stock of fuel, to be burnt for sustaining animal heat and motive power. Without this

internal resource for a supply, during periods when no other available supplies of food are procurable from external sources, the animals of the arctic regions would speedily become frozen, remaining like marble statues fixed on the surface of the fields of ice and snow.

A most remarkably abundant provision of fatty, and oily matter, formed from hydrogen and carbon, is found in the blubber which envelopes the bodies of the sto red-up whales like a thick blanket. The philosophy of this surprising provis'on of available food and fuel, accumulated in these large fishes, admits of the following explanation. It appears that whales, in ranging from one feeding-ground to another, sometimes have to cross broad oceans. Without an extraordinary supply of carbon, provided like a stock of coals in the bunkers of a steamer, for sustaining continuous combustion during a long voyage, the whales might fail in exerting a motive power sufficient to propel their great bodies through the waters of the great oceans. Whales have been aaptured from whose bodies more than two hundred barrels of oil have been extracted. As spermaceti and cetine contain above 90 per cent. of carbon and hydrogen, one of these fishes, therefore, carries with him about ten tons of combustible fuel, which is ready at all times to become absorbed and burnt, whenever this leviathan of the deep desires to develop powerful impulses of motive power, and rises to the surface of the ocean, to draw in a long breath of air, containing the requisite quantity of oxygen to burn his supply of carbon, and to allow it to recoil to its natural condition of carbonic acid gas. The more a whale exerts his locomotive powers, the oftener it is necessary for him to breathe, or " blow," as the whalers term it.

As amid abundant granaries and well-stored market-houses where there is little danger of falling short of a due supply of daily food, it is manifest that in the economy of nature there is no real necessity for this extraordinary supply of a surplus stock of carbonaceous fuel, enveloping the ribs of human beings.

The hump on the back of the camel—the locomotive engine of the wild deserts of Asia and Africa—may be deemed by the superficial observer as a deformity, or as a sort of natural saddle, ready prepared to bear the impositions of loads of merchandise, and thus stamping this animal as a " beast of burthen," apparently by the original design of the Creator. But this uncouth appendange, so far from being designed expressly for the purpose of a saddle, does really subserve the more essential purpose of a knapsack of providence, to supply from this superabundant deposit of fat, which principally composes the hump, the carbon necessary for propelling the locomotive mechanism of his body across the wide wastes of land, where no blade of grass is found to replenish his exhausted supplies of carbonaceous food. A surplus supply of water is similarly provided in the extraordinary sacs of his stomach, as a substitute for the tank applied to an artificial locomotive engine.

Adventurous mariners navigate their barks among the icebergs of the polar regions, to procure the valuable store of fat organized into the bodies of the whale, of the seal, and walrus, which they transport to marts of commerce for distribution, for the purpose of being burned as fuel in the lamps, instead of in the lungs, the purpose for which it was originally designed. Men strip off the fur and down from the bodies of animals, whose breasts, exposed by submersion into icy water, and to keen wintry winds, require these non-conducting coverings, to sustain the animal heat generated by combustion in their bodies. These prized spoils of soft downs and furs are appropriated as a covering to sustain the same genial excitation within the glowing bosom of a civilized belle. In the colder bosom of an esquimaux belle, residing in a crystal palace, and beneath a dome built of blocks of ice, not only are these soft external appliances of robes of fur necessary for sustaining a genial glow of life's warm current, but also the most extraordinary combustion of fatty, oily matter in her lungs. One of these

belles, according to Capt. Parry's narrative of his voyage to the arctic regions, sipped the oil from an extinguished lamp, and received a tallow candle as an acceptable bon-bon, the courteous captain kindly warning her by signs, not to choak herself by attempting to swallow the wick. It thus appears that the quantity of organic carbon which is scarcely adequate to serve as fuel in developing warmth and locomotive power in the bodies of human beings dwelling in the Arctic regions, would over-heat the bodies of the same individuals in warm tropical climates, and would speedily induce fatal inflammatory disorders.

To the ignorance of this simple fact may be ascribed the deaths of myriads of voyagers from cold to warm climates. On the contrary, voyagers from sultry to cold climates require the combustion of more carbon in their lungs to sustain the average temperature of blood heat. Indeed, the sensation of declining warmth is so immediately attendant on a diminished supply of food that the terms cold and hunger have been associated together, and the phrase starving with cold, has lately been introduced into popular language in these countries.

Numerous facts tend to demonstrate that a vigorous and healthful condition of the animal mechanism can only be sustained by a due relative apportionment of the atoms of carbon and hydrogen, presented in the thin membraneous air vessels of the lungs to the contact and union with due relative apportionment of the atoms of oxygen inhaled at every breath, and by the appliances of non-conducting clothing, to prevent the too rapid propagation of heat from the body. And thus the mechanical motive power by the vital agency of "life" truly subsists by the combustion of carbon, in accordance with the emblematical flame of the lamp, which was once lighted, in every tomb by a classic and superstitious people, as allegorically representing the bright spirit which, for a brief time, animates the body, and then vanishes forever, like the quivering and expiring flame.—*Canadian Agriculturist.*

The Harvest.

CORN CROP OF 1858.—PROBABLE RANGE OF PRICES.

ABRIGED FROM THE "NORTH BRITISH AGRICULTURIST."

The corn harvest being now nearly completed in America and Europe, an estimate can be formed of the yield of the grain, with the probable range of prices. An approximation, however, is all that can be hoped for, as it is not possible to collate wholly reliable information as to the produce, till a considerable portion of the crops have been separated from the straw.

Commencing with America, nearly all the accounts represent the cereal crops as below an average. This applies alike to wheat, maize and oats. The season has been very unfavourable, and the spring was backward, and excessive rains occurred.

In these countries bordering on the Mediterranean the crops are variously reported, but upon the whole may be regarded as equal to, if not exceeding an average. Ports in the Black Sea and the Danube will furnish a considerable

quantity of wheat, a large portion of which may be expected to be shipped to the south of France, Marseilles, &c., Egypt will furnish a full average export of wheat and beans.

Spain and Portugal will not require any supplies from other countries. A portion of this year's crop in Spain may be available for shipment.

In France, there is a fair average crop of wheat and rye. Oats inferior.

In Belgium and Holland, a full average crop has been harvested. A limited portion will be available for export.

In Northern Germany, Russia, and in countries bordering on the Baltic, the crops are below an average. These countries bordering on the Baltic will not furnish the usual supplies, except a considerable rise in value takes place.

Coming to the United Kingdom, it appears that in England, notwithstanding the injury caused in some districts by a severe drought, the cereal crops will exceed an average, Wheat is a fine sample, and the produce slightly over an average, but considerably below the abundant crop of 1857, a portion of which still remains, in the hands of farmers and merchants, and will go to swell the available produce of the harvest. Barley is unequal; in some instances the produce will be under an average, and of medium weight. Oats have suffered from the drought, and will not be above an average. The pea crop has proved almost a total failure—The produce will be considerably below an average, The potato crop is good as to produce, but a considerable portion is already tainted.

In Ireland, the cereal crops are generally good. Wheat, barley and oats exceeding average both as to quantity and also as to quality. The potato crop very extensively planted, and promising abundance, has been seriously affected with the blight, and perhaps not more than one half of the entire crop will be saved ; but even this amount will furnish a very considerable supply, the crop being much above an average. The demand for Indian meal in Ireland will consequently be limited.

In Scotland the harvest up to this date has progressed favourably, although damage has been sustained in some districts both in wheat and oat crops. The wheat crop is one of the best ever reaped in Scotland, the produce and quality being both excellent. The extraordinary yield of upwards of sixty bushels of white wheat per Imperial acre has been reported. Barley is very unequal. Taking the whole, barley may be estimated as being a full average crop. Oats are unequal. Inferior and damp soils were greatly benefitted by the beautiful season, and very full crops have been reaped, and in a state of maturity not often experienced. Where not damaged by rain, taking the produce and superior quality into accounts the oat crop may be taken to exceed an average. But perhaps at present, not more than one-half of the entire oat crop over Scotland is in stack. Beans are not an average crop—good fields are exceptional, and the bulk of the straw is below an average. The produce of grass will be also inferior. The potato crop, which promised to be one of the most abundant ever produced in Scotland since 1846, is suffering from the blight ; and, contrary to what was experienced last year, the crop on the west coast has been most seriously affected, while on the east coast the tubers are at present comparatively free of the taint. Should even the half of the crop be tainted, the remaining portion will furnish almost an average supply. Present appearances do not indicate that more than one-half will be diseased, thus leaving a larger amount of sound tubers than in the previous season, 1857 : but the ultimate result is very problematical.

It may be assumed then, with the abundant crop now nearly harvested over the whole of the United Kingdom, this country will require less of the produce of other countries than in ordinary seasons. In addition to the large crop of

wheat, the stocks of old wheat are unusually large, both of home and foreign growth.

If the above resume of the harvest of 1858 be correct, the following inference may he deduced :—Wheat will not recede in value from the sales obtained during the last six months. An advance of something like 3s to 5s a quarter may be even anticipated : but as much of the wheat in Scotland at least has been quickly harvested, damp samples will lower the average rates for some months. Dry samples of superior quality may be expected to realize above the present rates during the winter months. Barley will probably command fully as high rates as are at present obtained. A rise may be even anticipated for superior as well as for light samples. Oats will doubtless, be in request, mainly for feeding, and the present rates will be fully maintained. It is very probable that an advance will be also established. Beans will be in great demand. An advance on the present rates may be expected. The shortness of the root crops with the high rates for feeding cakes, will tend to advance the value of beans.

United-States—Short Crop.

The census f r 1840 and that for 1850 show the following aggregate production of each of these samples.

	1840, *Bushels.*	1850, *Bushels.*
Wheat	84,823,272	100,485,944
Oats	123,071,341	146,584,179
Indian-Corn	377,531,875	592,071,104

Of course, these are but rough approximations to the true aggregates : but the proportion maintained between the returns of 1840 and those of 1850 prove that they are within the neighborhood of the true amounts. Assuming their general accuracy, the following table will indicate the magnitude of the present deficiency :

	Average yield. 1858	*Actual yield.*
Wheat, bush	120,000,000	90,000,000
Oats, bush	160,000,000	110,000,000
Corn, bush	750,000,000	550,000,000

In other words, our total Harvest of Wheat, Oats and Corn for the current year will fall below what might have been reasonably expected as follows :

Wheat, bushels.....30,000,000 | Oats, bushels.....60,000,000
Indian-Corn, bushels.....200,000,000

Now the value of these amounts to the growers may not exceed One Hundred Millions of Dollars, but their value to the Country is at least double that sum. Our Railroads, Canals, forwarders, shippers, &c., are deprived of business which they were prepared to do, and in default of which their earnings and profits for the next year must suffer deplorably. We consider the Country at least Two Hundred Millions poorer than it would have been if our crops had proved good.

This deficiency is likely to exert a baneful influence, and not only our Domestic but our already depressed Foreign Trade. The Offieial statements show that we exported in the years ending on the 1st of July, 1858 and 1857 respectively (those up to 1st July not having yet been promulgated as follows :

Year ending June 30, '56.		Do. Do. '57.
Wheat	$815,115,661	$22,240,857
Flour	29,275,148	25,882,316
Indian-Corn	7,622,565	5,184,666
Indian-Meal	1,175,688	957,791
Pork (pickled)	5,029,940	2,805,867
Hams and Bacon	3,863,328	4,511,442
Lard	3,870,949	5,144,195
Total	$65,953,229	$61,727,134

In other words, Wheat, Corn and their products—Flour, Meal, Pork, Bacon and Lard—form the bulk of the exportable produce of the Free States, comprising two-thirds [in population, trade and wealth] of the American Union; and it is now probable that, instead of exporting nearly Seventy Millions' worth of these during the ensuing year, we shall not be able to spare half that amount. Can any one doubt that our Imports must be correspondingly reduced or not paid for, and that the aggregate capacity of the West to pay for goods, and in fact the entire commercial activity of the Free States, must shrink in proportion? Let our Importers, Jobbers, and Merchants give earnest heed to these facts.—*American Paper.*

The Harvest on the Continent.

The following accounts have been received:

The *Echo Agricole* says—The wheat harvest is nearly terminated in France. Generally speaking, it will not be of such good quality as that of 1857, and will weigh on an average four to five kilogrammes less per hectolitre. The harvest of 1858 will consequently be less than the preceeding, but it must not be forgotten that, that of 1857 was above the average.

From Sweden it is reported that the accounts from the governors of provinces say the crops show a very middling prospect. The export of corn from the north of Europe will therefore, be very limited this year. Prices are moving up in all the markets of Sweden.

The crops in the grand Duchy of Finland are all favourably spoken of, and an imperial ukase has extended the time during which corn may be imported free of duty into that country.

The latest accounts from Odessa say that some damage has been done by rain to the crops in Poland and Bessarabia.

In Spain the harvest of Castile is much better than had been hoped for.

The favourable prospects of abundant vintage which existed a few weeks back in Sicily have been completely destroyed by tremendous sirocco winds.

The cotton crop of the United States, estimated at the seaboard, according to the census of 1850, amount to $78,264,927. Estimated at the same point—that is, according to New-York prices to-day—the egg crop of the United States would amount to $259,011,666, or twice as much as the cotton, tobacco, rice, hemp and sugar crops of the slave States put together. Adopting the estimate of the Buffalo print, the average of eggs consumed by each inhabitant of the United States each day is about two.—*New-York Post.*

THE AMERICAN STAPLE.—*The Egg Crop.*—It is estimated that there are 103,600,000 laying fowls in the country, of which 50,000,000 lay one egg a day throughout the year. This would give the annual crop of 18,250,000,000 eggs, and these at eight cents a dozen, would be worth $121,666,666 !—*Buffalo Express, Aug.* 4.

Application of the Sciences to Agriculture.

AGRICULTURE IN ITS RELATION TO ZOOLOGY.

Zoology treats of the classification and habits of animals from the highest to the lowest in the scale, including insects, fishes, reptiles, birds, beasts—up to that of man—the highest and most complicated structure. The history and habits of the domestic animals cannot fail to interest the Agricultural Student —presenting him with comprehensive views of the animal economy, and of the relations which one class bears to another. The geographical distribution of animals over the globe, a most instructive and delightful study, tends to exercise and improve the mind, revealing in no small degree the wonders of creation, and leading the student by natural progression to regard, if possible, with growing awe and veneration the Great Original.

Many four footed animals are found to be by turns beneficial and injurious to the Farmer. The same may be said of birds. But above all does he suffer from the insect tribe ; and it becomes of importance to identify their species at their different states of transformation, watching their habits at sametime, and studying their true impulses and instincts ; so as to be enabled to devise plans for avoiding their destructive ravages,—thus by the exercise of vigilance and activity anticipating the periodical injury they so frequently inflict.

It would be well too that every farmer should improve his opportunities of becoming acquainted with the proper treatment of live stock under disease or suffering from accidents,—thus acquiring such a practical knowledge of veterinary science as to guard him against the exposure of his stock to such depressing influences—whether as regards food or shelter—as might tend to functional derangement—especially cautioning him against starving his stock at the very season when a due proportion of blood, and flesh, and fat, and warmth are more particularly required, to enable his animals to contend against the inclemancy of the climate of winter in this Province. He should be able to medicate in all ordinary cases of disease—and should be prompt to apply immediate checksto its progress—so as to place the animals, without any unnecessary delay, in a fair way of recovery. It is of great importance that diseased stock should lose as little as possible in condition.

Animal physiology bears the same relation to zoology which Vegetable Physiology does to Botany. As we have already remarked (in a previous article) in regard to Plants, the animal body, when burned, leaves a quantity of ashes, establishing a general analogy between the plant and the animal. The propor-

tion of this ash too varies in different parts of the animal, as it does in different parts of the plant. The composition of each part is specially adapted to the purposes it is intended to serve: and the substances of which their parts are composed are found to be identical with the vegetable food on which the various classes subsist. We find, as before in the plants, the same potash, soda, lime, manganese, oxide of iron, oxide of manganese, sulphur, phosphorus, and chlorine. There the analogy between the plant and animal becomes closer at every step we progress. It is clear that there is a close connection between agriculture and Animal Physiology.

We have thus passed in short review the sciences, whose principles seem most applicable to agriculture. We shall recur to them from time to time, showing the benefits arising in various ways from the scientific cultivation of the soil. We will, show that an immense amount of labour might be daily and hourly saved to the farmer—that the produce of the soil might thereby be greatly encreased—not only amply supplying the wants of an encreasing population but affording a large surplusage for export—thus not only providing for the wants of the inhabitants, but leaving a large remainder to be disposed of in exchange—making periodical additions to the accumulating wealth of the Country.

We have prepared Systematic Lectures on the subject of the application of the Sciences to Agriculture. It is likely they may be submitted to our Readers in portions, periodically, either in *The Journal* or *Transactions*. But our attention shall be mainly directed to the Practice of Agriculture—which is merely giving effect to the principles established by science. It is delightful to see science and practice going hand in hand—mutually aiding, and informing each other. J. A.

Grain and Breed.

To manage a rearing Horse.—Whenever you perceive a horse's inclination to rear, separate your reins and prepare for him. The instant he is about to rise slacken one hand, and bend or twist his head with the other; keeping your hands low. This bending compels him to move a hind leg, and of necessity, brings his fore feet down. Instantly twist him completely round two or three times, which will confuse him very much, and throw him off his guard. The moment you have finished twisting him round, place his head in the direction you wish him to proceed, apply the spurs and he will not fail to go forwards. If the situation be convenient, press him into a gallop, and apply the spurs and whip two or three times severely. The horse will not, perhaps, be quite satisfied with the defeat, but may feel disposed to try again for the mastery. Should this be the case, you have only to twist him, etc., as before, and you will find, that in the second struggle, he will be more easily subdued than on the former occasion; in fact you will see him quail under the operation. It rarely happens that a rearing horse after having been treated in the way described, will resort to this trick a third time.—*British Sportsman.*

Ladies Department.

LOVE IS EVERYWHERE.

The air is filled with a gentle song—
An under song of wooing—
As the leaf-enshrouded woods o'erflow
With the sound of the ringdove's cooing.
In nature's deepest haunts
I hear a voice that chaunts ;
" Why should the earth grow old with care,
Since 'Love, sweet love, is everywhere ?"

You will hear at night, if ye listen well,
Music in heaven ringing,
And amid the stars a melody,
As of angel-voices singing ;
For the spirits who in the sphere of light
Have made their happy dwelling,
To each other across the depths of space
Their tales of love are telling !

The sunbeams leave their glowing throne,
And whisper love to the flowers ;
The birds outpour it in their strains
As they sit in their rose-crowned bowers.
When the breeze swells mournfully
Through the boughs of a swaying tree
I ever hear a voice declare
That " Love, sweet Love is everywhere,"

In the gleeful laugh of the dancing spray,
From some skyward leaping fountain ;
Or the ceaseless roar of a white cascade,
In its giant bound from the mountain—
There falleth on mine ear
This song so sweet and clear ;
" Ah, why should man e'er feel despair,
Since ,Love, sweet Love, is everywhere ?

PRESERVATION OF ANIMAL AND VEGETABLE SUBSTANCES.

A Patent has lately been taken out for effecting this object. The improvement consists in coating animal and vegetable substances with a compound formed of vegetable albumen and a suitable antiseptic material. The coating is effected by immersing the substances to be preserved in the prepared compound two or three times, each coating being dried or set in a current of air before the next is applied. The object of combining an antiseptic agent with the vegetable albumen is to prevent a partial decomposition of the substances occurring before the protective coating is properly hardened. The following means may be adopted for carrying the invention into effect :—Supposing a joint of meat to be

the substance to be preserved, the meat (with as much of its blood extracted as possible) is first washed or immersed in water impregnated with *acetate of alumina* and allowed to drain, it is then suspended by a string, and allowed to descend into a bath composed by placing about 1lb. *Gum Adragauthe* (or Gum Dragon) in from one and a half to two gallons of heated water for about twenty four hours, strainning the solution, then mixing with it in a warm solution of about six ounces of *Gelatine* or *Paste*, and finally adding about ten ounces of *acetate of alumina*, mixing and straining. The meat is kept in this bath for about two minutes, being drawn and moved about in it by a striug, it is then taken out and suspended in a current of dry air for about twenty four hours. The process of immersion, &c., is then repeated once or twice, as may be considered desirable.

APPLE-PIE.—Every one knows how to make a common apple pie or pudding. But in case there may be a few among my emigrant friends, who have been unused even to this simple process in cooking, I will say: peel and core your apples; good acid cooking-apples are better than sweet ones, drop them into a pan of clean water as you pare them; in the pie-dish place a teacup, turned bottom upwards; put in a large table-spoonful of sugar, and two or three cloves, or a bit of lemon peel, if you have these things at hand; fill your dish with the cored apples; a very small quantity of water—a large table-spoonful will suffice; add two or three more cloves, and more sugar; cover with your paste. rolled thin; finely crimp the edge, and scallop with your finger and the edge of the knife. A few delicate leaves, cut and marked to resemble apple leaves, placed in the centre, give a pretty look to the dish; but this is a mere matter of taste. If you have any cause to think that the fruit is not quite soft, when the crust is baked, set the dish on the top of one of your stove griddles and let it simmer a while. Some persons stew the apples first, season and put then into the dish, and when cool, cover and bake; but I think the apples never taste so well as when baked in the old way.

The reason for inserting a cup in the pie is this: the jutice and sugar draws under the cup, and is thus kept from boiling out: paring the apples into the dish of water preserves them from turning brown or black, and the moisture they imbibe renders no other water necessary. or very little. The Canadians season their pies with nutmeg and allspice, making them sickly tasted; they stew the apples till they are an insipid pulp, and sweeten them till the fine acid is destroyed. A good, juicy, fine-flavoured apple-pie is a rare dish to meet with in hotels and among the old Canadian and Yankee settlers.

DRIED APPLES.—The drying of apples is a great business in the houses of the Canadian farmers, where they have orchards, or live near those who have large orchards, who will sell the inferior fruit very cheap, as low as 7½d. a bushel, if you gather them yourself. Those who revel in an abundance of this useful fruit, often call their young friends together to an Apple-paring „ Bee". Bushels and bushels of apples are pared, cored and strung on Dutch thread, by the young men and maidens, and the walls of the kitchen festooned round with the apples, where they hang till dry and shrivelled. They should be dipped into boiling water as they are hung up; this preserves the colour. Some expose them to the action of the sun and wind, on the walls of the house, or spread them on clean boards or trays; when thoroughly dry, they are stored in bags, and hung in a dry place, out of the dust. These dried apples find ready sale at 1s. 6d. per lb., and even higher, if the season be far advanced, and apples scarce. When required for use, they are steeped for some time in hot water. Stewed till tender, with a seasoning

of cloves, these apples from a delightful preserve, and rarely need any sugar; but if too sour, a small quantity is easily added.—Some add molasses. Tarts, pies and many pleasant dishes are made with these dried apples: a delicious fever drink is made by pouring off the liquor after the apples have boiled a few minutes. By this simple process of drying, you may have apples to make use of all the year round, long after the fruit has decayed, and lost its flavour, in the apple chamber. In Engand this process of drying apples might be adopted to advantage.

PRESERVED APPLES.—Take equal quantities of good brown sugar and of good boiling apples; i. e. a pound to a pound; cut the apples up fine, put on your skillet, and to every three pounds of sugar allow a pint of water; scum the syrup as it boils up, add the apples, with a little essence of lemon, or lemon peel: a few cloves, or a bit of ginger: boil till the apples are tender and look clear.

The small American crabs will be excellent done the same way.—For common everyday use, half the quantity of sugar will do.

APPLE JELLIES.—Allow a pound of crushed sugar (this is an inferior sort of loaf sugar, which sells at 7½d. a pound) to a pound of chopped apples, boil the sugar to a syrup, with a few cloves and a stick of cinnamon; throw in the apples, and boil till the fruit is dissolved. If you wish to have it coloured, add in, while boiling, a slice or two of blood beet; this will give a beatiful rich tint to the jelly; or a little saffron steeped in a cup of boiling water, which will tinge it a deep yellow; strain the jelley through a course sieve of net or fine canvas.—When potted, cut paper dipped in spirits, and lay on the top, the size of the inner rim of the jar: have a larger round cut, so as to cover the outer rim; press the edges close to the jar; to do this well, snip the edge with the scissors, which will make it form to the shape of the jar.

Preserves thus secured from the air, do not mould as in the ordinary mode of tying them up, and the trouble is not more than tying with string.

APPLES IN SYRUP.—Make a thin syrup with sugar and water, season with spice or lemon peel; pare some small-sized apples, whole, and let them boil till tender, but do not let them break if you can help it. Set the apples and syrup by in a deep dish till cold. This makes a cheap dish to eat with bread at tea. It is easily prepared, and is very agreeable, besides being very wholesome.

APPLE BUTTER, OR APPLE SAUCE.—This is often made in the houses of settlers where there is an abundance of apples, on a large scale; several bushels of pared apples being boiled down, either in cider or with water, for several hours, till the whole mass is throuroughly incorporated. Great care is needful to keep it stirred, so as to prevent burning. There are several ways of making this apple butter; some make it with cider, others without, some use sugar, others do not; and some boil sliced pumpkin with the apples, if the latter are very acid. It is a standing dish in most American houses, and is very convenient.

ANOTHER METHOD.—Take three pails of cider, and boil down into one; have ready a quantity of sweet apples pared, and quartered, with the peel of one or two lemons; throw tbe apples into the cider, and as they boil down, add more, till your cider will boil down no more; keep the apples stirred well from the bottom of your skillet, to prevent burning: it will take some time to boil down quite smooth, say three or four hours: when done put it into a clean wooden or stone vessel, and keep covered in a dry place.

You may take out some of this pulp and spread on dishes or tins, and dry in the sun or before the fire, and pack away ; it makes a nice dry sweetmeat, or, steeped and boiled up, a delicious wet preserve. The Canadians who have large orchards, make as much as a barrel of this apple sauce for daily use.

CANADIAN PARTRIDGES.—These birds, which are of two different varieties, the spruce partridge, and the ruffed grouse, are more like the pheasant than the English partridge—the meat being white instead of brown ; but they have not the high gamy flavour of either the partridge or pheasant. They are, when in season, very good eating ; but about the end of winter, the flesh becomes dry and bitter. This arises from the nature of their food, which in the thick woods, consists chiefly of the resinous buds of the spruce, the bark and buds of the birch, and some berries, which they find beneath the snow ; with various mosses and lichens, which give an astrigent taste to the flesh. At all other seasons they are very good and fleshy, and are excellent roasted and stuffed with fine bread crumbs, pepper, salt, a little butter, and sweet herbs. They require much basting, as they have no fat in themselves. Half an hour, with a good fire, will cook a partridge. To stew them cut them up, dust with a little flour, pepper, salt, and stew gently with a small quantity of water ; thicken with a little cream, flour, and a little nutmeg, grated ; served with toasted bread cut as sippets, at the edge of the dish.

PARSNEP SWEETMEATS.—The following contribution for the *Agriculturist*, by Miss Sarah M. Taylor, of Saratoga County, N. Y., may be useful for those who use preserved sweet-meats—we eschew them altogether since we have learned the art of keeping fruit fresh. The recipe is perhaps more appropriate to Spring. Miss T.; gives the following direction : "Take the largest part of the parsnep : and if wilted soak in water until swelled out plump. Cut across into round pieces an inch thick ; scrape the skin off and weigh. Put them into a brass kettle, cover with hot water, laying a plate over to keep them down. Boil until a broom splint will go through the pieces, and lift them out separately with a fork laying on plates to cool and toughen. For each pound of fruit use $\frac{3}{4}$ lb. of white sugar dissloving it in the water in which the parsneps were cooked and boil, removing the scum. Add the fruit, covered with a plate as before, and boil until the whole looks clear. Then take the pieces out upon plates and boil down the syrup until it becomes ropy and cool it in an earthen or tin vessel. For each pound of the parsneps take one lemon, grate the outer yellow peel, rejecting the inside rind which is bitter, and also pick out the seeds from the pulp which is to be used whole. Put the syrup, pieces of parsnep, grated lemon peel and pulp all into earthen pots, adding a stick or two of cinnamon bark, and a tablespoonful of cloves and of ground cinnamon for each pound."

ELDERBERRY WINE.— S. M. Luther, of Portage Co., O., gives us the following recipe, which he uses, and he states that the wine he now has, which was made three years ago, is pronounced by competent judges quite superior, in point of flavor, to the domestic wine in use. He directs ; Mash and press the fully ripe berries, and to one quart of the juice add 3 qts. of water and 4 lbs. of sugar. After the sugar is dissolved, strain and add two table spoonfuls of yeast to each gallon of the liquid, allowing it to stand in an open vessel from ten to fifteen days, according as the weather is cool or warm, when it should be carefully drawn off and bottled for use. Keep it in a cold place.

REMARKS—We would use a much less quantity of water with equal juice, and add $3\frac{1}{2}$ lbs. of sugar with—say $\frac{1}{4}$ oz. of cloves and $\frac{1}{4}$ oz. ginger root to a gallon of the liquid.

A Cockroach Trap.—Cockroaches are not very troublesome in inland towns, we beleive, but along the sea-board they are a decided nuisance. A hundred plans have been proposed for getting rid of them, but they abound as much as ever.

A trap was invented by I. J. Clough, of this city. Our own dwelling being comparatively new, is fortunately free from these pests, so far, and we handed the trap to an associate who reports that it operates finely until the cockroaches "pile in so thickly as to raise a mound for the next comers to crawl out on." The trap is simply a tin box. The inclined ends are roughed with a firm coating of sand to make the ascent easy. A little molasses is put into the shallow cup within, and the insects in attempting to get at it slide down the beveled opening, and are unable to crawl out, if the inside upper surface be kept bright and clean. The dotted circle on the right is a moveable punctured cover, which serves the double purpose of an opening to clean out the trap, and to attract the insects by giving them a sight of the molasses and what is going on within.

Beef.—Beef needs to be well packed in the barrel, and a good deal of salt strewn at the bottom. Strew a handful of salt between each layer of meat, and then make a brine that will float a middle-sized potato. To this add a quarter of a pound of saltpetre, which always improves the colour of pickled meat, and four pounds of coarse sugar. Boil your brine; scum it, and when cold, pour over your beef; it should be quite covered, and a lid put on the barrel. Unless you need beef for immediate use, say a week or ten days, no salt need be rubbed on. If you want dried beef, remove a joint—the half leg is best—from the pickle, after a month's time, and hang it up to dry,—or season a leg with the same pickle as you use for hams, adding 2oz. of allspice, ½oz. of cloves, and 2oz. of black pepper to your pickle. Let it be turned and basted daily for six weeks, then hang it to dry and smoke. This is usually shaved, and eaten with no other cooking than what the drying process gives.

MONTHLY METEOROLOGICAL REPORT FOR AUGUST, 1858.

From observations taken at St. Martin, Ile Jesus, C. E., Latitude 45 degrees 32 minutes, Longitudd, 73 degtees, 36 minutes West, Height over the level of the sea 118 feet.

BY CHS. SMALLWOOD, M. D. L. L. D.

BAROMETER.

	F	inches
Mean reading of the barometer corrected and reduced to	32°	29.771
Highest reading of the barometer	30°	002
Lowest reading of the barometer	29°	342
Monthly range	0	660

THERMOMETER.

Mean reading of the standard thermometer	62°	21
Hightest reading of the maximum do	97°	4
Lowest reading of the minimum do	44°	4
Monthly Range	53°	0
Mean of humidity	0°	756

Greatest intensity of the suns rays	108°	4
Lowest point of terrestrial radiation	48°	2
Amount of evaporation in inches	3	69
Rain fell on 13 days amounting to 8.656 inches it was raining 49 hours 51 minutes, accompanied by Thunder on 4 days.		
Most prevalent wind S. E.		
Least prevalent wind N.		
Most windy day the 5th, mean miles per hour	12	74
Least do do the 23 day do	0	00
Ozone was present in moderate quantity		
Aurora borealis visible on 1 night		

MONTREAL RETAIL MARKETS.

TUESDAY, November 30th, 1858.

	BONSECOURS.						ST. ANN'S.					
	s.	d.		s.	d.		s.	d.		s.	d.	
FLOUR.												
Country Flour, per quintal	14	0	a	15	0		0	0	a	0	0	
Oatmeal, per quintal	11	6	a	12	0		0	0	a	0	0	
Indian Meal, per quintal	0	0	a	0	0		0	0	a	0	0	
GRAIN.												
Wheat, per minot	0	0	a	0	0		0	0	a	0	0	
Oats, per minot	2	2	a	2	3		2	3	a	2	6	
Barley, per minot	3	9	a	4	0		0	0	a	0	0	
Pease, per minot	5	0	a	5	3		0	0	a	0	0	
Buckwheat, per minot	3	6	a	3	9		0	0	a	0	0	
Indian Corn, yellow	4	0	a	4	6		0	0	a	0	0	
Rye, per minot	0	0	a	0	0		0	0	a	0	0	
Flax Seed, per minot	0	0	a	0	0		0	0	a	0	0	
Timothy, per minot	0	0	a	0	0		0	0	a	0	0	
FOWLS AND GAME.												
Turkeys, (old) per couple	7	0	a	7	6		10	0	a	12	0	
Turkeys, (young) per couple	4	0	a	5	0		6	0	a	8	0	
Geese, (young) per couple	4	0	a	4	6		3	6	a	4	6	
Ducks, per couple	1	8	a	3	0		2	6	a	3	0	
Ducks, (wild) per couple	0	0	a	0	0		0	0	a	2	6	
Fowls, per couple	2	0	a	2	6		2	0	a	3	0	
Chickens, per couple	1	3	a	1	8		1	3	a	1	6	
Pigeons, (tame) per couple	1	3	a	1	6		0	0	a	0	0	
Pigeons, (wild) per dozen	3	6	a	4	0		3	6	a	4	0	
Partridges, per couple	0	0	a	0	0		0	0	a	0	0	
Woodcock, per brace	0	0	a	0	0		0	0	a	0	0	
Hares, per couple	0	0	a	0	0		0	0	a	0	0	
MEATS.												
Beef, per lb	0	4	a	0	9		0	4	a	0	8	
Pork, per lb	0	5½	a	0	6		0	6	a	0	6½	
Mutton, per quarter	6	0	a	12	0		7	0	a	12	0	
Lamb, per quarter	2	6	a	4	0		2	0	a	3	9	
Veal, per quarter	5	0	a	15	0		5	0	a	15	0	
Beef, per 100 lbs	30	0	a	45	0		30	0	a	40	0	
Pork, (fresh) per 100 lbs	30	0	a	35	0		27	6	a	30	0	
DAIRY PRODUCE.												
Butter, (fresh) per lb	0	11	a	1	0		0	11	a	1	0	
Butter, (salt) per lb	0	7½	a	0	8		0	8	a	0	9	
Cheese, per lb, skim milk	0	0	a	0	0		0	0	a	0	0	
Cheese, per lb, sweet do	0	0	a	0	0		0	0	a	0	0	
VEGETABLES.												
Beans, (American,) per minot	0	0	a	0	0		0	0	a	0	0	
Beans, (Canadian) per minot	7	6	a	8	0		0	0	a	0	0	
Potatoes, (new) per bag	3	0	a	3	9		4	0	a	5	0	
Turnips, per bag	3	0	a	4	0		0	0	a	0	0	
Onions, per bushel	0	0	a	0	0		0	0	a	0	0	
SUGAR AND HONEY.												
Sugar, Maple, per lb, (new)	0	4½	a	0	5		0	4	a	0	4½	
Honey, per lb	0	7½	a	0	0		0	7½	a	0	8	
MISCELLANEOUS.												
Lard, per lb	0	8	a	0	9		0	8	a	0	9	
Eggs, per dozen	0	11	a	1	0		0	8	a	0	9	
Halibut, per lb	0	0	a	0	0		0	0	a	0	0	
Haddock, per lb	0	4	a	0	0		0	0	a	0	0	
Apples, per barrel	10	0	a	20	0		15	0	a	20	0	
Oranges, per box	0	0	a	0	0		0	0	a	0	0	
Hides, per 100 lbs	0	0	a	0	0		0	0	a	0	0	
Tallow, per lb	0	4½	a	0	5		0	0	a	0	0	
BREAD.												
Brown Loaf	0	11	a	0	0		0	9	a	1	0	
White Loaf	0	0	a	0	0		0	9	a	0	0	