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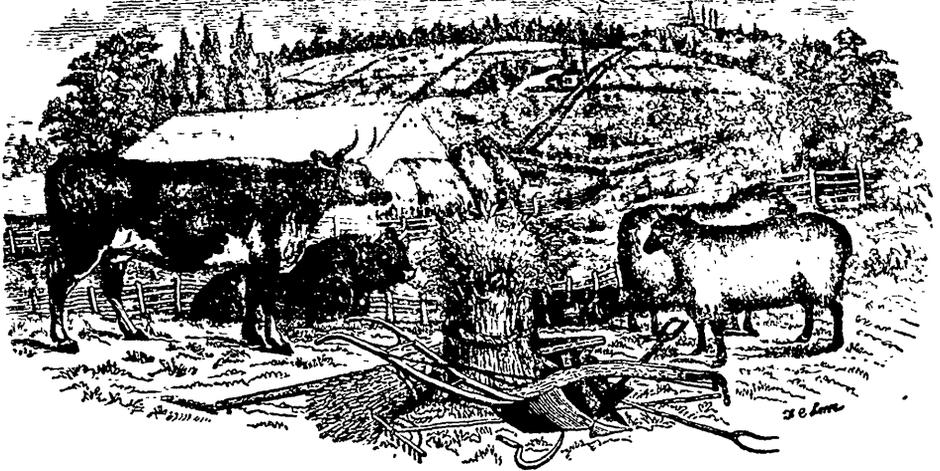
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# CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. v. 9.

GEORGE BUCKLAND, }  
WILLIAM McDOUGALL, }

{ EDITOR,  
{ ASSISTANT EDITOR.

VOL. II.

TORONTO, MARCH, 1850.

No. 3.

## The Canadian Agriculturist,

Published Monthly, at Toronto, C. W.

TERMS.

ONE DOLLAR A-YEAR, IN ADVANCE.

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To Clubs and Societies,

Twenty-five copies and upwards... half-a-dollar each.

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Bound Volumes, for 1849, will be supplied for 5s., delivered at our office.

All remittances should be forwarded to WILLIAM McDOUGALL, Proprietor, Toronto.

Letters are expected to be post-paid.

### INDIAN CORN—ITS PECULIARITIES.

There have been observed some singular anomalies, in the hybridization or mixing of different varieties of corn, that are difficult to explain.

A field of yellow corn, planted in the neighbourhood of a white variety, which flowers at the same period, at the distance of half a mile, or even more, will, when ripe, exhibit the mixture in a greater or less degree, according to proximity; and these grains are not half bloods, but apparently entire yellows and entire whites. This change is performed by winds alone, as the bee and other insects do not meddle with the silk, which is the pistil or female organ—for this plant is *monocious*, having its male and female organs in distinct and separate flowers, and not in the same receptacle. This fact can

be easily demonstrated, by clipping a part of the silk, or covering it with a piece of fine cloth; every fibre destroyed, or covered, will produce a failure of kernel or grain on the cob.

One of the unexplained circumstances adverted to, is the fact, that an ear of corn, having white kernels mixed with the yellow, when planted promiscuously, the apparently perfect white kernel, does not produce a white ear, nor a hybrid between the two, but yellow corn—generally a little mixed, the white in no case predominating. The same singularity occurs in mixing the Tuscarora and sweet corn, and the red, (or kissing ears of old times), that occasionally occur, do not produce, on planting, the kind from which it was derived.

An other singularity in its tendency to change, is the fact, that any variety of our climate, on being removed to Southern Ohio, Indiana, or more southern States, changes its character and form of kernel—enlongates and shrinks at the crown, and *denis*—runs into an increase of rows, from eight to twenty-four.

A Mexican variety, in which every kernel is husked, like a common ear of corn, on being grown in this climate, will the first year produce ears one half or more entirely naked; and, on the second or third planting, be changed into a common eight rowed variety, not distinguishable from some of the kinds in common use. There is a slow change and mixture of varieties and colors, we are aware, affected in time; yet the small eight rowed, and the large eight rowed—the Dutton twelve rowed—are still to be found, intact, and pure, which would hardly be expected, where adjoining farms grow often very different varieties. According to the well established doctrine, that all species cross and mix, all strong and peculiarly marked varieties ought to run into one common character, the joint blood of all the races.—*Rural New-Yorker*.

## AGRICULTURAL SOCIETIES.

## PROPOSED AMENDMENT OF STATUTE.—BOARD OF AGRICULTURE.—EDUCATION, &amp;c.

We deem it our duty to invite the earnest attention of our readers to that portion of the proceedings of the Provincial Association, inserted in another place, authorizing the formation of a Committee, for the important purposes of drafting new bills for the government of the Association, and the other Agricultural Societies in the province; and also to address the legislature on the propriety of establishing a Board of Agriculture, and an Agricultural Chair in the University of Toronto, in connection with an illustrative or experimental farm. The propositions originated, we believe, with the honourable Adam Fergusson, than whom no one is better qualified, from his long experience and social position, for aiding their practical realisation, and this meeting responded to them, with the most perfect cordiality. Differences of opinion there may be relative to details in the carrying out of these important objects; but upon the great and vital question itself, that the time has fully arrived in this country when patriotism and intelligence should enter into an indissoluble combination for the noble object of stimulating Canadian enterprise and industry, and of developing our immense agricultural resources, there can, we think, be but one opinion among those capable of comprehending the subject. That something must speedily be done in the direction indicated by the resolution referred to, cannot for a moment be doubted; unless the people of this country will remain content in a *stationary* position, engrossed with their own petty and most injurious party jealousies, while the rest of the world is rapidly marching onwards. The people of the United States have been, for a considerable time, awaking to a consciousness of the paramount claims of agriculture, and they are now giving palpable evidence of the sincerity and depth of their convictions, in disseminating agricultural knowledge, and in aiding discovery by original investigations, by the establishing of experimental farms, and endowing agricultural chairs and lectureships, in many of their public seats of learning. The same has been done in the British Isles, and in most of the countries of Europe, where agriculture is esteemed of national importance. And in these days of unrestricted competition, that people who neglect the duty of instructing the masses in the principles of the arts they practice, must necessarily be left behind in the race of competition. The united province of Canada, and we may add the whole of British America, possesses many great advantages; nature has dispensed her bounties on many large areas of this portion of the earth's surface with no niggard hand. The genial climate and extensive virgin soils of the Upper Province, equal in natural fertility to the richest lands of the mother country; the wide spread water power and manufacturing capabilities of every considerable section of these extensive regions, and withal our unrivalled lake and river navigation to the Atlantic, that mighty ocean which bears on its bosom by far the largest portion of the world's commerce; with

all these immense natural advantages does it not become our sacred duty to improve and apply them under the guidance of intelligence and public spirit; and to cultivate among ourselves a generous, confiding and conciliatory disposition? The great improvements which have already been made under many disadvantages, in some sections of the country—quite equal, we believe, to what have been accomplished, under similar circumstances, in the United States—indicate, most unmistakably, the untold blessings which are in store for Canada, whenever an enlightened, united and vigorous national feeling shall have supplanted the distrust and jealousy engendered by the antipathies of races, party strife and clamour. In the working out of an improved and better state of things, we regard the diffusion of sound knowledge, in its widest acceptation, as an essential preliminary condition; and, therefore, every effort that is put forth for raising the moral and intellectual standard of the producing masses of the people, has a strong claim for support upon every good citizen.

We have almost unconsciously been led into these remarks, under the impression with which we commenced, of the desirableness of introducing agricultural instruction both into our colleges and schools; and we have no doubt that the Directors of the Provincial Association will be sustained in their efforts to accomplish this purpose, by the intelligent and high-feeling portion of the people. The Chief Superintendent of Schools, and the Board of Education for this section of the Province, have already shown that they are not insensible to the claims of agriculture to occupy a place in the general routine of education.

We ought, perhaps, to say that in the Board of Agriculture, which it is proposed to establish, it is not intended to render the members thereof any pecuniary remuneration for their services by the Government. The main duties of such a board will be to collect and disseminate information, and generally to watch over the agricultural interest of the country; similar to what is done by a chamber of commerce, or board of trade, for commercial objects. We think the two might, in this country, be of mutual service to each other; and very frequently render useful aid to the government.

In reference to the proposed new statutes, for the government of the Provincial Association and Agricultural Societies, the Committee will be happy to receive the opinions or suggestions of parties interested in the subject. The attention of the officers of Agricultural Societies is particularly requested to the matter, and it is hoped that they will put themselves, without further notice, in communication with the Secretary of the Association, without delay, in order that the committee, before drafting the bills, may have the advantage of the advice and be made acquainted with the wishes and opinions, of competent parties interested in the subject, residing in different sections of the Province. As the Provincial Association will offer a larger sum of money for premiums this year than heretofore, it is hoped that the Agricultural Societies of the Province will, as heretofore, render a liberal support.

MEETING OF THE AGRICULTURAL ASSOCIATION OF UPPER CANADA.

The annual meeting of this Society was held in the Court-House, in this city, on Wednesday and Thursday, the 20th and 21st ultimo. After the disposal of some preliminary business, during which E. W. Thomson, Esq., occupied the chair, Thomas Clark Street, Esq., Second Vice-President, presided through the remainder of the day, and also the day following. Mr. Street evinced the greatest interest in the proceedings, and his active services will prove a great acquisition to the Society. The attendance on the first day was more numerous than usual, but the time of holding the meeting, however convenient in other respects, is not suited to persons residing at a distance. This matter was talked over, and it is probable the difficulty may hereafter be removed.

The absence of the President, John Wetenhall, Esq., M.P.P., who was unable to carry out his arrangements for attending this meeting, elicited an expression of general regret; particularly as he was known to have devoted much attention to some important matters relative to an improved system of managing the business and exhibitions of the Society. We also missed the presence of the Hon. Adam Fergusson, without whom no considerable agricultural meeting, affecting the interests of Canada, seems to be complete. Our readers will regret to hear that Mr. Fergusson's absence was occasioned by a recent attack of serious illness. We are happy, however, in being able to state that the hon. gentleman is now making satisfactory progress towards convalescence.

The President's bye-law, and that of J. B. Marks, Esquire, both of which appeared in this journal for October and December, 1849, were fully discussed. The reader will find the result in the by-law which we subjoin, and which is substantially that of Mr. Wetenhall's with a few additions and modifications principally from Mr. Marks's. It is to be hoped that these amendments will prove in their practical operation, to promote the efficiency of the Society's operations, and secure, beyond what has hitherto been realized, a uniform system of management.

A letter was read from J. B. Marks, Esquire, Chairman of the Executive Committee at Kingston, stating that in consequence of not having received the Government grant for the Midland District, the Committee was not able to close their accounts, and forward their report, as they had hoped to do before the annual meeting. We are glad, however, to learn that there is a prospect of a balance remaining in hand after all demands are paid, a circumstance as encouraging to the friends of the Association, as it is creditable to the management of the Executive Committee. And as we learn that the Government grant has now been paid, the Committee will soon be able to bring their labours to a close.

The Finance Committee presented their report, which will be found below. It will be observed, that by the liberal aid of Government, the Association, will shortly be placed in a condition free from debt.

It will be seen from the resolutions inserted be-

low, that the next exhibition will be held at the Town of Niagara; the inhabitants have promised £300 towards the local expenses. It was anticipated by some, and we confess ourselves to have been among the number, that the Falls would have been the favoured spot; but it was considered by a decided majority of the meeting that, taking all things into consideration, the ancient Town of Niagara offered the most convenient and accessible site. Visitors after seeing the exhibition may very readily proceed to the Falls, and witness one of the greatest natural phenomena in the world. The local Committee at Niagara, will doubtless make the best possible arrangements for the cheap and easy transit of stock and articles for exhibition, as well as for the accommodation of visitors.

The prize-list will appear in the *Agriculturist*, the beginning of April. Additional prizes will be given to Durham and Grade Cattle, also three premiums for heavy dray horses, as a distinct class. We deem it inexpedient to lose a moment in announcing a number of premiums offered in reference to the great Industrial Exhibition of all nations, to be held in England in 1851, under the patronage of Her Gracious Majesty and the Prince Consort.

For the best set of Drawing-room Furniture made of black walnut, diploma and £15; second best £10. The same for a set made of curled maple. Best specimen of Broadcloth, diploma and £5; 2nd. £3. Blankets the same. Tweed Cloth, diploma and £3; second £2. The above articles to be sent by the exhibitors to the show in England. For the best barrel of Flour £3; second £2. Second best 25 bushels of Wheat in Canada Company's Class £12 10s. The first prize being £25, given as usual by the Canada Company.—The Chief Commissioner has consented to allow the wheat obtaining this prize to be sent to England. Best Cheese £4; second £3; third £2.—The same for Butter, neatly packed in firkins, of not less than 56lbs. each. The four latter articles to remain the property of the Association, and to be sent home at the Society's expence.

It is most ardently to be desired that a vigorous and united effort be made at once, towards securing a full representation of the characteristic productions of this extensive colony, in the metropolis of the empire. Here will be a splendid opportunity for promoting the great interests of our country, in bringing under the notice of people from every civilized region of the world, her choicest productions both of nature and art—of showing loyalty to our beloved Sovereign and filial affection for our Fatherland; and of recognizing in the bonds of a common brotherhood the wide spread family of man.

BY-LAWS.

At a meeting of the Agricultural Association of Upper Canada held at Toronto, the 20th day of February, A.D. 1850, pursuant to notice, as directed by the Act of Incorporation, the following By-Laws were passed and ordered to be appended to, and form part of, the Constitution of the said Association:

1. The Board of Directors (the presence of at least

three being necessary to constitute such Board) or a committee thereof, shall meet daily during the exhibition and shall transact all the business connected therewith, which shall not have been previously entrusted to others, and all questions of importance which shall arise during the exhibition shall be submitted to the said Board, whose decision shall be final.

2. The ex-Presidents of the Association shall be ex-officio members of the Board of Directors.

3. The Secretary shall, if necessary, make frequent visits previous to the show, to the place selected, and if required shall remain there two or three weeks before the exhibition takes place.

4. The Secretary shall be a member of the local committee as well as of every sub-committee thereof.

5. The Secretary shall (subject to approval by the Board of Directors) prepare the necessary account books, superintend the entering of articles for exhibition, the preparation of the judges' books, and the pay lists, the issuing of badges and tickets of entrance into the show grounds, and all other matters connected with the management of the show, which are not of a local character.

6. The Secretary shall have charge of all account books and other documents relating to, and being the property of the society.

7. The Secretary shall (subject to approval, as aforesaid) engage the services of competent persons to act under him as heads of departments: one to take charge of the ticket office, another of the office for general entries, &c.; and in making his selections, the Secretary shall have in view the probability of obtaining the services of the same parties at future shows, in order to establish as far as practicable a uniform system of management.

8. The Board of Directors shall appoint an acting Treasurer, who shall attend at the show-ground during the exhibition, and for as many days before and after that time as the Board of Directors or committee thereof may require.

9. The said acting Treasurer shall give such security for the due performance of his duties, and shall receive such remuneration as shall be respectively decided upon by the Board of Directors.

10. It shall be the duty of the acting Treasurer to take charge of all monies collected by the society previously to the day of exhibition (excepting such monies as are collected by the local committee for local purposes,) to take charge of monies collected at the gates of the show-ground as well as of monies paid for badges, subscriptions of members, tickets for stock, &c.

11. The acting Treasurer shall pay the premiums at the time appointed by the Board of Directors, and shall pay such premiums in accordance with the pay lists, to be furnished him by the Secretary.

12. The acting Treasurer shall, as early a day as practicable after the exhibition, make out a full and fair statement of all monies received and disbursed by him (audited as the Board shall direct) and shall deliver the same to the Secretary of the association, and shall deposit the balance of monies received, if any, in the Bank of Upper Canada, to the credit of the association, which money, together with all other monies deposited in the said bank to the credit of the association, shall be subject to the order of the President of the association, countersigned by the Secretary thereof.

13. For the purpose of assisting the Directors in making the necessary arrangements before and during the exhibition, a local committee shall be appointed, to consist of not more than five and not less than three, which committee shall be appointed by the Board of Directors at the February meeting, unless previously elected at the general meeting: and that the said local committee shall have power to add to their numbers, provided that

the whole number of the said committee shall not exceed fifteen.

14. The President and Vice Presidents for the year, as well as the ex-Presidents, shall be ex-officio members of the local committee, in addition to those appointed by authority of the preceding clause.

15. The local committee shall have power to appoint sub-committees to superintend the several arrangements devolving on them.

16. The local committee shall appoint a local Secretary and a local Treasurer, and shall require from the said Treasurer suitable securities for the due performance of his duties.

17. The local committee and its officers and agents shall have power to collect subscriptions and receive donations, for the purpose of paying the local expenses, and shall pay all monies so collected to the local Treasurer.

18. The local committee shall select the ground for the exhibition, and contract for the fencing in of the same, as well as for the erection of the necessary buildings, booths and pens, and provide provender for stock, and make such other arrangements as may be necessary for the safe keeping of all articles exhibited.

19. The local committee shall make arrangements with steam-boat proprietors and rail-road directors, in order to facilitate access to the exhibition: and shall make similar arrangements with hotel keepers and other individuals, so as to have good accommodations provided for visitors.

20. The members of the Agricultural Societies of the several townships within the county or united counties, wherein the annual exhibition may be held, and the members of the Society of the said county or united counties, shall be also members of the association for that year, and have badges accordingly; provided the Agricultural Societies of the said townships, or the Society of the said county or united counties shall devote their whole funds for the year, including the government grant, in aid of the association; and that the office-bearers of the societies of other townships in other counties, and the office-bearers of the societies of such counties as shall have made donations or shall have contributed towards the Provincial Show (in the case of townships not less than £10, and in the case of counties not less than £25,) for that year, shall also be furnished with badges of membership and shall have free entry into the grounds of the exhibition.

21. No member of the Board of Directors, or of the local Committee, shall be concerned in any contract or work of profit, directly or indirectly, as surety or otherwise, ordered to be performed for the use of the association.

22. The words "From among themselves" in the first line of the 5th clause of the printed constitution, appended to the Act of Incorporation, shall be struck out of the said clause.

23. Any Mechanics' Institute or other scientific society, contributing to the funds of the association an amount equal to that of a County Agricultural Society, shall be entitled to all the privileges of such county society with respect to office-bearers.

THOMAS C. STREET, *Chairman,*  
2nd. *Vice-President.*  
GEO. BUCKLAND,  
*Secretary of Association.*

#### RESOLUTIONS.

Moved by Mr. Sheriff Ruttan, seconded by E. W. Thomson, Esq.,—That the thanks of this meeting be given to the president, John Wettenhall, Esq., and to John B. Marks, Esq., for the drafts of by-laws which they submitted to the Society.

Moved by J. Ketcheson, Esq., seconded by James Boulton, Esq.—That the thanks of this meeting be given to the mayor, corporation and citizens of Kingston, and to the various societies and individuals, that made grants of money in aid of the funds of this Association, for their valuable support.

Moved by G. D. Wells, Esq., seconded by James FitzGerald, Esq.—That the thanks of this meeting be given to the Ladies' Committee at Kingston, for the handsome and efficient manner in which they sustained their department of the Exhibition.

Moved by Mr. Sheriff Ruttan, seconded by F. W. Thomson, Esq.—That the thanks of this meeting be given to Mr. Sheriff Treadwell and the gentlemen who so readily acceded to his request, for the valuable report on the agriculture of the Ottawa District, with which they favoured the Association.

Moved by R. L. Denison, Esq., seconded by W. McDougall, Esq.—That Professor Johnston, of the University of Durham, be admitted an honorary member of the Agricultural Society of Upper Canada; and that the warmest thanks of this meeting be given to that gentleman for his kindness in coming among us at the late Exhibition in Kingston, and for the very interesting and instructive address which he delivered on that occasion.

Moved by E. W. Thomson, Esq., and seconded by Mr. Sheriff Ruttan,—That the services of our Secretary, Mr. Buckland, for upwards of two years, entitle him to the thanks of the Association, and that the Treasurer be hereby authorised to place to the credit of Mr. Buckland, the sum of £50, so soon as that amount is in his hands.

Moved by G. Dupont Wells, Esq., seconded by Mr. Sheriff Ruttan,—That the President, John Wetenhall, Esq., M.P.P., Hon. Adam Ferguson, E. W. Thomson, William McDougall, G. D. Wells, and George Buckland, Esquires, be a Committee to draft an amended Bill for the Provincial Association; also an amended Bill for the Regulation of Agricultural Societies; and to prepare an address to both branches of the Legislature on the importance of establishing a Chair of Agriculture in the University of Toronto;—a Board of Agriculture and an illustrative or experimental farm;—the said drafts and address to be submitted to the Directors at their first adjourned meeting.

Moved by John Cade, Esq., and seconded by Matthew Jones, Esq.—That the secretary be authorised to purchase the necessary books for keeping the accounts and entering in a regular manner the proceedings of the Society.

Moved by Franklin Jakes, Esq., seconded by E. W. Thomson, Esq.—That Matthew Jones, John Cade and George Buckland, Esqs., be a sub-committee for the purpose of revising the premium list, and reporting to the meeting to-morrow morning at 10 o'clock.

Moved by E. W. Thomson, Esq., seconded by G. D. Wells, Esq.—That the report of the committee on the prize list be adopted, with the exception of the classes Q and R, and that a committee, consisting of Rev. Dr. McCaul, Mr. Justice Draper, The Vice Chancellor and George Dupont Wells, Esq., be appointed for revising these two classes, and that they be requested to report to the secretary within ten days; their decision to be final, provided the usual aggregate amount heretofore awarded to these classes be not exceeded.

Moved by E. W. Thomson, Esq., seconded by Matthew Jones, Esq.—That the proprietor of the *Agriculturist* be requested to publish the prize list in the April number of that journal; and that he be authorised to print 2000 copies in pamphlet form, at the expense of the Association, for distribution among the county and township societies.

Moved by G. D. Wells, Esq., seconded by Matthew Jones, Esq.—That Mr. James Fleming, Yonge Street,

Toronto, be appointed seedsman to the Agricultural Association of Upper Canada.

Moved by Wm. McDougall, Esq., and seconded by the Hon. Captain Irving,—That E. W. Thomson, Esq., be one of the two Judges selected by this Association to assist in awarding the prize of His Excellency the Governor General, for the best Essay on the bearing of the canals on the interests of the agriculture of Canada.

Moved by R. L. Denison, Esq., and seconded by G. D. Wells, Esq.—That Mr. Sheriff Ruttan be the other judge.

Moved by Mr. Sheriff Ruttan, seconded by Matthew Jones, Esq.—That the next Exhibition of this Association be held at the town of Niagara, in the third week of September, 1850.

Moved by E. W. Thomson, Esq., seconded by G. D. Wells, Esq.—That Walter H. Dickson, M.P.P., Andrew Heron, Richard Hescott, John Simpson, Esqs., and Mr. Sheriff Kingsmill, be the local committee, with power to add to their number, in accordance with the by-law of the Association.

Moved by E. W. Thomson, Esq., seconded by Mr. Sheriff Ruttan,—That R. L. Denison, Esq., be the acting Treasurer of the Association.

Moved by E. W. Thomson, Esq., seconded by James Boulton, Esq.—That the directors meet at Niagara on the Tuesday of the show week, for the purpose of forming the various committees; and that the secretary communicate with the county societies, requesting them to forward a list of the names of such persons as are competent and willing to act as judges, naming the class in which they will act; and that the secretary also communicate with Mr. Allen of Buffalo, with a view to obtain the services of American judges.

FINANCE COMMITTEE'S REPORT.

*The Committee appointed to settle the financial matters of the Association for the year 1847,*

BEG LEAVE TO REPORT:

That having met on several occasions for the purpose of ascertaining the amount of the liabilities of the Association, from the few books and papers which they obtained with a great deal of difficulty—they, on the receipt by them of certain funds to meet the liabilities of the Association for the year (1847), gave public notice that they would attend in Toronto and Hamilton, on certain days named, for the purpose of adjusting and paying the various claims existing against the Association, which they accordingly did in Toronto on the 16th and 19th of January, and two of the Committee attended at Hamilton on the 23d and 24th of the same month.

The Committee found in the hands of Mr. Kerr, at Hamilton, thirty-eight volumes of books of various kinds, the property of the Association, of which the Committee have handed over to the various parties entitled, all which have heretofore been claimed. There are still on hand several volumes, most of which are yet due for premiums, and retained in the hands of your Committee for distribution amongst the several parties to whom they are due, so soon as they may be claimed. There still remains as yet unclaimed the sum of eighty-four pounds for premiums,

The amount received by your Committee is as follows:—

Government Grant, in Debentures,.....	£350	0	0
Edmundson's Securities,.....	120	0	0
Cobourg balance,.....	74	7	3½
Hon. Adam Ferguson,.....	3	0	0
Interest on Cobourg bills,.....	2	19	2
Two life Member's subscriptions,.....	5	0	0

Total,.....£555 6 5½

Paid		
Premlms, &c., Toronto, . . . . .	£163	4 0
Ditto, Hamilton, . . . . .	100	13 9
Amount of Fergusson's and Wetenhall's note to liqui- date cla'm agts. Simpson, } Ditto against Roach, . . . . . } Expenses of Committee at Toronto and Hamilton, in- cluding stationery and larc. }	97	11 9
	80	10 3
	6	3 7½
	£418	3 4½
Balance in hand. . . . .	£107	3 1

Leaving in the hand of your Committee the sum of one hundred and seven pounds three shillings and one penny. Eighty-four pounds of which are still due, but are as yet unclaimed.

Your Committee beg further to report, that there is an additional claim of thirty-six pounds fourteen shillings and nine pence, which has been presented to your Committee by Messrs. Freeman & Jones, as bills of costs for defence of two suits above mentioned; which said bills have been placed by your Committee in the hands of a professional gentleman for taxation.

These two claims, together amounting to one hundred and twenty pounds fourteen shillings and nine pence, when paid will leave a deficiency of thirteen pounds eleven shillings and eight pence.

Your Committee beg further to report, that they have been made aware that there is now in the hands of the Sheriff of this county an execution against the late Secretary, Mr. Edmundson, for the purchase of books from Messrs. Saxon and Miles, in the United States, which have been charged by Mr. Edmundson to the Association, and which have been allowed in the settlement of his account. Your Committee conceive that although no legal claim exists against the Association for the same, yet they respectfully recommend that the amount of the invoice should be paid so soon as the funds of the Association will permit.

All which is respectfully submitted.

E. W. THOMSON,  
GEO. D. WELLS,  
RICH'D L. DENISON, } Committee.

Toronto, C. W., February 19, 1850.

#### AGRICULTURAL SOCIETY OF THE MIDLAND DISTRICT.

We learn from the *Chronicle and News*, that at the recent annual meeting of this society a letter was received from J. B. Marks, Esq., the President, tendering his resignation. As Mr. Marks has discharged with great satisfaction the duties of that office for 20 years, and is known to many of our readers as a zealous promoter of agriculture, we embrace the opportunity of transferring his letter to our own pages. We are glad to find that Mr. Marks will be so well succeeded in the person of Angus Cameron, Esq. We observe further that Peter Davy and Wm. Holditch, Esqs., have been deputed delegates to the next Provincial Exhibition to be held at Niagara, and that £25 were voted towards that object.

To the Members of the Midland District Agricultural Society.

GENTLEMEN:—About twenty years ago the Legislature of Upper Canada, with the judicious view of encouraging Agriculture, passed an Act granting to each District an annual sum of money for that purpose.

Upon the passing of that patriotic act, the inhabitants of the Midland District first established this Agricultural Society, and we elected the Hon. John Macaulay, (then Chairman of the Quarter Sessions) President, who continued most ably to fill the Agricultural Chair, until he was removed to an official government appointment at Toronto.

At the following annual meeting, the members elected me to fill the vacancy, and I have remained without interruption, president, until the present time.

Last year it was my intention to have requested permission to retire from this responsible office, but in consequence of the annual Agricultural Exhibition of the province, being voted to take place at Kingston in the year 1849, it was thought best that I should remain and share the difficulties that devolved upon the members of our society, in making provision for that great exhibition. That grand affair being over, in which the inhabitants of the city of Kingston, and the farmers of the Midland District so nobly supported the good cause of that national institution, the benefit of which will be long remembered in this part of the country, we have now to fall back upon the common business of the district society and its several branches, which are now being carried on in the usual manner.

The parent or district society being free from debt, and every prospect of greatly improving in usefulness, my reasons for desiring to be relieved have much increased since last year. I beg to return to our agricultural friends my best thanks for their uniform support, respect, attention, and forbearance, given for so long a period to my official operations amongst them; and with my best wishes for the success of your future proceedings, I respectfully relinquish into your hands the office of president of the Midland District Agricultural Society; and I do so with the satisfaction of knowing that many persons can be found among our present members well qualified to fill that high station.

I have the honour to be, gentlemen, your faithful friend,

J. B. MARKS.

Barriefield Feb. 20, 1850.

#### SPIRIT OF THE AGRICULTURAL PRESS.

CANADA THISTLES.—The complete extirpation of this pest is exceedingly difficult, particularly in wet or stony ground. A correspondent in the last number of our talented contemporary, the *Genesee Farmer*, suggests a plan for destroying thistles, which is both simple and efficacious. He recommends a free and timely use of the plough; that is to say, in summer-fallowing a field infested with this troublesome weed, give a deep and clean ploughing as soon as the leaves of the thistles fairly appear above the surface, a process that will often require repetition. It is a well-known fact in vegetable physiology, that no plant can long survive the repeated destruction of its leaves, which may be said to be a kind of breathing organs, somewhat analogous to lungs in animals. We have seen hundreds of acres of the richest pasture land in England literally covered with thistles, but in two or three years scarce a plant was to be found left. This result was obtained without breaking up the pasture, simply by cutting the root about an inch under the surface with a sharp instrument, significantly designated a "thistle spud," and by repeating the operation as long as any leaves make their appearance. In arable land we have found, in addition to deep ploughing, the use of a powerful cultivator or subsoil plough,

of the greatest service. As the roots of the thistle in dry rich soils penetrate very deep, it frequently becomes necessary, in order effectually to extirpate this enemy, to disintergrate the soil to the depth of twelve, or even eighteen inches. But in case of weeds, as in maladies of the body, *prevention* is the better cure; and every careful farmer, when his land is once free from noxious intruders, will use diligently the proper means of *keeping it clear*. A slovenly farmer, harbouring and maturing upon his land weeds instead of grain, is an absolute nuisance to a whole neighbourhood.

**HIGHLAND AGRICULTURAL SOCIETY.**—We perceive, from our recent Scottish exchanges, that this important society, the first that was formed in Great Britain, and which has done so much for the advancement of Agriculture, not only in Scotland, but in various parts of the world, continues in a flourishing condition. The monthly meetings of members, held in Edinburgh, have become still more attractive, and the chemical department of the society is in a promising condition; although it has not as yet received that degree of support which is requisite for the full realization of its important objects. Dr. Anderson, the Society's chemist, had performed during the year a considerable number of analyses, some of them involving extremely complex and minute investigations. He is actively engaged in a series of analyses of the turnip, grown on different soils and with various kinds of manure. Another series of analyses has been commenced of the wheat soils of different districts of Scotland, with a view of determining the standard constitution of such soils. The exhibition for 1850, will take place in Glasgow; and an effort is making to have the meeting of 1851, at Perth. We are glad to see that the society is likely to be able to resume its annual exhibitions.

**DRAIN TILE MACHINE.**—We had the pleasure at the New York State fair held at Syracuse, of an introduction to that enlightened and enterprising agriculturist, John Delafield, Esq., of Oaklands, Seneca County, N. Y. Mr. Delafield informed us that he had recently imported from England a machine with its various appliances, for making tiles, pipes, &c. for purposes of draining; a subject which is engaging the earnest attention of the farmers of the state of New York. The high price of draining materials has been hitherto an almost insurmountable obstacle to the successful introduction of this most indispensable branch of agricultural improvement. In the last number of the *Genesee Farmer*, there is an illustrative cut of Mr. Delafield's machine, which we perceive comprises the recent improvements made in England, and also a list of prices for the different sizes of pipes and tiles, which we subjoin for the information of our readers—

**DRAIN TILES.**

4 inches high, by 15 inches long at \$15 per 1000 tiles.
3 " " " " " 12 do. "
2 " " " " " 10 do. "

Sales for the above, if required, \$6.26 per 1000, largest size  
 " " " " 5 " smallest size

**DRAIN PIPES.**

4 inches diameter, 15 inches long, at \$16 per 1000 pipes	
3 " " " " " 14 " "	
2 " " " " " 10 " "	
1½ " " " " " 9 " "	
1 " " " " " 8 " "	

Pipes of larger size can be made by this machine, also semi-cylinders of 6 and 11 inches diameter. Roof and ridge tiles are turned out with equal facility.

The above rates are considerably higher than those in England. Greater experience, however, will after a while facilitate production and lower prices. As there are many parts of Canada where draining is much needed, and where little or no stone, of a suitable description, can be found, we think that sufficient encouragement should be given to enterprising persons, either by societies or otherwise, to get a few of these machines introduced. If such an enterprise were done judiciously, it could not fail to be profitable to the parties engaged, and of immense benefit to the country.

**DIFFUSION OF AGRICULTURAL KNOWLEDGE.**—In order to create and satisfy a taste for agricultural knowledge and rural improvement throughout the American Union, it has been proposed by several influential parties to print a large number of suitable tracts for gratuitous circulation, at the expense of the federal government. There are not less, it is calculated, than four millions of farmers in the United States, not one in ten of whom reads an agricultural book or journal. Several fresh plans appear to have been either commenced or projected for giving a vigorous impulse to the advancement of agriculture. The object is most patriotic, and richly deserves success.

**PRECAIOUSNESS OF THE WHEAT CROP.**—We asked Mr. Thomas, of Oakland, what success he had as a wheat grower: in reply, he smiled significantly, and shook his head; and upon being a little further interrogated, owned that he had not had a decent crop of wheat in five years. Last year, he had two hundred and ten acres, and it looked finely, and gave promise of an abundant yield, until just before harvest, but just as he was about to put forth his hand to reap the reward of his toil, the spoiler came and disappointed all his hopes. From his 210 acres, he only had 1860 bushels, which, he remarked, was about one-third of a crop, fifty acres of it having been put in on shares. The crop scarcely paid expenses.—*Michigan Farmer.*

**GOOD FARMING.**—Mr. John Johnston, near Geneva, has on his farm a cow, which probably gives more milk than any other cow in the United States. Through the month of June, 1848, she gave forty-two quarts per day, which is probably without any parallel in this country. From the cream only, they made fourteen and a half pounds of butter per week. Had they churned from the milk, they would have got more butter. The cow was milked three times a day. The only feed she got was grass in the pasture. She is of a roan color, half Durham and half native breed, and is seven year old.—*Journal of Commerce.*

## THE HOG.

The following note was received too late for insertion in the December number, and was mislaid until after the matter for the February number was set up. We make this explanation as an apology to our respected friend the writer.

Woodhill, Dec. 16, 1849.

Dear Sir, — Although the accompanying note from Mr. Kerr (a considerable produce merchant in Hamilton) conveys little that is worthy of record, yet as it bears testimony to the estimation in which the Canadian settler's *invaluable friend, the hog*, is justly held, you may perhaps spare it a corner in your excellent and improving paper; improving, I will add, in more than one sense of the term. The animal referred to is from the well-known breed of Mr. Harland, near Guelph. I got him nearly four years ago, and through his aid have obtained a very satisfactory breed of swine. I killed a lot of hogs last week, about fourteen months old, each of which weighed over 200 lbs. I can safely pronounce them to be *true and quick feeders*. They run out all summer, and after about six weeks' feeding with peas, weighed as above. The pork is white and beautiful as the most delicate veal. Mr. Harland's stock is the large white Yorkshire. The sow I use is a mixed Berkshire.

I remain, Sir, yours truly,

ADAM FERGUSON.

Hamilton, 7th Dec. 1849.

Hon. Adam Ferguson, Sir,—I beg to acknowledge the receipt of one of the *finest hogs* that has been offered in this market this season. Its actual weight is 532 lbs. I have shewn it to several individuals who are well acquainted with the different breeds of hogs, and they pronounce it the best specimen of the *pork kind* they have ever seen.

Yours, &c.

W. G. KERR.

## THE STATE OF AGRICULTURE IN EUROPE.

An Address delivered before the New York State Agricultural Society, at Syra use, Sept. 13, 1849, by James F. W. Johnston, F. R. S., S. L. & E.

(Concluded from page 39.)

GREAT BRITAIN.—In striking contrast to the case of Spain, is the agriculture of the Island in which I was born, and from which so many of your forefathers have come. I need not tell you of our uncertain climate—our fickle sky, our frequent rains, our late frosts in spring, our early frosts in autumn, the cold winds and temperate suns of our most favouring summer, the mists and fogs that settle over us at every season of the year. I only remind you of these things, and ask you to contrast with them the large crops we can reap, the high rents we can pay, the poor lands we have enriched, the local climate we have ameliorated, the wide wastes we have subdued beneath the plough, the northern districts we have tamed down to the production of wheat, the large population we have reared, and in ordinary seasons are still able to feed, and—amid all the croakings and complaints of individuals and of classes—the vast amount of material comfort and of intellectual elevation which the island exhibits. How much kinder, on the whole, the Deity has really been to us than to prolific and sunny Spain; how much better our fortunes as a people, how much happier our individual lot!

PRACTICAL IMPROVEMENT IN GREAT BRITAIN.—Among the greatest of those practical improvements in the treatment of land, by means of which British agriculture has been advanced to its present condition, I may mention:

1st. *The alternate husbandry*—a judicious rotation of

crops. In this walk Flanders was probably the earliest among modern European countries to make decided and important advances.

2d. *The introduction of thorough drainage*.—To a certain extent and in a certain way, under drains have been made in almost every country of Europe, and are at least as old as the time of the Romans. But the necessity and almost universal profit of the system as it is now understood and practised, was first demonstrated in Scotland, and owes its general introduction to Mr. Smith, of Deanston.

3d. As the complement of thorough drainage, the introduction of *deep and sub-soil ploughing*. These practices have renovated shallow, worn out soils, by bringing up new materials; have opened a passage for the roots to descend deeper in search of food; and have provided a more ready outlet for the surface waters into the drains below.

4th. *The judicious and continued application of lime*—according to principles now beginning to be generally understood. When applied without the requisite knowledge, or without regard to future consequences, the use of lime has been, and will still be, one of the most ready means of exhausting the most fertile soils.

5th. *The use of bones*—in various forms, as an application to land in various conditions, and for the growth of various crops.

6th. Generally, what is called *high farming*, comprehending:

a. The culture of green crops extensively.

b. The making of rich home, and the purchase of valuable foreign, manures of various kinds to a great extent.

c. The rearing and feeding of improved breeds of stock, for the conversion of one form of produce into another, which meets with a readier market, or is otherwise more profitable.

d. The custom of *full feeding*, both for plants and animals, from early youth to full maturity.

It is the characteristic of this kind of farming, that it spares no reasonable expense—in implements, in manures, in labour—as all experience has shown that a liberal treatment of the land, makes the land liberal in return: and that to the stingy farmer, the land is most niggard of her crops.

7th. *The introduction of lighter and better contrived implements*, of machines to economise labour, and of horses having a quicker step.

Such are generally the practical methods or processes by which British agriculture has been advanced to its present condition.

In connection with this improved condition of British agriculture, and the practices it involves, you will excuse me if I advert for a moment to one aspect in which British agriculture may be regarded, which at the present moment is most vitally connected with the interest of the English farmer, and may be neither uninteresting nor uninteresting to you.

Were an intellectual foreigner, previously unacquainted with Great Britain, with the character of its people, or with its social condition, to be informed regarding this country, that though occupying only a small and thickly peopled corner of Europe, shrouded for many months of the year in fogs and mists, seldom and briefly visited by the fervid sun—never, I may say, by such a sun as now shines upon us—and raising its own grain crops with cost and difficulty to feed its rapidly increasing inhabitants—were he to be told that the Legislature of this country, in which the agricultural body is the predominating interest, had thrown open its inland harbours to all comers, and trusting to superior energy, perseverance and skill, had invited even the most fertile and favoured regions of the globe to a free competition in their own grain markets, fearless of the results;—apart

from all fiscal theories or political views with which my profession and pursuits forbid me to intermeddle, I ask you, if such a foreigner, so instructed, could fail to admire the open boldness, to look with respect on the resoluteness of such a country, or to long for an opportunity to study, not only the character and habits of its people, but the modes of culture practised by them, with so much success, in a region so unfavoured by nature?

And were he actually to come among us, it would be easy for him, having started from the Land's end, to proceed from one warm hearted and hospitable farmer to another, till the Pentland Firth arrested his course, and all his journey long he might converse with cultivators of ardent minds, full of practical and general knowledge, who in most unpromising circumstances refuse to despond, and while they see so much every where around them awaiting the hand of the improver, will not let slip the anchor of hope; who differing widely, perhaps, in politics, and as to the policy of certain fiscal regulations, yet feel alike that to resolute men the conquest of the stubborn land is as sure as the dominion of the sea; that new difficulties only demand new exertion and that new energies are equal to meet new emergencies.

On quitting the British shores, after such a tour, that foreigner would carry with him a true impression of the flower of English and Scottish Agriculturists, and his first admiration of the resolute firmness, and his estimate of the skill of the island farmers, would be confirmed and strengthened by his actual survey.\*

In other parts of the world I might fear lest my audience should accuse me of over exalting, by such language as this, the character of my own country and its people. You, who feel so just a pride in the noble land you possess, will know how to make allowance for my pride in mine. But indeed whatever can be truly said of the spirit and energy of British farmers, may, I begin to feel, already he said, with almost equal truth, of the farmers of your Northern states. Of the west and south I cannot as yet, from personal observation, speak. In Nova Scotia and New Brunswick, two younger Provinces, I have seen a picture of what Maine and New Hampshire, and Massachusetts especially, have been: and in the gradual conquest which persevering labour has in these states achieved over drifted rocks and hungry gravels, and sandy barrens, and ungenial swamps, I discover the resolute spirit still living of those men who centuries ago dared to cross a then wide and little known sea, in search of new and freer homes, and whose descendants now till alike the soils of the Old England and the New. Time has not impaired the energy and enterprise of either; I believe I may say it has left their hearts unchanged too.

And now you are ready to ask me, what those, who in Europe are most in advance in the practice of the rural arts, look forward to as likely to help on agriculture still further. In what especially, you will enquire, do we of Great Britain trust, who have thrown down the gauntlet to the farmers of the world? These questions I shall answer by drawing your attention briefly, to what may be regarded as the characteristic or living feature of the agriculture of our time—what you no doubt expect me briefly to speak of, the direct applications, namely, of natural science to the several branches of rural economy.

The main purposes for which natural science is applied to rural economy, are—

*First.* To explain the reasons of practices already adopted, or of things already observed, and to supplant old and defective by new and better usages.

*Second.* To establish general principles, by means of which a short cut is provided for the unlearned, to the knowledge, practical and theoretical, we already possess. A single principle explains and thus recommends or forbids many practices, according to the circumstances of the soil, place or season.

*Third.* To enlarge our actual knowledge by new discoveries susceptible of practical application.

On these several objects of natural science, in its applications to agriculture, it would be out of place at present to dilate. It will be sufficient if I briefly draw your attention to some of the general results, in reference to rural economy, at which science has already arrived.

With this view I might draw my illustrations from any one of the many different branches of natural knowledge. I might select for example:—

1st. The general relations of *Physical Geography*, to the art of culture—such as

a. The influence of broad seas and of great lakes and rivers, of tides, of sea currents, and of prevailing winds, on the capabilities of a country and the practices and profits of its cultivators.

b. The influence of mountain elevations and depressions, of high table lands and of low level plains—or

2d. The general indications of *Geology* in regard to the fertility of a country, the branches of husbandry to which it is best adapted, and the means by which its fertility may be best promoted.

The Geological Map of this State and the volumes of the *Natural History Survey*, afford abundant illustrations of the relations of this science to practical agriculture—or

3d. The relations of *Meteorology* and *Botany* conjoined—such as

a. The adaptation of certain plants to certain climates—of sugar, cotton and rice to warmer; of buckwheat, and Indian corn, and wheat, to warmer and drier; of rye, barley and oats, to colder and more uncertain climates.

b. The nature of rust, smut, mildew, the maize, brand, &c., and the circumstances of local climate most favourable to their appearance—or

4th. The relations of *Geology* and *Vegetable Structure* conjoined—such as

That certain plants and soils are mutually adapted to each other, because of the special structure and natural habits of the plants, and the physical characters only of the soils.

The valley of the Mohawk, for example, is remarkably prolific in Indian corn, and raises comparatively little wheat—while the district of Syracuse produces wheat abundantly, and is less favourable to corn. So in Great Britain and Ireland, we have our turnip and barley soils, distinguishable readily, by the practical man, from the wheat and clover soils. These differences are independent of chemical composition, and are not to be explained upon chemical principles. They are dependent upon the special relation which the structure and natural habits of the plants bear to the physical characters of the medium in which their roots are made to grow—or

5th. The general indications of *Geology* and *Meteorology* conjoined—such as

The relations of the nature of the rocks, of the soil, and of the fall of rain taken together—

a. To the necessity for under drainage, and the means of effecting.

b. To the necessity for artificial irrigation, and the easiest mode of obtaining a supply of water for the purpose—or

\* For two recent estimates of the condition of Agriculture in Great Britain, see WACHSMAN, *Ueber Englische Land-wirthschaft und deren Ausdehnung auf Land-wirthschaftliche Verhältnisse insbesondere Deutschlands*. Stuttgart and Tübingen, 1845. And COLMAN'S *British Agriculture*. London and Boston, 1840.

6th. The general relations of Zoology and Animal Physiology.

a. The breeds of domestic animals, and to the preservation of their purity.

b. To the rearing, feeding and general tending of stock.

c. To the agency of animal life in fertilizing the soil.

d. To the attack of insects upon our cultivated crops—

7th. The general indications of Chemistry—such as a. That a fertile soil, in addition to various organic compounds, contains at least eleven different mineral substances.

b. That plants contain, usually, or in most of their parts, the greater number of the same mineral substances.

c. That the animal, as a whole, also contains them, but distributed throughout its several parts in a manner different from that in which they are found, either in the plant or in the soil.

d. That the plant standing, as it were, between the soil and the animal, prepares for the latter both its organic and its mineral food.

e. That an intimate and beautiful relation exists between the soil, the plant and the animal—or between the living and the dead things of nature—or

8th. The general indications of Geology and Chemistry conjoined—such as

a. That certain Geological formations are especially rich in some of the mineral substances found in and required by plants, and produce soils which with special treatment will prove fertile and profitable to the cultivator.

b. That others are especially defective in some of these substances, and form soils which are naturally unproductive.

c. That some abound in all kinds of mineral matter which plants require, and yet yield soils which are naturally unfruitful.

#### I. RELATIONS OF GEOLOGY TO AGRICULTURE.

From any one of these general topics. I might select beautiful examples of the close bearings of science upon profitable farming—but time does not permit me to illustrate in detail any one of the general relations to which I have referred. A few observations, however, in reference to the special applications of Geology and Chemistry, will neither detain us long, nor prove, I believe, generally uninteresting.

In reference to Geology, I could have wished to point out to you the very close economical connection which recent discoveries have established between practical geology and practical agriculture—how the manufacture and abundance of valuable manures, for example, is actually dependant on the progress of geological discovery. I must be content, however, with a brief allusion to the geology of the United States.

There are few countries, indeed, which more clearly than your own, show the relations which geology bears to agriculture in all its branches. Your wide prairies are naturally distinguished from your vast forest lands, by the character of their soils, and these again by the geological structure of the regions over which they extend, and from which they are generally derived. The broad treeless zone of calcareous marl, or rotten limestone—called the prairie or cane-brake country—which crosses Alabama in an east and west direction,\* owes its natural nakedness to the dry, waterless, chalky deposits, which for a depth of hundreds of feet form the uppermost rocks of the country; and the tenacious, soapy, unctuous quality of the soil, with which the carriage wheels of travellers in that state, in wet weather, become familiar, is owing to the same cause.

So your zones of differing timber, as you ascend from the alluvial swamps of the shores in your Southern

states, across the eocene and cretaceous beds to the mica slate, gneiss and granite of the Appalachian chain, are the consequences and indications of diversities in geological structure. The swamp willow, the cypresses, (*Thyoides* and *disticha*) the swamp hickory, the green palmetto, the tall magnolia, the red maple, and the cotton wood of the lowest swampy spot—the hickory, oak, magnolia, beech, walnut, tulip tree, and holly, of the dry alluvial bluffs—the perpetual pines of the tertiary (eocene) sands—the naked prairie of the cretaceous marles—and the mixed oaks, hickory and pines which appear on the primary rocks—all these zones of different timber indicate the natural connection of the vegetation of a district with the nature of the rocks on which it rests.

Nor are these geological relations of vegetable life without their influence on the daily movements of your shifting population. I have elsewhere shown how directly the movements, the natural expansion I may call it, of our first class farmers in Scotland, is not only influenced but actually, as it were, prescribed, by the geological character of the district in which they have been brought up and to which they intend to move.† So it is among you. "Those who go southwards from Virginia to North and South Carolina, and thence to Georgia and Alabama, follow, as by instinct, the corresponding zones of country. The inhabitants of the red soil of the granitic region keep to their oak and hickory; the 'crackers' of the tertiary pine barrens, to their light wood; and those who inhabit the newest geological formations in the sea islands, to their fish and oysters."‡

And to this illustration of a fact, which may be proved, I believe, by observation in every country of the globe Sir CHARLES LYELL adds a sentence, from which I am sure you will at once draw an important, practical lesson. "On reaching Texas, all these different classes are at fault, because the cretaceous in that country consist of a hard, compact, siliceous limestone, which defies the decomposing action of the atmosphere, and forms table lands of bare rock, entirely unlike the marles, clay and sand, of the same age, in Alabama.

The tillers of the red land, of the pine barrens, of the marshy prairies, and of the sea island swamps, are equally at a loss when they migrate to a country of which the soils and surface differ from all they have left. And how is this? Because they have no familiarity with those general principles of chemical science on which all culture on all soils depends—because, if they wish to continue the same kind of tillage, and on soils similar to those they have left, they have not such a knowledge of the general principles of Geology as would enable them at once to say, to this or to that country I must go, for there alone am I likely to find them.

In my own country, I have been accustomed to press upon the agricultural community the importance of such geological knowledge to them, because of the numerous colonies we possess in all parts of the world, and because of the swarms of emigrants we yearly send off to subdue and people them.\* But to you whom I now address, who already occupy, or in connection with kindred blood are destined to subdue and people, nearly half a world—how much more important must such knowledge be! Your westward movement will continue for many generations, and how much sorer will the way to wealth be to your hardy pioneers, if they have been taught in their early homes, not only how to choose land, but where to look for the kind they wish to buy, and how to till it best, whatever it may be, when it has come into their possession.

I ought, perhaps, to apologise for saying so much on

† See an article in the Edinburgh Review for March, 1849.

‡ Lyell's Second Visit to the United States, p. 116.

\* See the Author's Elements of Agricultural Chemistry and Geology, fifth Edition, p. 616.

\* Lyell's Second Visit to the United States, p. 42, 89.

this subject. To you, who have expended so much public money, and so large a measure of talent in developing the geological structure and natural resources of this and other states, it may appear presumptuous in me to urge further upon your attention, what you have shown that you already so fully appreciate. I may plead as an excuse, that in a country where all action originates, and all power centres in the masses, a brief discussion of the subject before a great meeting like this, may help new listeners towards a proper general estimation of the practical value of science—and that what I have said will not fail in being useful to scientific agriculture, if it convince a single undecided voter in this great commonwealth of the worth of those aids which science offers you, in developing the resources of the soil.

II. RELATIONS OF CHEMISTRY TO AGRICULTURE.

Permit me now to say a few words on the subject of chemistry, in its relations to agriculture.

The special applications of this science, as many of you are already aware, are far too multiplied to admit even of enumeration. Of the practical ends which have been more or less perfectly attained by means of chemistry, I might mention such general ones as these:

1st. In what *general* exhaustion consists, how it is produced, and how it may be repaired?

2d. In what *special* exhaustion consists, how it is brought about, either naturally or artificially, and how it is to be corrected?

3d. What plants, in general, require to make them grow well?

4th. What manures ought to contain, to be generally serviceable; what, with a view to special purposes, they ought specially to contain; and how they are to be artificially prepared?

But such topics are too general and indefinite to make a sure impression on the mind of the practical farmer; in the brief moments I have spent in enumerating them.

I mention farther, therefore, such special points as the following:—

1st. How to bring crops to earlier ripeness in late and elevated districts.

2d. How to reduce the straw producing tendency of the land.

3d. How to hasten to promote, or to push forward laggard, yellow, and stunted vegetation.

4th. How to strengthen the straw of your grass crops, where they are liable to be laid.

5th. How to fill the ear and make it larger, where long culture or natural poverty has reduced its size.

6th. How to improve the deficient feeding quality of turnip, and other root crops, when grown on mossy land.

7th. To quicken the organic matter in dead, deaf, or peaty soils, and make it available for the nourishment of plants.

8th. To prepare artificial manures, which shall nourish any crop on any available soil.

9th. To promote growth on *slow*, and to retard it on *quick* soils.

10th. On newly brought up subsoils, and on trenched land, what manures ought to be used, and why.

11th. Why a rotation of manures, as it is called by practical men, is necessary and where.

12th. That the use of lime to a certain extent, and in a prudent way, is necessary to the highest fertility.

13th. That saline and nearly all other manures, do more good upon light and open, than they do upon stiff and close soils, and why.

14th. How to economise the consumption of vegetable food, and to adapt it to the purpose for which an animal is fed.

15th. How to prevent the disease called *stings* and

*loes*, in turnips and other roots, and how to render milk-dew and ague equally rare?

To do these and many similar things economically, skillfully, and with more or less success, are among the practical ends to which chemical investigations have already led us.

They also supply answers to many practical questions, such as:—

1st. Why cabbage crops so greatly exhaust the soil, and how such exhaustion is to be repaired?

2nd. Why tares cut green exhaust the land, and give inferior wheat?

3d. Why tares are seldom good after crops of clover?

4th. Why lime produces a more marked benefit on one soil than it does upon another?

5th. Why one variety of lime is more useful generally, or in particular districts on particular farms and fields, than another?

Of special points and questions, I could enumerate many more, in regard to which chemistry may be said to have been, or to be capable of becoming, of obvious money value to the farmer. Even to such of you, however, as have not much attended to this subject, the above examples will sufficiently indicate both the kind of connection which exists between practical agriculture and practical chemistry; and the kind of uses to which such scientific knowledge may hereafter be put, in advancing the important art, which it is the first wish of this great Society, and the individual interest of many of its members most zealously to promote.

LIMITS OF HUMAN SKILL.—But in dwelling upon and illustrating what is already in the power of man, and what he hopes to attain in reference to agriculture through the aids of science, I would not forget to acknowledge how very limited his knowledge is, and how feeble his capacities after all.

A mysterious fungus attacks the potato, and for years spreads famine and misery, and discontent and depression, among millions of industrious farmers.

A minute fly, season after season, hovers over our wheat fields, and from entire provinces and states almost banishes the cultivation of our most important grain.

A long continued drought, such as half a century past has scarcely seen, dries up our meadows and pastures, and drives the farmer to his wits end, to obtain winter sustenance for his necessary stock.

Such things as these ought to prevent us from boasting of our knowledge, and to enforce upon us that piety and humbleness of spirit, which rural occupations themselves so naturally foster—while at the same time they should not restrain us from any effort or enquiry by which the evils themselves may be mitigated or removed.

It is possible—nay, it is almost within the bounds of a reasonable expectation—that the same intellectual research which has given us dominion over the proud waves—has made out the laws by which hurricanes are regulated—has already almost freed us from their most fierce influences—and has found the fiery lightning to descend harmlessly from heaven—that the same research may finally free us from the visitations of the fungus and the insect, and may place the dreary droughts of summer under reasonable control. Such hopes we may entertain, not as sources of pride, but as stimulants to exertion—for in so greatly rewarding the past exercise of our intellectual powers, the Deity obviously intends still further to excite us to study and extract good from the living and dead things of nature, over which He has given us a general dominion.

OBSTACLES TO PROGRESS.—I here are, however, in every country, certain obstacles which oppose themselves to the progress of scientific agriculture; as a branch of knowledge, or to its practical application in the improvement of the soil.

I do not refer to those physical or local obstacles of

climate, elevation above the sea, low prices, distance from markets, and so on; but to those social and class obstacles which, in so many places, and in so many ways, interfere not only with the rapid extension of our knowledge, but with the diffusion of what we already possess as to the application of science to the rural arts. I may enumerate as belonging to obstacles of this kind:

1st. The aversion to theory, as it is called, which is so generally professed by practical farmers in most countries of the world. Rash and hasty theorising in regard to agriculture, it is right to reject; the error lies in confounding with such theory every thing that does not appear to bear directly upon the more common operations of the farm—as if chemistry, or the chemist for example, could be of no use to the farmer, because he does not interfere with the handling of the plough—or with the shape and management of the drill machine, or the harrow.

2d. The small amount of talent hitherto in all countries considered necessary to fit a man to become an excellent farmer. This not only lowers the general education and attainments of the agricultural class, and the estimation in which they are held—but it unfits them, as a body, readily to appreciate the labors, or to listen to the counsels of men of science, however prudent and practical they may be.

3d. The special deficiency, among all grades of the agricultural community, (in England among landlords, among tenants and among laborers,) of any instruction in the elementary parts of those branches of knowledge by which the principles of agriculture are especially illustrated.

4th. The extreme sub-division of the land, which you may not see in this country for many generations, but which already exists as a great evil in some of the countries of Europe. It prevents the use of improved implements, and therefore the encouragement of agricultural mechanics—because the farmer is too poor to buy anything but the merest necessities. It prevents also the purchase of manures, natural or artificial, to any extent—the employment of paid labor in farming—and generally all those forms of improvement which demand an outlay of capital, or to which the occupation of a considerable breadth of land is a necessary prerequisite.

5th. An obstacle peculiar to your country, and to its present transition state—and it is really a serious obstacle to improvement—is the feeble local attachment by which the proprietors of the more newly settled districts are bound to their farms. This appears in the fact that so many of your farms are for sale. Few families have yet become so attached to their locations as to be unwilling to sell them, if a fair offer be made. The head of the family trusts to his own skill to do better elsewhere for all his household, with the money for which they may be sold. This state of things will pass away as age creeps over your commonwealths and institutions, but in the meantime it operates as a serious hindrance to the expenditure of money in embellishment or in costly improvements, which might possibly not enhance, in a proportionate degree, the value of these properties in the market.

I merely mention these social obstacles, for although some of them do, as I am informed, exist to a certain extent in this State of New York, yet I would rather express my high opinion of the much good I have found among you, than appear to detract from your just deserts, by discovering and commenting upon wants and defects which in your hurry to get forward, you have as yet scarcely had time to discover, much less to supply or remove.

ENCOURAGEMENT TO AGRICULTURAL SCIENCE IN THE UNITED STATES.—Of the good I see, for example, I may specify the enlightened desire exhibited by your

several State governments, to promote the applications of science to your home agriculture, as it is strikingly shown in the numerous surveys and reports which they have caused to be made and published, in respect to the geology and agricultural capabilities of the several parts of the Union. In this respect your State of New York occupies a most distinguished position, and its inhabitants will no doubt reap from their well directed exertions, a rich harvest of deserved fruit.

Again—this great Agricultural Fair, the implements and stock here exhibited, the countless numbers who have entered the show yard to see them, and who now surround us—impress upon a foreign visitor, the obvious usefulness and efficient management of your Agricultural Societies, how much they are doing, and how zealously they are supported. To those at a distance, who cannot look upon you with their own eyes, your annual publications speak. I have myself been both interested and instructed by the former volumes of the Transactions of your Society, and I have heard them, in a public meeting in Scotland, most highly spoken of, and favorably contrasted with the published proceedings, even of the Highland and Agricultural Society of Scotland. It gives me pleasure to express my opinion, that the volume for the present year is not only equal to its predecessors, but contains matter highly creditable to the Society, and useful to the advancement of scientific agriculture.

Farther—The interest which, as individuals, you take in the promotion of agriculture, by the acquisition and application of new knowledge, may be gathered from two circumstances—*first*, from the establishment and liberal endowment of chairs of science in connection with agriculture, by private parties, in two, at least, of your state universities—a liberality at once most patriotic and most judiciously applied; and *second*, from the causes which led to the recent visit to Europe of your countryman, Mr. COLMAN. Him we were led to look upon as a deputy from the individual farmers of this and the adjoining states, to the farmers and agricultural assemblies of Great Britain—for it was your individual encouragement and subscriptions, I believe, and those of your societies, which induced and enabled him to come among us. As your deputy, he was every where received—every where kindly, I believe, as so kind hearted a man deserved to be—and every where with a desire to give him the fullest information on every subject that might be useful to you.

Gentlemen, in the minds of some of your countrymen whom I have met, not so I hope in yours, a wrong impression exists as to the feelings of my countrymen towards you as a community, or as individuals. We do not envy or regret your rapid growth and prosperity as a people—we are proud of it. We do not dislike you individually—we are predisposed, rather, to see good in you and to like you. Whatever sour men on either side of the water may say, you may rest assured that there is a corner in almost every heart at home, which especially warms towards the North American, whether from the Colonies or from the States, and a warm seat at many a fire side, if he will come and occupy it. It may be old fashioned, gentlemen, but we all still think at home that blood is thicker than water, and if any of you doubt it we beg you, like Mr. COLMAN, to come among us, and honestly and frankly to try whether it is so or not.

If I were asked to give a special reason why a knowledge of the scientific principles of agriculture is more necessary among you than among any other existing people, I would mention the great extent of your territorial dominion, and the varied soils, climates and cultures, which your people encounter, as your dominion over the forest and prairies extends. When you take this fact in connection with another, which is no less

familiar to you, that a general set of your population, like a great moving tide, is carrying them towards the south and west—so that the old tillage and crops of one year are often deserted by the mover for a new form of tillage, and the culture of new crops in the next—you will see how useful to the shifting agriculturist himself it must be, and how beneficial to the whole community, that he should possess some degree of familiarity with those principles, not only of Geology to which I have already made especial allusion, but of Chemistry and Botany also, which enable him in whatever circumstances of soil, of climate or of tillage he is placed, to make the most of the advantages he happens to possess—to overcome most easily and most economically the difficulties he may have to encounter—and to employ at once his head and hands with skill in bettering his local condition.

As an agricultural people, you possess many advantages over the nations of Europe. You are not old enough to have acquired district and state prejudices, which are difficult to overcome, and which in many parts of Europe, long opposed, successfully, the importation of improvements from abroad.

I may mention, as a most intelligible illustration, the introduction of implements imported from other countries, which in Europe is a very slow process. The swing plough of Scotland, for example, has made its way into many districts of England, has been extensively introduced into some parts of France, Holland, Sweden, and even into Poland and Russia. But into Germany, where attachment to the old tools and methods is so very strong, it makes its way very tardily. And I advert to this instrument—this fundamental instrument, I may call it, of the practical farmer—because I find it mentioned to your credit, by a German writer, that the swing plough has had a much more willing and ready reception among you than among his own countrymen, and that Germany has already received many excellent swing ploughs from America.\* I have seen plough irons of Scottish manufacture, in use in various parts of North America. It is said that plough irons in considerable quantities are now exported from the States in considerable numbers to England.

Whatever is good in other countries, you are very much in a condition to adopt at once. You have, as I have said, fewer old forms to break through, old methods to abandon, old tools to lay aside, and old rules and regulations to abolish. Above all, as proprietors, you work every man for himself and for the profit of his family.—Not only are feudal superiorities, servitudes, serfdom and tithes, unknown among you, but even rents are not, as with us, to be made up on two dark days of every year. What ought to stand in the way then of your rapid progress in this most important art?

Another great advantage possessed by the agriculturists of this country, you will both understand and estimate. As a nation you commence your agricultural career at a point which we have attained. The eminence which we have reached after long climbing, you start from. You have the benefit of all our knowledge and experience, and—unwearied with previous labor, or satisfied with the idea, as too many of our farmers are, that you have already done very much—you must progress beyond what we have at present attained to. And with the intellect and energy you inherit, you must and will progress. It cannot fail indeed to prove a great blessing to mankind at large, that so many new minds, unfettered by old restraints of prejudice or partial legislation, or conventional custom, are now directed in this country towards the varied arts of social life. Especially must intellectual exertion on your part, in refer-

ence to any of the arts of life, benefit us in Great Britain—whom a common parentage, individual ties of blood, and a unity of speech, connect, and whom now the broad Atlantic, more than bridged over, almost brings together again into a common home. What you think, reacts upon our thoughts; what you speak, intensely affects our speech; and your literature and ours, are read and have their influence in both countries. What each discovers sooner becomes the property of the other, than in the case of nations who speak different tongues; and a step in advance on either side of the Atlantic, carries the arts of the other side along with it. We are not selfish—perhaps I might say we are eminently unselfish—in wishing you to become agricultural improvers. But of all the arts, it may be said more truly of agriculture than of any other, that it is of no country. The producer of the common staff of human life, ought in all its perfection, to be the common property of all. In rivalling each other in our endeavours to push forward this highest art of life, Britain and America will be striving only which can do most for the human race. And if we in Britain should benefit hereafter by the advances you are destined to make,—beyond what you have obtained from us,—it will enable us only the more speedily to aid in diffusing a knowledge of these advances among the other nations of the globe.

What is the moral of this discourse, what its immediate application to you whom I have the honor to address?

Is there improvement any where—let it be seen among you. Is there agricultural progress any where—you ought not to stand still. Are there means of bettering the modes of culture any where—you possess the same. Is there greater knowledge any where—it is within your reach. Is there energy and determination any where—these qualities are inherited in as great strength by you as by any other people. Is the climate favourable any where for special kinds of culture—you possess all climates, and may take a leaf from the farming book of every country. Is knowledge necessary any where—it is so among you; if not because of an over-crowded, yet because of a constantly moving, and at present rather retrograde agricultural population.

And if in consequence of its progressive tendency, the Teuton blood of the Anglo-Saxon shade, is destined, as some believe, to conquer and possess this vast continent from sea to sea: it is surely the wish and purpose of the Deity, that such possession should be made a source of happiness both to the ruling and to the ruled, and a means of furthering at the same time, that general advancement of the human race which all philanthropists so ardently anticipate.

But this conjoined happiness and progression demand the constant aids of augmenting knowledge. In your western migrations, you must bear with you, to plant on your new soil, the arts and sciences and daily discoveries of the east; and thus will population and civilization extend together to the shores of the wide Pacific.

And among the branches of knowledge which you will most carefully carry with you, those which relate to the arts of rural life, will, above all others, contribute largely to the temporal welfare of your spreading people. That which we know in England, you soon learn to master and apply here; and what is known in the Empire State, ought, in like manner, to diffuse itself hence over the vast dominions of your great confederacy.

Though I have considered it my duty, in conformity with your request, to lay before you the observations I have put together in the present address—it would be presumptuous in me, after what I have seen in this show-yard, and in this city, to suppose that any thing I could say, would materially hasten the progress of agriculture among you, or turn you into any better paths than those you have already begun to follow. If any

\* *Ueber Englische Landwirthschaft von A von Weckherlin.* Stuttgart, 1845. p. 81.

man wishes an evidence of what you are in energy, and what you are capable of in action, let him come to Syracuse, and look around him. It was brought as an accusation against the ancient Romans, that they made a country desolate, and called that peace. It is the nobler praise of the great modern Republic, that you find a country desolate, and cover it with people—a wilderness, and you plant it with fertile farms—furnished with rare wigwam encampments, and you strew it over with splendid palaces and great cities. Energy, discernment, constructive talent and administrative skill, must all be united to accomplish such results, so rapidly, so safely, so securely. I thank you for inviting me to come among you, that I might see all this, and might enjoy the gratification which the sight of progress of such a kind imparts. It will be to me a source of future satisfaction, if I shall be able, on reflection, to believe that my visit to your country has in any way contributed to the further or more safe advancement among you of that pursuit, which is the surest support of nations—whether in the Old World or in the New.

#### ROOT CROPS—BREEDS OF CATTLE, AND CHEESE MAKING IN NEW-BRUNSWICK.

The Directors, thinking it might be of service to obtain the opinion of Mr. Robert Gray, a practical farmer, recently from Scotland, on various points of husbandry, the following is his reply to their application:—

OAK PARK, Fredericton, Oct. 24, 1849.\*

To the President of the St. John Agricultural Society:

Sir,—In answer to your request to furnish you with my mode of cultivating turnips, my opinion of what kind of cows are best adapted for dairy purposes, what rotation of crops I think would be most suitable in this country, and the way in which "Dunlop" cheese is made, I beg to submit the following:—

##### THE CULTIVATION OF TURNIPS.

Land intended for turnips should be ploughed in the fall, especially if it has any portion of clay in its composition. It has thus the benefit of the winter's frost, which renders it friable and easier worked in the spring. The number of spring ploughings and harrowings will depend on the nature of the soil, which must be thoroughly pulverised and cleansed, every clod broken, and every weed gathered off.—It is then drilled up into ridges of from 26 to 30 inches, according as the land is level and clear of stones or otherwise. Well prepared manure is then put into the drills, and seed sown (at the rate of 3lbs. per acre) as soon after as possible.

It is of great importance that the operations of drilling, manuring, covering the manure, and sowing, should be carried on in as rapid succession as possible. Seed sown on the evening of the day that the manure is applied and covered, will vegetate under the most unfavourable circumstances, whilst, if it is delayed for only twelve hours it will either not vegetate at all or so partially and feebly as to render it useless as a crop. So soon as the young plants show their rows distinctly, the grubber or cultivator should be passed between the rows, and the stripe of surface left between its operation and the line of plants should be taken off by the hand hoe. This gives an effectual check to the first growth of weeds, and renders the subsequent weeding comparatively easy. When the plants have got to some size, and begin to crowd each other, they should be singled out to a distance of from ten to fourteen inches, according as the crop is likely to be, a bulky one or otherwise. Moist weather is the best for this operation, but it should not be delayed more than eight days beyond the proper stage, even though the weather should be unfavourable. While the thinning is going on, the earth should be removed from

the roots of the plants left, so that only the taproot shall have a hold of the soil. At least one hand hoeing will be necessary after this, and as much cultivation between the rows as there is leisure for, up to the time that the plants begin to meet their leaves across the drill, when the drill plough may be passed lightly between the rows so as to form a channel for the surface water to run off, but without putting any earth up to the bulbs.

##### MANGOLD WURTZEL.

The culture of mangold wurtzel is much the same as for turnips, only the seed requires to be sown by the hand, and slightly covered with a rake or shovel. It is chiefly valuable as food for milch cows, as it does not, like turnips, taste the milk. In other respects I think it inferior to turnips, and being easily damaged by frost should not, in my opinion, be grown to any great extent in this Province.

##### CARROTS.

Land intended for carrots should have the manure ploughed in in the fall, and by as deep a furrow as possible. The seed should be thoroughly separated, mixed up with moist earth and sand, and placed in a rather warm situation, such as a kitchen, and turned over repeatedly for say forty-eight hours before sowing. This will cause the seed to germinate and insure an early braird. The rest of the treatment is similar to that for turnips, only in thinning out the distance between the plants should be from four to six inches.

##### BREEDS OF CATTLE.

From my experience in the matter, I give a decided preference to Ayrshire cows for the dairy.

I believe they will yield a greater quantity of milk in proportion to the food they consume than any other breed. Besides this, they are docile and hardy, and will thrive on pasture and with a description of keep when such breeds as the Short Horns would starve. They also possess more than average feeding qualities of their own, and when crossed with the Short Horn or Durham Bull, the produce is an animal remarkable for early maturity and a disposition to fatten. If proof were wanting of the excellence of the breed, it would be found in the circumstance that they are carried to almost every quarter of the globe. Large droves are every year taken to England, and during the last ten years, considerable numbers have been shipped to the Cape, the Isle of France, to Sweden, Denmark, Belgium, and the United States.

##### ROTATION OF CROPS.

The same rotation will not answer equally well on all soils and under all circumstances. The one I consider most generally applicable, and which I have myself adopted, is the following:

First year (and when the ground has been broken up from grass) oats or buck-wheat; second year, drilled green crop, properly cleaned and manured; third year, wheat, barley or other grain, with grass seeds; and fourth, fifth, sixth, and perhaps seventh year, grass made into hay or pastured.

##### METHOD OF MAKING DUNLOP CHEESE.

When more than the produce of one milking is used, the old milk must be heated to the same temperature as that newly drawn from the cows, or a little above it. This is best done by putting the milk, after taking off the cream, into a tin pan, and that again into boiling water. When the milk is properly heated, it is (together with the cream previously drawn off,) and the new milk, put into a tub and well stirred together, and the steep applied. When the milk has coagulated, which will be in about twenty minutes, the whole should be stirred up and thoroughly broken by the hand. In ten minutes afterwards the whey should be taken off, and

the curd pressed against the bottom of the tub, till it is firm enough to be lifted into a drainer, or vessel with a porous bottom, when it is cut with a knife, once in every ten minutes for an hour. It is then put into a cloth, and a pressure applied to expel the whey more thoroughly. When this is done and the curd gets dry and firm, it is put into a tub and carefully minced with the curd knife, and salt and a little nitre applied. The curd with a cloth round it, is then put into a chesset, set before the fire for three hours, and turned from time to time to preserve a uniform heat. It is then put in the press and a slight pressure applied. At the end of an hour the cheese is turned upside down in the chesset, and a cloth drawn from boiling water applied. At the end of another hour the cloth is again changed, and the cheese is left in the press to the following morning, when it is taken out, slightly heated before the fire, and again returned to the chesset and the press. When the wet cloths have been changed a time or two, a dry cloth is substituted and a greater pressure applied. The dry cloths are changed every two hours till the cheese is perfectly dry, when it is taken out, the chesset well warmed, and a thin cloth put into it. The cheese is then returned to the chesset for the last time and subjected to a slight pressure for half an hour, when it is taken out and laid on a plank in a dry situation with a cloth thrown over it for a day or two, and turned over and rubbed with a coarse towel, (taking care not to break the edges), every two days till it is sufficiently dry for keeping.

The above cannot be called my methods exactly, but are the modes considered at present in Ayrshire as the most profitable and advantageous.

If they contribute to make the way more smooth to my brother Farmers in this Province, I shall be gratified.

I am your obedient Servant,

ROBERT GRAY.

DOUBLE FURROW PLOWING.

We saw an experiment in fall plowing not long since, in which there is some virtue, that will meet the approbation of all those who prefer deep plowing and deep soils, to shallow surface work.

It was in a piece of the most inveterate June grass, infested with the wire-worm, and entirely worthless for mowing. The *modus operandi* was this:—With a good turning green-sward plow—its roller set to gauge a furrow about four inches in depth—a land was marked out by the plow, and the first furrow slice turned over once out of the way, by hand, with forks. Then another plow of the same width followed, set to work six inches deep in the same furrow, with two strong horses harnessed tandem—one before the other. After the first furrow was completed, the turf slice of the first plow was turned into a ten inch depth of furrow; and, by the second plow, which follows, covered with a furrow of earth six inches thick, taken immediately from under where the turf came from—so that the surface of the original sward was ten inches below its former.

By this process, a species of subsoiling was performed—the ground put in a proper situation for manuring, and cross-plowing for spring crops—the June grass and wireworm probably buried beyond resuscitation—and the earth properly charged with vegetable nutriment to sustain a heavy crop, and resist drouth.

A three-horse team, abreast, would probably be a better team for the second or subsoil furrow; and the whole operation a good spring process, with or without manuring.—*Rural New-Yorker.*

GOOD ADVICE.—“It will not do to hoe a great field for a little crop, or mow 20 acres for five loads of hay. Enrich the land and it will pay you for it. Better farm 30 acres well than 50 acres by halves.”

MANURING TREES.—It does not always happen, says the *Maine Farmer*, that the ground is made as fertile when young trees are set out, as it should be. In such instances, subsequent manuring is useful. No better season for this purpose can be selected than late in the autumn or during the winter, when rains or thaws may carry the soluble portions down among the roots, and the remainder be spaded in, in the spring.

Now every person at all conversant with the laws of vegetable growth, is aware that the absorbing parts of roots, are young fibres or spongioles, at or near the extremities of larger roots. In very small trees, these may be within a foot of the main stem; but as the tree increases in size, the circumference of the roots forms a larger circle each successive year. While the tree is young, the length of the roots is quite equal to the height of the tree. As it becomes older, the roots near the base of the tree enlarge and become nearly destitute of fibres. Hence, the entire uselessness of the too common practice of applying manure closely around the base of the tree, instead of at a distance of many feet around. This practice is not less absurd than to pour water into a man's boots to allay his thirst.

Trees which grow in sod ground can never thrive so well as where the soil is kept mellow and free from vegetable growth. With young trees the difference will often be as ten to one. Many, to avoid this evil, spade around their trees, but in so small a circle, that no benefit is derived; the young roots are far off from the tree and from this spaded circle, seeking in a hard dry soil, under the thick grassy covering, for a scanty supply of food.

PRUNING STONE FRUIT.—It has been but a few years since the cultivators of fruit have been in the habit of pruning peach trees at the extremities of the branches, instead of cutting off limbs at the trunk. This system of shortening in, as it is called, is gaining ground, and is a great improvement. The reasons for this mode of pruning are evident on examination. Most kinds of stone fruit grow rapidly, and bear the greatest part of their fruit on new wood, which is, of course, near the ends of the limbs. In this way a tree spreads over much land, and has naked branches near the trunk; and pruning at the trunk causes the gum to ooze out, which sometimes endangers the health or life of the tree.

On the contrary, by pruning at the ends of the branches, the tree is confined to small space, the wounds have no unfavourable effect, or only affect the twigs and not the trunk, and much new wood is produced for the production of fruit.

TO NEUTRALIZE THE ACID (OR SOURNESS) IN FRUIT PIES AND PUDDINGS.—It is well worthy of notice that a large quantity of the free acid which exists in rhubarb, gooseberries, currants, and other fruits, may be judiciously corrected by the use of a small quantity of carbonate of soda, without, in the least, affecting their flavour, so long as too much soda is not added. To an ordinary sized pie or pudding, as much soda may be added, as, piled up, will cover a shilling; or, even twice such a company, if the fruit is very sour. If this little hint is attended to, many a stomach-ache will be prevented, and a vast quantity of sugar saved; because, when the acid is neutralized by the soda, it will not require so much sugar to render the tart sweet.

PASTRY.—Take a quarter of a peck of flour, and rub into it a pound of butter, very fine. Make it up into a light paste, with cold water, just stiff enough to work well. Lay it now out about as thick as a crown piece; put a layer of butter all over; sprinkle on a little flour, double it up, and roll it out again. Double and roll it with layers of butter, three, four, five times, or more. Bake in a moderately quick oven.

## Horticulture.

### A FEW WORDS ABOUT SICKLY PEAR TREES.

We have heard several complaints of the early decay of pear trees in Canada. This effect is probably owing as much to the want of drainage and thorough preparation of the soil, and planting too deep, as selecting sorts which have not become acclimatised. It should be remembered that a tree is a living organism, and that it is necessary to pay the strictest attention to the various physical conditions which affect its healthy development, and therefore its durability. The extremes of temperature and excessive droughts incident to the climate of a large portion of the North American continent, are no doubt injurious to the healthful and prolonged maturity of vegetable as of animal life; but much of the premature decay of fruit trees, as well as of human beings, is attributable to the want of rational attention and the ignorance or neglect of nature's laws. The following article we take from the February number of that useful periodical the *Horticulturist*:

I find, on looking about my garden, talking with fruit-growers and looking through the pages of your paper, that it is an undeniable fact that a good deal more difficulty is experienced in cultivating the pear than any other of the popular fruit trees.

The time was, indeed, when pear trees—great, strong lofty trees, too, though the fruit was rather *chokey*—grew around every farm-house, bore cart-loads of fruit annually, and were looked upon as able to “stand more hard knocks” than even an apple tree. Longer-lived the pear tree certainly is by nature; and as standing venerable proofs of this, I refer you to the Endicott pear tree, near Salem, and the Stuyvesant pear tree, in New York. As both of these trees are above two centuries old—by veritable records—it is not worth while to spend time in proving that the pear is, naturally, a long lived tree.

But, in fact, natural pear trees, that is to say, the chance seedlings of the common pear, that spring up by the sides of lanes and fences, are as hardy and as great bearers now as they ever were. What then is the matter with all the sorts whose tenderness our fruit-growers groan over?

Is it not owing to the delicate constitutions which these foreign varieties, bred in a more regular climate, have, and which makes them peculiarly alive to our great excesses of heat and cold?

Is it not true, in rich and deep soils, where delicate trees are forced into a sappy condition, when the limbs are too full of juices, upon which the frost or sun acts readily, that blight and other diseases of the pear are most frequent?

Is it not true that foreign varieties of pear, especially those originated within the last few years, are far more delicate and liable to disease than native sorts of equal merit, raised from seed in this country?

I throw out these queries to set some of your ingenious and practical correspondents, in various parts of the country, at work to furnish materials for answers that will settle some knotty points. For my own part, I have made up my mind that to grow fine pears for profit, we must, in order to save the trees and keep them sound, keep the trunks and leading branches covered with a light *sheathing of straw* all the year round. This guards the bark of the principal parts of the tree from all excesses of heat and cold. I have experimented for four years past with this plan of sheathing, and can say

that I am quite satisfied with it. Among three dozen pear trees now just come into bearing, one-third of them have been kept in straw, and not a single one of that dozen has suffered by blight or other disease; while of the remaining two dozen, nearly one-half have dropped off, and been dug up and consigned to the brush heap.—Some careless farmer or gardener—fond of *shirking* everything that he can—will say, “but who can take the trouble to straw all his pear trees?”

You can, is my reply. Try it on half a dozen trees, and keep an account of the time and labor spent in it. It will amount to a few cents per tree,—not the price of half a peck of Virgalieus in the York market. And if you can gather pears by the cartload—for no fruit ripens better, or has a higher flavor than the pear in this climate—if, I say, you can gather pears every year by the cartload, for only the trouble of strawing the trees, then the blight take you if you are too lazy to do it!

AN OLD DIGGER.

### ANCIENT HORTICULTURE.

In the middle of the nineteenth century, when, by the aid of science, we are approaching to perfection, it may be curious and interesting to take a retrospective glance, the better to judge of the progress that has been made in fruit culture. The following remarks on the apple, are taken from a book, published in London in 1597, by John Gerarde, and “enlarged and amended” by Thomas Johnston, anno 1633:—

“The tame and grafted apple trees are planted and set in orchards made for that purpose. They delight to grow in good and fertile ground. Kent doth abound with apples of most sorts; but I have seen in pastures and hedge-rows, about the grounds of a worshipful gentleman, dwelling two miles from Hereford, called Master Roger Bodnome, so many trees of all sorts, that the servants drink for the most part no other drink but that which is made of apples. The quantity is such, that by the report of the gentleman himself, the parson hath for tyth many hogsheads of cyder. The hogs are fed with the fallings of them, which are so many that they make choice of those apples they do eat, who will not taste of any but the best—an example doubtless to be followed of gentlemen who have land and living. But enough saith, the poor will break down our hedges, and we shall have the least part of the fruit. But forward in God's name; graft, set, plant and nourish trees in every corner of your grounds. The labour is small, the cost nothing; the commodity is great; yourselves shall have plenty; the poor shall have somewhat in time of want to relieve their necessity, and God shall reward your good minds and diligence.”

Then, when so many have “land and living enough,” and are destitute of fruit trees, the above advice to the people of England, given upwards of 250 years ago, is worthy of attentive consideration. We would say, the season is now at hand; “graft, set, plant and nourish [fruit] trees,” of good descriptions only, “in every corner of your grounds.”

L. T. N.

### PRUNING.

The proper season to prune fruit trees is in spring, when the cold weather is past—say from the middle of March to the end of April, according to the season. Pruning, regularly and judiciously performed, improves the size and flavour of fruit,

and promotes a vigorous and healthy growth. Experience has shewn the correctness of the following general principles:—

1st. Over pruning produces barrenness, and moderate pruning leads to productiveness.

2nd. It is a well known law that the removal of one bud or branch, strengthens another. The reason of this is, that the sap which formerly supplied an amputated limb, transfers itself to the other branches.

3rd. To stop a branch by cutting away its extremity, induces what is left to produce side branches, which would not otherwise have appeared. By this means we are enabled to give a shapely form and proper balance to the head of the tree.

The application of these principles is easy. The great object to be kept in view, is the necessity of keeping the branches thin; remove such as are straggling, or cross, and come in contact with each other. Abundance of light, and a free circulation of air amongst the leaves, are of vital importance to all plants. When branches and consequently leaves are crowded together, they are smothered. When pruned to grow well apart, they break freely, and perspire profusely; the result is, strong, thrifty shoots, and dark green fat leaves, instead of spindling twigs and yellow weasened foliage.

In apple orchards that have been recently planted, very little pruning is necessary. Let the trees be examined yearly about midsummer, and all crossing branches removed, while they are yet small. The heads can then be properly adjusted and balanced, and little trouble required to keep them in order for the future.

In all cases let such limbs and twigs as are necessary to be removed, be cut close to the trunk or branch from which they are taken. This facilitates the healing of the wound, and prevents the unsightly appearance of dead and decaying stumps or spurs. After being pruned in spring, an application of the subjoined wash will prevent the ravages of insects, and greatly promote the thrift of the tree. Cultivating the soil around the trees, and the regular use of manure, are also of essential importance. Every fall, let some good rotten manure be put round the roots, and dug down in spring.

GEORGE LESLIE.

Toronto Nursery, Feb., 1850.

#### WASHES FOR THE STEMS AND BRANCHES OF FRUIT TREES.

1. A peck of quick lime, half a pound of flour of sulphur, and a quarter of a pound of lampblack; mix the whole together with as much boiling water as will form the ingredients into a thick paint. Before applying the composition—which will be best done with a paint or whitewash brush—scrape off all the moss and loose bark from the trunk and branches.

2. Dissolve two pounds of potash in two gallons of water. This is applied with a brush once, or at most twice, and is an efficacious preservative against the attacks of insects.

3. For old trunks with thick and rigid barks, a wash of soft soap is very beneficial. A portion

of it remains upon the bark, which, dissolved with the rain, penetrates into the crevices, where insects are lodged, and effectually destroys them.

The use of any of these washes will rid the stems and branches of trees of the bark louse, the scale or scab, the white mealy insect, and render the bark soft, smooth and glossy, and add to its natural lively colour.

#### IMPORTANCE OF ORCHARD PLANTING.

J. DOUGALL, ROSEBANK NURSERY, AMHERSTBURGH.

(Concluded from Page 42.)

##### Planting and Cultivation of Orchards.

Orchards should not be planted on ground where water stands at any season of the year. If not intended to be underdrained, open drains should be made so as to carry off all surface water as it falls; after which, the land should be thoroughly ploughed and manured. The best way to do this, is to subsoil plough it first, then trench plough it, to incorporate the manure thoroughly; or, if the whole field cannot be subsoiled, a strip of land, eight feet wide, should be so treated where the rows of trees are to be placed. If the land is sloping, care should be had to run these strips up and down the slope, and not across it, so as to allow the water in the soil free egress. The orchard should also be put on the best soil on the farm, if otherwise suitable, as it will well repay such care.

The trees, if apples, should be planted thirty feet apart each way. Some plant them forty feet apart, but it is a long time before they cover the ground. One of my orchards has the apples and pears planted quincunx, thirty-three feet apart each way, and between every one of these trees, a plum or peach tree is planted, so that in reality, the trees are only twenty feet apart; but before the apples and pears need the ground to themselves, the peaches and plums will have died out. This is a very good plan where you have not ground or room for separate orchards for each kind of fruit; but I would, where practicable, advise planting each kind of fruit by itself, as they require different manures, and standard pears may be planted twenty-five feet apart, as they grow more upright than apples; plums, cherries, and peaches from fifteen to twenty feet apart.

If the trees are planted in the fall, it is well to make a conical mound of earth about fifteen to eighteen inches high, round each tree, this serves to protect the roots from frost, it also prevents the tree from being blown about by the wind when the ground is soft, and thus saves the trouble of staking the trees; it also prevents the depredations of mice in winter.

If planted in spring, the trees should be mulched; that is, long manure, chip manure, or other litter placed round the trees a few inches thick; this protects the roots from the effects of drought in summer, and keeps the ground moist, and prevents it from baking and cracking; and, if it is necessary to water the trees in summer till fairly started, it will prevent the water from quickly evaporating. But, in general, it will be better not to water the trees at all. I have never found watering, unless slightly over the foliage or wood, if the tree is long of growing, do any good during the prevalence of dry weather; but on the contrary, I have found it do great injury. During wet weather, though it may look ridiculous to say so, it is sometimes very beneficial; when sufficient rain has not fallen to penetrate the ground thoroughly, then is the time to give them a good watering, so as to reach to the roots, and then the evaporation will not be so injurious as during the prevalence of long continued drought.

The holes for planting the trees in, should be three or four feet in diameter, and eighteen inches or two feet

deep, unless in underdrained clayey subsoils, as before stated. If the subsoil is bad, it should be thrown out, and rich earth or compost, put in the place, in which the tree should be planted, so as to be not more than an inch deeper after the soil has settled, than it was in the nursery; and as the earth is filled in, the tree should be gently shaken, so as to make the fine earth fill up all the interstices about the roots. When the hole is about two thirds full, the earth should be trod around the roots to firm the tree, and if in spring, a bucket of water should be thrown into the hole, which will cause the earth to settle equally about the roots. The rest of the earth should then be filled in loosely, without further treading; and if the tree is in an exposed situation, or large, it should be staked to keep it from blowing about; if in sheltered situations, and the trees are small, they will not require staking. I have never staked a tree I planted yet, and have found no need of doing so. Where necessary, the stake should be placed slanting, and tied to the tree with a straw rope, or other soft bandage, which should be wound two or three times round the stem of the tree before tying it to the stake, to prevent injury from rubbing.

After the trees are planted, the soil should, for several years at least, be thoroughly cultivated with root crops that require manure, such as potatoes, beets, carrots, turnips, and other vegetables; but care must be taken in planting these crops, not to have any of them within three or four feet of the trees. I have seen a fine young orchard, planted with great care, nearly killed the first year by a foolish greediness in allowing the hills of potatoes to be planted close up to the tree. This space round each tree should always be kept free from all crops, and regularly hoed and dug, for if large weeds are allowed to grow up round the trees, they are as hurtful, or more so, than crops, or grass. When necessary, from any circumstance, to lay the orchard down in grass, a space of from six to eight feet in diameter, according to the size of the tree, should be kept clear of grass and weeds, by digging and hoeing repeatedly.

In no case should grain crops be sown in an orchard, as they are the most injurious that could be put in it.—Indian Corn might be planted but it must be kept a considerable distance from the trees, and it is not nearly so good as low hoed crops. After the trees commence bearing, it would be found far more profitable to cultivate the ground regularly without planting any crops; the increased product, both in quantity and quality, would well pay for the labour, and I cannot see why it should be considered that the crop of fruit is the only one on the farm that will not pay for separate cultivation.—*Montreal Witness.*

#### ROOT GRAFTING.

This method of propagation is admirably adapted to hardy, thifty varieties of apples, pears and plums, and as such is perhaps the most popular in the Horticultural world. *Tender or unthrifty sorts, however, should never be so worked at the West*—such varieties in our climate need all the additional vigour and hardihood, to be gained by an exchange of their own stocks and roots for those of seedlings. In grafting wild plums upon wild plum stocks, the graft should always be below ground a few inches, so that it may throw out roots of its own. If set low at first, but not low enough, the tree should be taken up and set deeper afterwards. If this is not done, the tree, we think, will be comparatively tender or shortened. But it is, with the apple tree more particularly, that root-grafting obtains and shines forth in all its glory. That variety alone, so far as we know, is so worked in the winter season and kept in boxes till spring, at the usual grafting season.

We subjoin the usual practice in root-grafting, as given in an article written by us three years since for

the Horticulturist, with, however, some few alterations. When ready to commence operations, take a lot of roots, as many as are wanted during the day, and cut them up in pieces three or four inches long—never longer—marking the upper end of the roots when necessary, in order to distinguish them, and throw the pieces into a pail of water. If desirable to cut close, the upper piece need not have more than an inch of clear root upon it. In regard to size, they may vary from that of the scion, to an inch or more in diameter—but the best size, perhaps, is about three-eighths or half an inch thick. When the roots are cut they should be washed by stirring and turning them a few times in the pail, and changing the water once, leaving them when washed in the water.

After marking the name of the variety to be grafted, upon a little stake eight or nine inches long which should be kept constantly with that variety, and in boxing put between it and the next kind—two or three hundred grafts are prepared ready for setting and piled up. They should be from three and a half to four inches in length, and with a tongue, as in splice grafting—the cut or slant at the grafted end of both the scion and root, not exceeding about half an inch in length. After taking out a quantity of roots, and piling them up with the lower ends towards you, they are then, one by one, prepared with a tongue and the grafts inserted.

They should now be waxed, or tied, ready for packing away in the boxes. If waxed, they must be previously spread out so that the outside moisture can dry off. The wax is made by melting and stirring together four parts rosin, one and a half beeswax, and one of tallow—to be applied while in a fluid state, with a shaving brush, which is neatly and quickly done. If preferred, they may be tied with tow or bass strings, or corn husks.—This we think quite as good a way as any, though perhaps not so speedy as the other. They are now ready for the boxes, which should be about twenty-four inches long, twelve wide, and five and a half high on the inside, and need not be very tight. Such a box will hold from 600 to 1,000 roots, according to their size and the closeness of packing. Fill the box partly full of fine earth, and pack some snugly against one end; then take a handful of the root-grafts, and after evening the tops, set them up slanting against the earth, beginning at the right hand side of the box, having the tops an inch or two above it. In order to get the tops even, and keep the tiers separate across the box, a thin, narrow strip of board is placed behind each tier. After placing a row, the dirt should be worked among the roots and packed snugly against them, using a little punch to jam down the dirt behind, each tier and next the box. There need be no fear of disjoining the grafts in boxing, unless handled very roughly. When the box is full it should be set away in a cool, dark, moist cellar, or place where they will not freeze, nor the mice get at them.

They should be planted out as early as the ground will admit, though we have planted them as late as the middle of May, but not with so good success. The best stage, we think, for planting them out is when the buds have burst, and the young shoots have fairly started—but have set them when they had grown several inches. A week or two before putting out they should be exposed to the light and air, and well watered. Should the cellar where they are kept be very dry, they might require watering in the winter.

In planting out rub off all the shoots from the roots, and set in good, mellow soil, with the top of the scion an inch or so above the ground.

Root-grafting, as above, can be done at any time during the winter. The regular day's work is 500, which, however, under favourable circumstances, is an easy task. In case the roots or scions cut during the day, be not all used the same day, they can be kept overnight in the water.—*Wisconsin Farmer.*

General Science and Miscellany.

NATURAL PHILOSOPHY.  
No. III.

THE LAWS OF MOTION AND THE CENTRE OF GRAVITY.

The science of mechanics is founded on the laws of motion; it will therefore be necessary to explain these laws before we examine the mechanical powers. Motion consists in a change of place. A body is in motion whenever it is changing its situation with regard to a fixed point. Now, as one of the general properties of bodies is inertia, it follows that a body cannot move without being put in motion. The power which puts a body into motion is called *force*; the stroke of the hammer is the force which drives the nail; the exertion of the horse in pulling, that which draws the carriage. Gravitation is the force which occasions the fall of bodies; cohesion, that which binds the particles of bodies together; and heat, a force which drives them asunder. When a body is acted on by a single force, the motion is always in a straight line, and in the direction in which it received the impulse.

The rate at which a body moves, is called its *velocity*; and it is one of the laws of motion, that the velocity of the moving body is proportional to the force by which it is put in motion. The velocity of a body is called *absolute*, if we consider its motions without any regard to that of other bodies. When, for instance, a horse goes fifty miles in ten hours, his velocity is five miles an hour. It is termed *relative*, when compared with that of another body which is itself in motion. Thus a man asleep in a ship under sail, remains at rest relatively to the vessel, though he partakes of its absolute motion. If two carriages go along the same road, their relative velocity will be the difference of their absolute velocities.

The motion of a body is said to be *uniform*, when it passes over equal spaces in equal times. It is produced by a force having acted on a body once, and having ceased to act, such as the stroke of a bat on a cricket-ball. It may be said, that the motion of the ball is neither uniform nor in a straight line. In answer to this objection, you must observe that the ball is inert, having no more power to stop than to put itself in motion; if it fall, therefore, it must be stopped by some force superior to that by which it was projected; and this force is gravity, which counteracts and finally overcomes that of projection. If neither gravity nor any other force opposed its motion, the cricket-ball, or even a stone thrown by the hand, would continue to proceed onwards in a right line and with a uniform velocity. We have no example of perpetual motion on the surface of the earth; because gravity, the resistance of the air or friction, ultimately destroys all motion. When we study the celestial bodies, we find that nature abounds with examples of perpetual motion, and that it conduces as much to the harmony of the system of the universe, as the prevalence of it would be destructive of all stability on the surface of the globe.

*Retarded* motion is produced by some force acting on a body in a direction opposed to that which first put it in motion, and thus gradually diminishing its velocity.

*Accelerated* motion is produced, when the force which puts a body in motion continues to act upon it during its motion, so that its velocity is continually increased. Let us suppose, that the instant a stone is let fall from a high tower, the force of gravity were annihilated: the stone would nevertheless descend; for a body, having once received an impulse, will not stop, but move on with a uniform velocity. If, then, the force of gravity be not destroyed after having given the first impulse to the stone, but continue to act upon it during the whole of its descent, it is easy to understand that its motion will be thereby accelerated. It has been ascertained, both by

experiment and calculations, that bodies descending from a height by the force of gravity, fall about sixteen feet in the first second of time, three times that distance in the next, five times in the third second, seven times in the fourth, and so on, regularly increasing according to the number of seconds during which the body has been falling. Thus the height of a building or the depth of a well may be known, by observing the length of time which a stone takes in falling from the top to the bottom. If a stone be thrown upwards, it takes the same length of time ascending, that it does descending. In the first case, the velocity is diminished by the force of gravity; in the second it is accelerated by it.

The *momentum* of bodies is the force or power with which one body would strike another. The momentum of a body is measured by the product of its weight and velocity. The quicker a body moves, the greater will be the force with which it will strike against another body; and we know also, that the heavier a body is, the greater is its force; therefore, the whole power or momentum of a body is composed of these two properties. It is found by experiment, that if the weight of a body be represented by the number 3, and its velocity also by 3, its momentum will be 9.

The *reaction* of bodies is the next law of motion to be explained. When a body in motion strikes another body, it meets with resistance; the resistance of the body at rest will be equal to the blow struck by the body in motion; or, in philosophical language, action and reaction will be equal and in opposite directions. Birds, in flying, strike the air with their wings, and it is the reaction of the air which enables them to rise or advance forwards.

If we throw a ball against a wall, it rebounds; this return of the ball is owing to the reaction of the wall against which it struck, and is called *reflected motion*.

*Compound motion* is that produced by the action of two forces. If a body be struck by two equal forces, in opposite directions, it will not move. But if the forces, instead of acting on the body in opposition, strike it in two directions inclined to each other, at an angle of 90 degrees, it will move in the diagonal of a square: thus, [Fig. 1.] if the ball A be struck by equal forces at x and y, the force x would send it towards B, and the force y towards c; and since these forces are equal, the body cannot obey one impulse rather than the other, yet as they are not in direct opposition, they cannot entirely destroy the effect of each other; the body will therefore move, but, following the direction of neither, it will move in a line between them, and reach D in the same space of time that the force x would have sent it to B, and the force y would have sent it to c.

Now, if two lines be drawn from D to join B and c, a square will be produced, and the oblique line e, which the body describes, is the diagonal of a square. Supposing the two forces to be unequal—that x, for instance, is twice as great as y; then x will drive the ball twice as far as y, consequently the line A B will be twice as long as the line A c; the

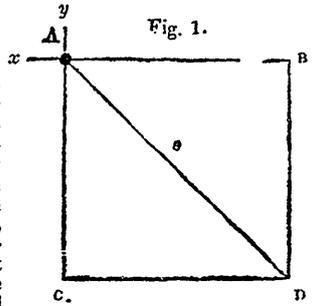


Fig. 1.

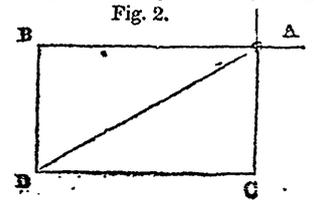


Fig. 2.

body will in this case move to *D*; and if the lines be drawn from that point to *B* and *C*, the ball will move in the diagonal of a rectangle. Let us now suppose the two forces to be unequal, and not to act on the ball in the direction of a right angle, but in that of an acute angle.

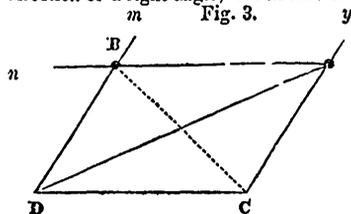


Fig. 3.

The ball will move [Fig. 3] from *A* to *D* in the diagonal of a parallelogram, *A B D C*. Forces acting in the direction of lines forming

an obtuse angle will also produce motion in the diagonal of a parallelogram. For instance, if the body set out from *B* instead of *A*, and be impelled by the forces *m* and *n*, it will move in the dotted diagonal *B C*.

**Circular motion** is produced by the action of two forces on a body, by one of which it is projected forward in a right line, whilst by the other it is continually directed towards a fixed point. For instance, if I whirl a ball fastened to my hand with a string, it is acted on by two forces, and has a circular motion; one of the forces is that which I give it, which represents the force of projection, the other force is the string which confines it to my hand. If during its motion the string were suddenly to break, the ball would fly off in a straight line, and this, because it would then be acted on by only one force; for, as we have said, motion produced by one force is always in a direct line. The point or line, to which the motion of a body is confined, is called the *centre* or *axis* of motion. This centre or axis remains at rest, whilst all the other parts of the body move round it: when a top is spun, the axis is stationary, whilst every other part is in motion round it. There is one circumstance in circular motion, which must be carefully attended to; which is, that the further any part of a body is from the axis of motion, the greater is the velocity. The force, which confines a body to a centre, round which it moves, is called the *centripetal* force; and the force which impels a body to fly from the centre, is called the *centrifugal* force. In circular motion, these two forces balance each other.

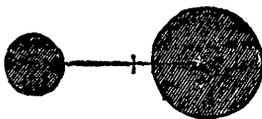
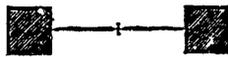
If a ball be thrown in a horizontal direction, it is acted upon by three forces, viz., the force of projection; and the resistance of the air through which it passes; and the force of gravity which finally brings it to the ground. Bodies thus projected describe a curve line in their descent. If the forces of projection and of gravity both produced uniform motion, the ball would move in the diagonal of a parallelogram; but the motion produced by the force of projection alone is uniform, that produced by gravity is accelerated; and it is this acceleration which makes it fall in a curve instead of a straight line. The curve line which a ball describes, if the resistance of the air be not taken into consideration, is called in geometry a *parabola*.

The middle point of a body is called its *centre of magnitude*, that is, the centre of its mass or bulk.

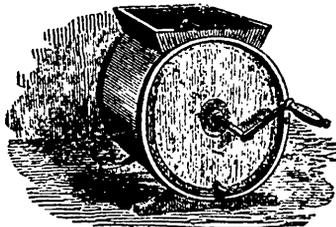
The *centre of gravity* is the point about which all the parts of a body exactly balance each other, in every position of the body; if, therefore, this point is supported, the body will not fall. When a boat is in danger of being upset, it is dangerous for the passengers to rise suddenly: this is owing to their raising the centre of gravity. When a man stands upright, the centre of gravity of his body is supported by the feet. If he lean on one side, he will no longer stand firm. A rope-dancer performs all his feats of agility, by dexterously supporting his centre of gravity; whenever he finds himself in danger of losing his balance, he shifts the heavy pole which holds in his

hands, in order to throw the weight towards the side that is deficient; and thus by changing the situation of the centre of gravity, restores his equilibrium. A person carries a single pail of water with great difficulty, owing to the centre of gravity being thrown on one side; but two pails, one hanging on each arm, are carried with much greater facility, because they balance each other.

When two bodies are fastened together, they are to be considered as forming but one body. If the two bodies be of equal weight, the centre of gravity will be in the middle of the line which unites them; but if one be heavier than the other, the centre of gravity will be proportionably nearer the heavy body than to the light one.



KENDALL'S CHURN.



This is a churn much used in the States, and from its simple, compact, portable shape, we are inclined to think it is both cheaper and better than many of those new fangled contrivances with high sounding names, such as the "Thermometer Churn," "Atmospheric Churn," &c. &c. The cut needs no explanation. The shaft passing through the centre is supplied with perforated wings, which, by turning the handle, give motion to the cream.

THE LACTOMETER.



This is a very useful invention, though but little known. It costs a mere trifle compared with its utility, especially in large dairies. The object of the lactometer is to ascertain the proportion which the cream bears to the milk of any particular cow, or the produce of a whole dairy. Lactometers of different kinds have been invented, the best is called the five or six glass lactometer.

The principle of the instrument is, that if new milk is poured into glass tubes, and allowed to remain, the division between the cream which floats upon the surface of the milk will be so evident, that its depth will be easily measured; and should the milk from any cow produce more cream than that of another, the difference will be

seen by the divisions or marks on the glass tubes. The lactometer consists of five or six glass tubes, about half an inch diameter, and eleven inches long, fitted into an upright mahogany frame, each tube having a fine line drawn round it, ten inches from the bottom; three inches from the line downwards, it is graduated into inches and tenths of inches. At milking time, each tube is to be filled up to the line with new milk. After standing twelve hours, the quantity of cream which floats upon the surface is shewn by the scale of inches and tenths; each division will therefore represent one per cent. of the whole.

If the milk given by a cow at one meal is one gallon or eight pints, and the thickness or depth of the cream which floats upon it measures fourteen divisions, multiply the number of pints, 8, by the depth of the cream, 14; the result will be that the produce of the cream of that meal is 112, or one pint twelve one-hundredths. Care must be taken to fill these tubes as soon as the pail is taken from under the cow, for, if any delay takes place, some of the cream will have ascended towards the top. The milk should be taken from the middle of the pail, which is done by dipping a cream-pot below the froth.

**RICH BUCKWHEAT CAKES.**—Take two pints of fresh buckwheat flour and half a pint of sifted corn meal, mix with milk to a thin batter, and add one tablespoonful of fine salt, and two tablespoonfuls of brewer's yeast, or an equivalent of other yeast. Leave the whole in a stone jar, in a warm place, to rise over night. In the morning add a little hot water, and then bake immediately.

An uncultivated mind, like neglected ground, will soon be overrun with weeds.

**COMMON INDIAN CAKE.**—Sift into a pan a quart of corn meal. Scald it with sufficient quantity of boiling water to make a thick batter, stirring it smooth as you proceed. Add a teaspoonful of salt, and a quarter of a pound, or half a pint of fresh butter. It must be stirred or beaten very long and hard, so as to make it very light. Butter some small square tin pans; fill them with the mixture, and bake the cakes well. Send them to table hot, and eat them with butter and molasses, if you like it.—*Miss Leslie, in Saturday Gaz.*

**TO MAKE YEAST.**—To two middling-sized boiled potatoes, add a pint of boiling water and two tablespoonfuls of brown sugar. One pint of hot water should be applied to every half pint of the compound. Hot water is better in warm weather. This yeast, being made without flour, will keep longer, and is said to be much better than any previously in use.

**FINE INDIAN CUP CAKES.**—Stir to a light cream a pound of fresh butter, cut up into it a pound of powdered white sugar. Add a heaped teaspoonful of powdered nutmeg and cinnamon, mixed. Mix together a pint of sifted Indian meal, and a half pint of wheat flour. Beat six eggs very light, and then stir them into the mixture of butter and sugar in turn, with the meal. Butter some teacups, fill them with the mixture, and bake it well.—When done, turn them out of the cups, and send them to table warm.

**INDIAN BATTER CAKES.**—Mix together a quart of sifted Indian meal, (the yellow meal is best for all purposes,) and a handful of wheat flour. Warm a quart of

milk, and stir into it a small teaspoonful of salt, and two large tablespoonfuls of the best fresh yeast. Beat three eggs very light and stir them gradually into the milk in turn with the meal. Cover it, and set it to rise for three or four hours. When quite light, bake it on a griddle in the manner of buckwheat cakes. Butter them, cut them across, and send them to table hot, with molasses in a sauce boat.

If the batter should chance to become sour before it is baked, stir in about a saltspoonful of pearl-ash dissolved in a little lukewarm water, and let it set half an hour longer before it is baked.—*Miss Leslie.*

**USEFUL HINTS.**—Account should be kept detailing the expenses and product of each field.

When an implement is no longer wanted for the season, lay it carefully aside, but first let it be well cleaned.

**THE WONDERS OF NATURE.**—There is a tree called the Manchaneel, in the West Indies; its appearance is very attractive, and the wood of it peculiarly beautiful; it bears a kind of apple resembling a golden pippin.—This fruit looks very tempting and smells very fragrant, but to eat of it is instant death, and its sap or juice is so poisonous, that if a few drops of it fall on the skin, it raises blisters, and occasions great pain. The Indians dip their arrows in this juice to poison their enemies when they wound them. Providence has so appointed it, that one of these is never found, but near it grows a white wood, or fig tree, the juice of either of which, if applied in time, is a remedy for the disease produced by the Manchaneel.

**TEA.**—The definition of this word, two hundred years ago, was: "A kind of drinke used in China, made of hearbes, spices and other comfortable things very costlie; they drinke it warme, and with it welcom their dearest guesstes and friendes."

**IMPROVEMENT IN GUN CASTING.**—A new method has been resorted to at the Cannon Foundry, near Pittsburgh, for the production of guns. Instead of bringing them from the mould solid, and afterwards boring them, they are cast with the proper bore; the bore being carefully prepared so as to enclose a circle of cold water, which it receives and discharges in a continuous current, during the process of cooling, the object, probably, being to chill the inner surface more rapidly than the outer, and thereby given to it a greater density and strength. The plan is the suggestion of Liet. Rodman; and two guns—one cast on the old and the other on the new plan, having been subjected to the usual test, the first exploded on the eighty-fourth, and the latter on the two hundred and fifty-fifth round. This shows a great superiority over the common mode of making cannon, and if future experiments substantiate this successful one, Lieutenant Rodman's invention will come into general use.—*Farmer and Mechanic.*

#### MEASURING DISTANCE BY SOUND.

A bell rung under the water returns a tone as distinct as if rung in the air.

Stop one ear with the finger, and press the other to the end of a long stick or piece of deal wood; and if a watch be held at the other end of the wood, ticking will be heard, whatever be the length of the wood or stick.

Tie a poker on the middle of a strip of flannel two or three feet long, and press your thumbs or fingers into your ears, while you swing the poker against an iron fender, and you will hear a sound like that of a heavy church bell.

These experiments prove that water, wood and flannel are good conductors of sound, for the sound of the

bell, the watch and the fender, pass through the water, and along the deal and flannel to the ear.

It must be observed, that a body in the act of sounding is in a state of vibration, which it communicates to the surrounding air—the undulations of the sound affect the ear, and excite in us the sense of sound. Sound of all kinds, it is ascertained, travels at the rate of fifteen miles in a minute; the softest whisper travels as fast as the most tremendous thunder. The knowledge of this fact has been applied to the measurement of distances.

Suppose a ship in distress fires a gun, the light of which is seen on shore, or by another vessel, twenty seconds before a report is heard, it is known to be at a distance of twenty times 1,142 feet, or little more than four and a half miles.

Again, if we see a vivid flash of lightning and in two seconds hear a tremendous clap of thunder, we know that the thunder cloud is not more than 760 yards from the place where we are, and we should instantly retire from an exposed situation.

**DISCOVERY IN TANNING.**—We are informed by a correspondent from New Oxford, Pa., that Mr. William H. Rosensteel, of that place, has discovered a new and valued improvement in the mode of tanning leather, which has been tried for nine months, and which, it is said, will save "one-fourth of the bark and make the stock weigh at least three pounds more per hide, tanning in one-third of the usual time, and making a better looking article." These are very important improvements, especially as only one-fourth of the customary number of vats are employed, consequently no less than one-half of the usual labor is saved. We are not able to describe the process, but our correspondent is one on whom we place every confidence in what he asserts.—*Scientific American.*

**SELF-RELIANCE.**—The success of individuals in life, is greatly owing to their early learning to depend upon their own resources. Money, or the expectation of it by inheritance, has ruined more men than the want of it ever did. Teach young men to rely upon their own efforts, to be frugal and industrious, and you have furnished them with a productive capital which no man can ever wrest from them.

#### RECIPES, &c.

**TO MAKE RICE BREAD.**—Take one pound and a half of rice, and boil it gently over a slow fire in three quarts of water about five hours, stirring it, and afterwards beating it up into a smooth paste. Mix this while warm into two gallons, or four pounds of flour, adding at the same time the usual quantity of yeast. Allow the dough to work a certain time near the fire, after which divide it into loaves, and it will be found, when baked, to produce twenty-eight or thirty pounds of excellent white bread.

**ADULTERATIONS** in articles of food are so common, and fraught with such dangerous consequences, that we shall supply the processes by which they may be easily detected. Whenever numerous member of a family, after having partaken of the same kind of food are similarly affected by low pains, nausea, or relaxation, there is grave ground for suspicion that impure food has been taken. In such cases, it is alike a matter of individual protection, and public duty, to investigate the subject, and make any discovery of fraud widely known.

**ADULTERATION OF SUGAR.**—If brown sugar be adulterated with sand, (a very common cheat practised by unprincipled dealers,) it may be detected by taking a glassful of clear water, and dissolving a quantity of the suspected sugar therein. If sand, or any similar substance be present, it will fall to the bottom after standing some time,

**TO DISCOVER WHETHER BREAD IS ADULTERATED WITH ALUM.**—The bread must be soaked in water, and to the water in which it has been soaked, a little of the solution of muriate of lime must be added; upon which, if any alum be present, the liquid will be pervaded with milkiness; but if the bread be pure the liquid will remain limpid. Rationale: sulphuric acid has a stronger affinity for lime than for the alumina and potass, with which it forms alum: it therefore quits those bodies to form sulphate of lime with the lime of the test, which produces the milkiness.

*Another method.*—Run into the crumb of a loaf one day old, the blade of a knife considerably heated; and if adulterated with alum it will show its unwholesome adherences on the surface; and it may be further detected by the smell.

**TO DETECT THE ADULTERATION OF BREAD BY PLASTER OF PARIS, &c.**—Bone-dust or plaster of Paris may be discovered by slicing the soft part of a loaf thin, and soaking it in a large quantity of water in an earthen vessel, placed over a slow fire, three or four hours. Then having poured off the water and the pap, the obnoxious matter will be found at the bottom.

**TO DETERMINE WHETHER WHEAT FLOUR OR BREAD BE ADULTERATED WITH CHALK.**—1st.—Mix with the flour to be tried a little vitriol; if chalk or whitening be present, an effervescence (caused by the discharge of the carbonic acid of the chalk) will take place; but if the flour be pure no effervescence is produced. 2nd. Pour boiling water on some slices of bread, and pour into the water a little sulphuric acid; if there be chalk in the bread an effervescence will ensue.

**TO EXTINGUISH A FIRE IN A CHIMNEY.**—So many serious fires have been caused by chimneys catching fire, and not being quickly extinguished, that the following method of doing this should be made generally known. Throw some powdered brimstone on the fire in the grate, or ignite some on the hob, and then put a board or something in the front of the fire-place, to prevent the fumes descending into the room. The vapour of the brimstone ascending the chimney, will then effectually extinguish the soot on fire.

**A GOOD GARGLE FOR SORE THROAT.**—Tincture of myrrh, 2 drachms; common water, 4 ounces; vinegar, half-an-ounce. Mix.

**MACASSAR OIL TO MAKE THE HAIR GROW AND CURL.**—Olive oil, 1 pound; oil of origanum, 1 drachm; oil of rosemary, 1½ drachm. Mix.

**REMEDY FOR A SPRAIN.**—Take of camphorated spirit, common vinegar, spirits of turpentine, of each one ounce.

**TO PREVENT THE SMOKING OF A LAMP.**—Soak the wick in strong vinegar, and dry it well before you use it; it will then burn both sweet and pleasant, and give much satisfaction for the trifling trouble in preparing it.

**SCOURING BALLS TO REMOVE GREASE, &c., FROM CLOTH.**—Soft soap and Fullers' earth, of each half-a-pound; beat them well together in a mortar, and form into cakes. The spot first moistened with water, is rubbed with a cake, and allowed to dry, when it is well rubbed with a little warm water, and afterwards rinsed or rubbed off clean.

**WET CLOTHES.**—Handle a wet hat as lightly as possible. Wipe it as dry as you can with a silk handkerchief; and when nearly dry, use a soft brush. If the fur stick together in any part, damp it lightly with a sponge dipped in beer or vinegar, and then brush it till dry. Put the stick or stretcher into a damp hat, to keep it in proper shape. When a coat gets wet, wipe it down the way of the nap with a sponge or silk handkerchief. Do not put wet boots or shoes near the fire,

**HOW TO MAKE AN UNHEALTHY BED-ROOM.**—If you want to have a thoroughly unhealthy bed-room, these are the precautions you should take:—Fasten a chimney-board against the fire-place so as to prevent foul air from escaping in the night; and, of course, in the night season, never have a door or window open. Use no perforated zinc in panelling; especially avoid it in small bed-rooms. So you will get a room full of bed air. But in the same room there is bad, worse, and worst; your object is to have the worst air possible. Suffocating machines are made by every upholsterer; attach one to your bed; it is an apparatus of poles, rings, and curtains. By drawing your curtains around you before you sleep, you ensure to yourself a condensed body of foul air over your person. This poison vapour-bath you will find to be most efficient when it is made of any thick material. There being transpiration through the skin, it would not be a bad idea to see whether this cannot be in some way hindered. The popular method will do very well; smother the flesh as much as possible in feathers. The feathers retain all heat about your body, and stifle the skin so far effectually, that you awake in the morning pervaded by a sense of languor, which must be very agreeable to a person who has it in his mind to be unhealthy. In order to keep a check upon exhalation about your head (which otherwise might have too much the way of nature), put on a stout, closely-woven night-cap. People who are at the height of cleverness in this respect, sleep with their heads under the bed-clothes.—Take no rest on a hair mattress; it is elastic and pleasant certainly, but it does not encase the body; and therefore, you run a risk of not awaking languid. Never wash when you go to bed; you are not going to see anybody, and therefore there is no use of washing. In the morning, wet no more skin than you absolutely must,—that is to say, no more than your neighbours will see during the day—the face and hands. So much you may do with a tolerably good will, since it is the other part of the surface of the body, more covered and more impelled in the full discharge of its functions, which has rather the more need of ablution. It is therefore fortunate that you can leave that other part unwashed. Five minutes of sponging and rubbing over the whole body in the morning would tend to invigorate the system, and would send you with a cheerful glow to the day's business or pleasure. Avoid it by all means, if you desire to be unhealthy. Do not forget that although you must unfortunately apply water to your face, you can find warrant in custom to excuse you from annoying it with soap; and for the water again you are at liberty to take vengeance by obtaining compensation damages out of that part of the head which the hair covers. Never wash it; soil it; clog it with oil or lard, either of which will answer your purpose, as either will keep out air as well as water, and promote the growth of a thick morion of scurf. Of course, as you do not cleanse your body daily, so you will not show favour to your feet. Keep up a due distinction between the upper and lower members. When a German prince was told confidently that he had dirty hands, he replied with the liveliness of conscious triumph, "Ah, do you call that dirty? You should see my toes!" Some people wash them once in every month, that will do very well; or once a-year, it matters little which. In what washing you find yourself unable to omit, use only the finest towels, those which inflict the least friction on the skin. Having made these arrangements for yourself, take care that they are adhered to, so far as may be convenient, throughout your household. Here and there, put numerous sleepers into a single room; this is a good thing for children, when you require to blanch them and render them delicate; but you must take care not to carry this too far, otherwise you will render them pasty, pot-bellied, and deformed. By all means let a baby have foul

air, not only by the use of suffocating apparatus, but by causing it to sleep where there are four or five others in a well-closed room. So much is due to the maintenance of our orthodox rate of infant mortality.—*Journal of Public Health.*

**NEWSPAPERS.**—The reading of a good and well-conducted newspaper, even for the short space of one-quarter of a-year, brings more sound instruction, and leaves a deeper impression, than would be acquired, probably, at the best school in twelve months. Talk to the members of a family who read the papers, and compare their information and intelligence with those who do not. The difference is beyond comparison.—*Irish paper.*

**COD LIVER OIL.**—This species of oil is now a very fashionable remedy, and so great is the call for it, that some have wickedly suggested that there is more cod liver oil in the market than there are pounds of cod's livers caught. The principal disease, for which this is prescribed and taken, is consumption. We have no doubt that in many cases where there are consumptive symptoms, relief has been obtained by the use of this medicine. Probably a free use of any other fish oil would have done the same. The accounts that we have read in narratives of voyages among the Esquimaux Indians, who live on seal oil and blubber—and the fact that the Indians of the Penobscot and Quoddy tribes on our coast, are more healthy and fat during the fishing season, when porpoise oil is plenty, tend to corroborate this opinion.

We have seen some accounts of the use of other kinds of fish oil instead of the cod's liver, when that particular oil could not be conveniently obtained, which stated that equally as good effects followed its use. Some contend that in the cod liver oil may be found *Iodine* and *Bromine*, two very powerful remedial agents. It may be so, but if this be the case, the benefit derived from them must be attributed to Homoeopathic doses, for there is not generally enough of them to act otherwise. One mode of the action of this and other oils is undoubtedly by nourishing the patient. They contain large quantities of carbon, which become transferred or assimilated in the system of the patient, as fat, and thereby improve his appearance. They act also as an aperient, removing liability to a costive state of the bowels, which costive condition is always injurious to health. We would not deter any person from making free use of cod's liver oil, if they wished; but at the same time would advise them not to despair, if this species of oil could not be obtained. Try porpoise oil, or any fish oil—it will nourish you, if it doesn't cure you.—*Maine Farmer.*

**BONES AND ACID.**—To those who dissolve bones in sulphuric acid, I beg to communicate a method I have now, for the second season, adopted with success, whereby I make very short work of an otherwise troublesome job. Under cover, either in a manure barn or cart shed, I make a clay basin or trough, 20 feet by 10, with edges 20 inches wide and as high, into which, having previously thrown 100 bushels of half inch bones, and having damped them, I pour from the carboys 1700 lbs. of acid the contents of each carboy being marked by the maker, I have not the trouble of weighing. As soon as the requisite quantity of acid is poured into the trough, two men with common iron road scrapers or long iron rakes, commence stirring, continuing so to do until effervescence subsides, two hours completing the work. I leave the mass for ten days, when by the addition of sufficient water, I bring the whole to the consistency of a thick gruel, cinder dust being then added as usual.—*Plough, Loom and Anvil.*

## Editors' Notices, &c.

THE AGRICULTURIST.—We have received several communications, inquiring about the agency for our paper. We have no agents this year that are recognized as such by us. Any person may constitute himself an agent by complying with our published terms. We will send a few extra copies to any one wishing them, as a specimen to show subscribers.

NOVA SCOTIA, NEW BRUNSWICK, &c.—We beg to state to our friends in these provinces who subscribe to our journal, that in making remittances to us, they should either send us bills of the Bank of British North America, or current American money: the former is preferable. We have to submit to so large a discount upon Nova Scotia or New Brunswick money, that we lose all our profits, which at the best are exceedingly small.

WIND WHIFFL.—In the Albany Cultivator for 1846, a new invention, patented by a Dr. Bridgeman, is described, which is said to surpass all previous wind-wheels. The *modus operandi* is stated to be that of letting the air into the side of a building by means of movable boards, on the principle of venetian blinds, and causing it to ascend and pass out at the top. In its passage upwards it is made to act on the inner circumference of a horizontal wheel placed in the upper story of the building. Can any of our exchanges tell us what has become of this invention? Has it proved to be of practical utility, or has it failed, like the majority of new inventions? Several persons have lately been making inquiries about this wheel, and if any of our American cotemporaries with whom we exchange can give us any information on the subject, we should be glad to get it, and reciprocate the favour when the opportunity occurs.

PROVINCIAL ASSOCIATION.—The prize list will appear in our next number.

We beg to thank our newspaper cotemporaries for the friendly reception they have given to the *Agriculturist*. We clip the following as a sample of the many flattering notices we have received since the issue of our January number, for the present year.

The *Canadian Agriculturist*.—We beg the attention of our friends in the country, to the Prospectus of the above periodical, which will be found in our columns to-day. To those who have read the *Agriculturist*, it would be needless to say that it is a most useful publication to the Agriculturist, the Horticulturist, the Mechanic, and likewise to the general reader. To those who have not seen it, we will say merely, that if they feel any interest in the prosperity of the country, they should subscribe for it; and by the way of increasing its circulation in this district, we offer to such persons resident in the country as may become subscribers to the *Argus*, and send us their names during this winter, that we will regularly send to their address, the "*Agriculturist*" gratis.—*Argus*.

The *Canadian Agriculturist*.—This useful publication, which every farmer in Canada would find it advantageous to read, has lately improved as regards the quantity of matter it contains, no advertisements being allowed, and is published monthly—twenty-four pages in each number—at the low rate of 5s. per annum. The number for January, just received, contains a quantity and variety of information, alone worth the price of the whole year's subscription; and it being the *only agricultural paper printed in Upper Canada*, it deserves far better support than it has hitherto received. The Prospectus for the current volume will be found elsewhere, and any person who takes the trouble to read it will be convinced of the necessity of supporting the publication. There are farmers in Canada who have subscribed to the *Genesee Farmer*, or some other American agricultural paper, for years,—and although they are very valuable, and furnished at a low rate, we can assure them that they will find the *Canadian Agriculturist* equally useful, and furnished at a cheaper rate, considering the difference in the postage paid on American papers.—*Vic. Chronicle*.

The January number of the *Agriculturist* has been received, the Prospectus of the second volume will be found in our advertising columns. No farmer should be without a copy of this useful periodical; besides the valuable information contained in it on agricultural pursuits, it is an excellent family paper.—*L. Times*.

The *Canadian Agriculturist*.—We are in receipt of the first number of the present volume. It contains twenty-four large and closely printed pages, filled with interesting and useful matter. The *Agriculturist* is a paper deserving the support of every agriculturist in Canada; and one which every farmer, in justice to himself, should be in possession of. The improvements in Agriculture and Horticulture are faithfully noted in this journal. It is in fact the best agricultural paper ever published in Canada, and edited at present by a couple of the most competent gentlemen our province affords. The paper is furnished to single subscribers for one dollar a year, and to clubs at a much lower rate. We will insert the Prospectus in our next.—*Sun*.

The *Canadian Agriculturist* for February fully maintains its high character. The article on the establishment of an Agricultural Professorship in the University of Toronto is peculiarly seasonable: we hope that the University Commission will report favourably on it. Professor Johnston's Address on "the State of Agriculture in Europe," is an important and highly useful document. By employing small type and excluding advertisements, the proprietors of the *Agriculturist* are enabled to furnish a large amount of information at a very low price. We trust they will be well supported.—*Pilot*.

## MARKETS, &c.

Since our last the weather has been unusually changeable, with boisterous winds and heavy snow storms.—The wheat plant, we believe, has as yet escaped uninjured. There is every prospect of a very early opening of navigation; we hear that it is in contemplation to commence the running of the Kingston boats about the middle of the month.

The Toronto market for wheat and flour has suffered a depression by the news of the last Steamer—the *America*—from Liverpool, February 9. The British grain market continued very much depressed, and as navigation was about opening in several European ports, large supplies were again expected. Any improvement in rates appears, for some time at least, hopeless. The delivery of wheat in this city of late has been considerable; the back roads having been, and still are, good. The following we give as quotations:

Flour 18s. a 20s.; wheat 3s. 9d. to 4s. 3d., bushel 60lbs; rye 2s., bushel 60lbs; barley 1s. 9d. to 2s., bushel 60lbs; oats 1s. 3d. a 1s. 4d., bushel 48lbs; pease 1s. 6d. to 2s., bushel 60lbs; potatoes 1s. 6d. a 1s. 9d. per bushel; hay 45s. a 50s. per ton; straw 25s. to 30s. per ton; fire wood 10s. a 12s. 6d. per cord; butter, in tubs, 5d. to 6d. per lb—fresh 7½d. to 11d. per lb; cheese 4d. a 6d. per lb; eggs 9d. to 10d. per dozen; fowls 1s. a 1s. 6d. each; beef 18s. a 26s. per 100lbs; pork, 20s. a 23s. per 100lbs.—*March 7th*.