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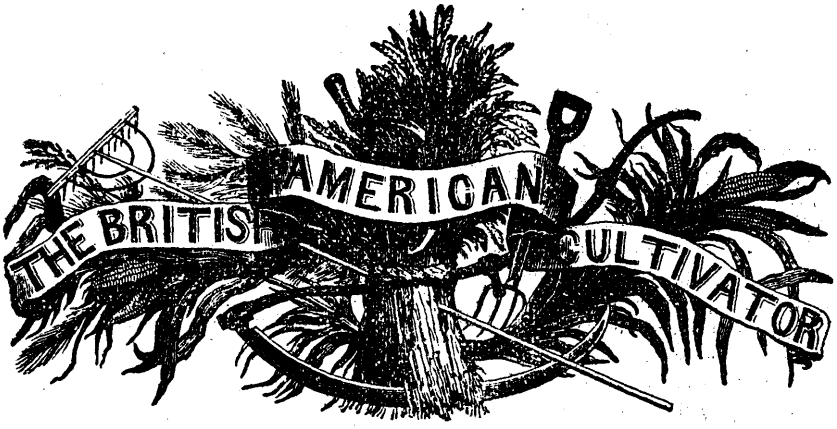


"Agriculture not only gives Riches to a Nation, but the only Riches she can call her own."

New Series. TORONTO, SEPTEMBER, 1846. Vol. II. No 9

Will Canada suffer by the withdrawal of Protection?

It would be well for the people of this colony if they understood this question, so as unanimously to answer it in the negative. There probably never was a more delusive imposition, in the shape of an Imperial enactment, than the benefits which the inhabitants of this country have fancied that they so exclusively enjoyed over other colonies and foreign countries, in the admission of their products into the British markets. Although the two past and the present harvests were the most productive that have ever been gathered in Canada, still there is a great depression in the money markets; or in other words, the country is actually poorer at this period than has been the case in any period during the past twenty years.—The inhabitants of towns and cities fancy that the farmers in the best agricultural districts have their thousands of dollars hoarded up, but a greater mistake than this could not possibly be conceived. We will admit that hundreds of farmers have loaned large sums of money to country merchants, and men beginning the world, as the saying is, but it does not follow from this that the country abounds in capital, or that its business transactions are carried out on a healthy basis. The reverse of this is practically the case; money is not only scarce, but there is none to be had; and so far as the money market is concerned, it could not possibly be in a worse condition. Now, there must be some cause for this extraordinary depression, because it is clear that the producing classes have acquitted themselves most creditably, and that the improvements made in agriculture in many portions of the province, are without a parallel in any other country. The cause of the evil may very justly be attributed to the iniquitous system of monopoly that has been nurtured by the men who have controlled the destinies of the colony from its earliest settlement down to a very remote period. It is not our province, as an editor of an agricultural journal, to point out the errors of the past, but we shall certainly fearlessly and independently endeavour to exert any influence we may possess, in placing this country in such a healthy position, that its inhabitants cannot consistently envy the prosperity of their neighbouring republic. Every man who has given the subject a moment's reflection, must have made himself satisfied that the province is fast verging on a state of national bankruptcy, and that this deplorable state of things can only be averted by enacting wise and salutary measures, calculated to remove the cause of the evil, as speedily as possible.

Impost taxes of every description will have to be speedily abolished, and the straight-forward and honest method of raising revenue by a direct property tax will have to be instituted instead of the old and expensive method of collecting revenue from the imposts of the country. The man

who has property in the country is the only legitimate tax-payer; and when an equitable system of assessment is established, the burden of keeping up the revenue and credit of the country will fall extremely light upon the landed interests. If any farmer doubts the soundness of these views, it would at least be worth the attention of such an individual to calculate the exact amount of impost taxes he pays the government annually, and then add to that amount the extra profits that he pays the merchant for his goods, from the circumstance that the merchant is obliged to pay the duties the moment the goods are landed But few are disposed to look into the why and the wherefore of this somewhat intricate question, but in order to fully understand the real merits of the case, it is absolutely necessary to examine the subject in all its details and bearings. To bring the matter practically home to our individual case, we find that we have paid the government, during the last twelve months, no less a sum than £40, in the shape of impost taxes; and although this may appear a heavy tax, still there are scores of farmers whose indirect taxes have even exceeded this large amount; and they have borne it with such christian fortitude, that it is extremely doubtful whether they have ever given the matter a moment's serious reflection.

The next great evil, and probably the greatest of all is, the monopoly which has been given to Banking Institutions, in the shape of Royal Charters. These institutions, more than any other influence, have been the means of encouraging extensive commercial operations, which the infant state of the country did not in the slightest degree warrant. If the same amount of capital and encouragement had been given on the same easy terms to the farmers and mechanics of the country, the case would have been very different indeed to what it is at present; but no, the honest plodding producer has had no opportunity of employing borrowed capital, as has been the case with mercantile men and speculators, and they have been heavily burdened with indirect taxation, as we have already amply proved. It is high time this evil was completely removed, and the best method of properly doing so, is to abolish at once the present usury laws, and to establish free trade in every sense of the term. The usury laws are practically evaded by every business man in the country, —even the honest farmer who sells his horse, his cow, or his hundred barrels of flour on credit, takes good care to secure a greater rate of interest for the use of his property than six per cent. In every department of trade those laws are evaded, and even the banking establishments practically obtain for the use of their capital fully twice six per cent per annum upon the paid up capital. If this subject was well understood by the people of Canada, every honest man would at once petition Parliament to repeal not only this unjust law, but every other restriction that cripples honest industry, trade and commerce.

The moment that government no longer relies upon direct taxation as a means of sustaining the public revenue, that moment will active measures be taken to encourage the producing classes to extend their operations, and every possible facility will be held out to influence the development of the agricultural, manufacturing, mineral, and other resources of the province.

As a fearless, and we trust independent and consistent advocate of the rights and interests of the farmers and manufacturers of Canada, we shall continue to advocate the repeal of every odious enactment that may be found in our statute books that has the slightest prejudicial influence in depressing the national interests and character of the colony. We are delighted to see the Canadian press so generally and so ably advocate the rights of the farmer, and we have not the slightest doubt but that if this course be followed up by the press in general, that in less than six months the evils complained of will be removed. The following pertinent and practical remarks are from the Toronto *Globe*, for which we solicit an attentive reading at the hands of our subscribers:—

The great question of Canada now is, *How, and to what extent, will Free-Trade affect us?* Did one judge by the lamentations heard on every side over the loss of protection for our grain in the home market, it would very naturally be concluded, that, under the protective system, Canada had become a wealthy country—that her farmers were enterprising and prosperous—and commercial affairs flourishing beyond precedent; that the ruthless hand of Free Trade was about to sweep away this delightful state of things, and leave the country in poverty and ruin. A stranger would form this opinion, not from the conversation of Protectionists alone, but even from

that of a great majority of our Free Traders;—they admit that a free exchange of commodities is natural and desirable, and that eventually "we must come to it,"—but they nevertheless consider that we are about to sustain a great blow by the withdrawal of protection, and that we are entering on a new era of existence, hovering and portentous, but which they ardently hope and think will in the end turn out for the best.

To our view the picture presents a very different aspect. We regard the fancied prosperity of Canada an illusion; we believe the commercial system of the Province to be unsound—that, instead of acquiring wealth, we have been consuming our capital, and that the deception could not have been kept up much longer. The Free Trade question has come up at a fortunate moment—it has saved us years of unsatisfactory trade—doubt and uncertainty as to the cause of it, and useless speculation as to the way of getting out of it.—Free Trade will compel us to look our true position in the face—it will sweep away the false bolstering notions of the past—it will force us to work harder, sell cheaper, live more frugally—but it will also make trade more steady, profits more sure, and the comforts of social life more uniform.

The sure test of the prosperity of any country is a comparison of her exports and imports; and we cannot but help thinking that regularly published returns of these by the government might have drawn public attention earlier to the unhealthy condition of our foreign trade, and have averted much evil. With great difficulty we have procured data by which we may arrive at something like an idea of our true position:

In 1844, the declared value at the point of export, of the Goods imported into Montreal, was . .	£2,153,520 10 1
The value of the imports into Quebec, we have not; but we have the amount of duty paid on them, which, calculated at the same ratio as Montreal, gives .	791,500 0 0
The total value of the imports at all the other ports, was	1,070,649 15 5
Total, sterling .	£5,015,670 5 6

In 1845 the imports were still greater, being being about £5,300,000.

It will be observed that this statement does not include freight, charges, &c., which in Canada are so heavy that the consumer must pay between nine and ten millions out of his earnings for these goods. A portion of this enormous sum remains in the country, but at least seven millions currency must be paid to the foreign creditor. Were we transacting a sound, healthy business, an amount something like this would have been exported, but how stands the fact? Why, the fact is, that our total exports did not reach two millions currency in either of these years! The balance of the legitimate trade being thus turned against us in the short space of two years to the extent of ten millions currency! and to shew the contemptible extent of the produce trade, (over the threatened loss of which we are whining so loudly) it is but necessary to glance at the following return, recently published by order of the House of Assembly:

Statement of Produce exported from the Ports of Montreal and Quebec, during 1844 *and* 1845.

	1844.	1845.
Ashes, brls. - -	35,643	27,472
Flour, brls. - -	415,467	211,093
Wheat, bush. - -	282,183	313,502
Pork, brls. - -	11,164	1,015
Beef, brls. - -	5,568	1,070
Lard, kegs, - -		148
Butter, kegs, - -	7,680	10,536
Oatmeal, brls. - -	6,725	182
Peas, bush. - -	130 355	153,400
Barley, do. - -	63,755	27,688
Oats, do. - -	34,574	28,865

Any one who will take the trouble to calculate the value of these shipments, will find, that in 1844 it was about £850,000, and in 1845, only £550,000 currency. The balance of exports is made up by the timber trade, and by a small amount of shipments to the U. States. * * * How then has this enormous annual defict been made up? A large portion of it has probably not been paid, but is standing on running account between the English merchant and the Colonial trader. * * * Loans to a large amount have been drawn from England during the last few years by the government, by the banks and other corporations, and by private individuals. Emigration has been the means too of bringing us a considerable amount yearly in specie, or in exchange against Europe. These immense sums of money pouring in within so short a space of time, should have made the money market of the country exceedingly buoyant—new undertakings should have been everywhere springing up—and by frugality and economy a permanent capital might been saved from them for future years.

Instead of this, our increased enterprise has been turned to procure more personal comforts for ourselves; we have been more intent on building fine houses than to produce larger exports.

Of course there are sources of annual foreign indebtedness in our favor, which may legitimately be consumed, but they are very trifling. The payment of the troops and imperial establishments in the colony give us an annual balance, we are assured, of about £600,000, and pensioners, annuitants, and parties drawing incomes from property in England, help to a further extent--but the whole together will not cover the annual interest on our public and private debt—an item not included in the five million annual balance shown to be against us.

The result of the whole matter is, that we have been living from day to day on borrowed money—that our debt has accumulated to so alarming an amount that our whole exports do little more than pay the annual interest—and that our whole commercial system must immediately undergo a radical change, or the country will be overwhelmed in bankruptcy.

How absurd is it then to talk of the loss which free trade will inflict on us. Free trade will not save us from the hard times which are before us, but it points out a safe road to travel for the future, when we emerge from our difficulties — Free trade may lower the rate of labour, but it will also bring down rents, and the price of food and clothing; profits may be less, but they will be more certain; we may be compelled to live more frugally, but what we save we will be more sure to retain. We will have more producers and fewer merchants.

To right the ship once more, the measures are easily summed up:—

The abolishment of the Navigation Laws on the St. Lawrence, and throughout our Lakes.

The admittance of Canadian produce into England via the United States, on the same terms as by the St. Lawrence.

The abolishment of all differential duties, and the reduction of our Tariff to the lowest possible rate.

The vesture in the Provincial Government of the Post Office.

Ultimately, the abolishment of all Custom Duties, Custom Houses, and Custom House Officers —the reduction of the expenses of Government, —and the raising of necessary revenue by *direct taxation.*

Township Agricultural Societies.

We are informed by friends from different parts of the country, that these local institutions are exerting a powerful influence in favour of the cause of agricultural improvement, and that the farmers in some of the most remote townships are as anxious to obtain knowledge and effect improvements, as those who reside along the borders of the lakes and navigable rivers. We are delighted to hear those glad tidings, and trust that as the Mother Country has now thrown us upon our own resources, we shall, from the greatest to the smallest, show ourselves able for the task before us If is not a difficult one, if only all who are able to bear the burden and heat of the day, would resolve to put their shoulder to the wheel, and resolutely aid in pushing forward the car of agricultural and mechanical improvement.

The great *desideratum* required to make this a prosperous country is, *knowledge* A vast storehouse of meaning is comprised in this single word; and as it is a commodity that should be found in every farm house, and in fact in the *cranium* of every sane adult in the country, we shall very briefly state how an incalculable fund of this precious substance may be distributed throughout every section or settlement of our favored land. If agricultural societies would appropriate a large share of their funds in purchasing agricultural and mechanical books, and award them to successful competitors, instead of money, they would confer an inestimable favour on the fortunate few who would prove successful at the exhibitions; and such a course would add tens of thousands of pounds worth of wealth to the country yearly. Where is the farmer who would not feel proud in receiving the entire back volumes of the *Albany Cultivator* or *American Agriculturist*, as a reward for having exhibited the best animal at one of our local shows? We instance these works because they are generally known; but there are at least fifty other works published in the English language, all of which treat on Agriculture and the Mechanic Arts, that might with great advantage to the societies and profit to the country, be scattered, as it were, broadcast among the producing classes, in the manner proposed. We throw out this sugges-

tion in the hope that it will be taken up in a manner worthy of the great and important end such societies have in accomplishing, viz: the advancement of agriculture and its sister arts.

Some of our friends have requested us to publish an outline or sketch of a constitution adapted to the government of township agricultural societies, and in compliance with this request, we beg to state, that we should have done this long ago, had it not been that our attention has been so much occupied on our farm that we could ill spare the time. Probably if we were paid for our services we could afford to bestow more pains in the conduct of this journal than has been done formerly All we want, to do up the task as it should be, is, 10,000 subscribers. We have only half that number; but, GENTLEMEN, give us the balance, and we will serve you in a manner that would redound to the credit of all concerned.

Constitution adapted to Township Agricultural Societies.

Art. 1.—This Society shall be called , and its objects shall be to promote improvements in Agriculture, Horticulture, Household and Mechanical Arts, and also the Importation of Farming Stock.

Art. 2—Any person may become a member of this Society by paying the sum of five shillings Halifax currency, to the Treasurer; and he shall pay, after the year in which he enters, an annual subscription of five shillings, on or before the first day of April in each year, so long as he shall continue a member. When a member neglects to pay his annual subscription for one month after it is due, his name shall be erased, but on paying all arrears due, he may be reinstated.—Each member, upon paying his subscription, shall be entitled to a complete copy of an Agricultural Journal published in the country, provided it can be had for one half of the subscription.

Art 3.—The Officers of this Society shall consist of a President, two Vice Presidents, Secretary and Treasurer, and an Executive Committee of twelve members; to be elected at the annual meeting of the society, and to continue in office for one year, or until their successors are elected. Any member shall be eligible to hold office, and to be re-elected.

Art. 4—The Officers and Committee, five of whom shall form a quorum, shall constitute a Board of Managers. It shall be their duty to exercise a general supervision over the affairs of the society; to appropriate the funds of the same in such manner as shall in their judgment best subserve the interests and forward the objects of the society; to call special meetings; to appoint Committees, to award premiums, and determine all matters connected therewith; and to make the necessary arrangements, and appoint the time and place for holding the Fairs and Exhibitions.

Art. 5.—The President, or in his absence, one of the Vice Presidents, shall preside at all meetings of the society and of the Board of Managers.

Art. 6.—The Secretary and Treasurer shall keep a list of the names of the members of the society, and a record of the society's proceedings; he shall also be Secretary to the Board of Managers, and keep a record of their proceedings; he shall receive all the monies of the society and expend the same only by the direction of the Board; he shall keep a correct account of the receipts and expenditures, and make a report at each annual meeting of the Society of his affairs as Treasurer, and shall perform such other duties as the Board may from time to time assign him.

Art. 7.—The Board of Managers shall have power to fill all vacancies in the offices of the Society, and the persons thus appointed shall hold office until the next annual meeting.

Art. 8.—Any person, not a member, shall be charged ten shillings for the privilege of competing for any of the premiums of the society.

Art. 9—This Society shall hold its Annual Meetings on of in each year; and there shall be a spring and autumn meeting for the exhibition of Domestic Animals, Agricultural, Horticultural, and Mechanical productions; and such other articles as the Board may deem worthy of encouraging, at which meetings premiums will be awarded from the society's funds.

Art. 10.—Any person introducing the subject of party politics during any of the proceedings of the society, shall be fined five shillings, and if he refuse to pay such fine, he shall be expelled. The fines to be placed in the Treasury, and subject to the same controul as the other funds.

Art. 11.—This constitution may be altered or amended at any annual meeting of the Society, by a vote of two-thirds of the Members pre-

Art. 12. The Officers and Committee are expected to make every possible exertion to procure new Subscribers, and to receive and forward the subscriptions to the Treasurer.

We beg to solicit the attention of the readers of the *Cultivator* to the accompanied proceedings of the Hamilton Convention, which took place on the 17th ultimo.

The objects of the Provincial Society and Board of Agriculture, are pretty well understood at this time by all who take any interest in the success of the Agricultural and Mechanical enterprises of the Province. We therefore need not repeat what has been so often stated in the columns of this journal respecting the benefits that will undoubtedly accrue to the country through the influence of this national institution. One thing is quite certain, that but little good can be effected without means. The Society is yet in its infancy, and will require a liberal patronage at the hands of the Canadian people. The subscription or admission fees are extremely low—so much so indeed, that every friend to the productive interests should immediately enrol his name on the subscription list. We trust our friends will exert their influence in their respective neighborhoods, and obtain for the Society a liberal patronage.

The preparations for the First Grand Provincial Show are being made on an extensive scale, and the prizes will be both liberal and numerous. This being the case, it behoves every one possessed of influence, to exert it in the proper quarter, to secure success to this great national movement.

Minutes of a Meeting held at the City of Hamilton, on Monday, 17th August, 1846, in accordance with public notice.

Moved by John Wetenhall, Esq.,
Seconded by Henry Moyle, Esq.,
That E. W. Thomson, Esq., do take the Chair.

Moved by W. H. Wrighton, Esq.,
Seconded by Mr. Sheriff Conger,
That W. G. Edmundson, Esq. do act as Secretary.

The following gentlemen appeared as the Delegates and Representatives of the several Districts attached to their names, viz:

George Crawford, Esq., Johnstown.
Mr. Sheriff Conger, Colborne.
W. H. Wrighton, Esq., do.
E. W. Thomson, Esq., Home.
W. G. Edmundson, Esq., do.
John Wetenhall, Esq., Gore.
Henry Moyle, Esq. do.
Col. Burrowes, do.
Col Dixon, do.
Allen Cood, Esq, do.
Henry Parsons, Esq, do.
David Christie, Esq., do.
William Miller, Esq., do.
John Harland, Esq., Wellington.
James Cowan, Esq., do.
Captain Purley, Brock.
G. Brown, Esq., do.
John Longwarth, Esq, Huron.

Moved by George Crawford, Esq.,
Seconded by Henry Moyle, Esq,
That this Meeting consider it expedient to form an Association, to be called the "Provincial Agricultural Association and Board of Agriculture for Canada West," and that the views of a meeting held at Toronto, on the 13th July last, be carried out, as far as the first resolution passed at that meeting is concerned.

Moved by Mr. Sheriff Conger,
Seconded by John Longworth, Esq.,
That a Committee of three gentlemen, viz:—the Chairman, W. G. Edmundson, and John Wetenhall, Esqrs., do draft a Constitution for the consideration of this meeting.

The Committee appointed to draft a Constitution presented the same to the Meeting, which was read and approved of:—

1. That the Association be called the "Provincial Agricultural Association and Board of Agriculture for Canada West."
2. That the Members of the Association be composed of persons subscribing annually to the amount of Five Shillings and upwards.
3. That those persons who shall subscribe to the amount of Two Pounds Ten Shillings and upwards, shall be constituted Life Members of the Association.
4. That the Association shall be governed by Delegates sent by the several District Agricultural Societies, who shall meet annually for the election of Officers, and the transac-

tion of the business of the Association; and in case no such Delegates are appointed, then the Presidents and Secretaries of such Societies to be *ex-officio* Delegates.

5. That the Delegates shall elect their President, two Vice Presidents, Secretary, and Treasurer, at their meeting, who shall hold office until the election of their successors at the Annual Meeting, which shall be held on the day preceding the Show, at 10 o'clock, a. m., when the said Officers shall be eligible for re-election.
6. That the Funds of the Association be raised by subscriptions of the Members of the Association, voluntary Subscriptions, and such funds from the various Agricultural Societies as by them may be appropriated, and any grant which may hereafter be obtained from the Government, by application through Parliament.
7. That the objects of the Association shall be improvement of Farm Stock and Produce; the improvement of Tillage, Agricultural Implements, &c.; and the *encouragement* of Domestic Manufactures, of Useful Inventions, and, generally, of every branch of Rural and Domestic Economy.

Moved by John Wetenhall, Esq.,
Seconded by John Harland, Esq.,

That E. W. Thomson, Esq, be President of the said Association and Board for the coming year.

Moved by Allen Good, Esq.,
Seconded by George Crawford, Esq.,

That John Wetenhall, Esquire, be Vice-President.

Moved by Mr. Sheriff Conger,
Seconded by Allen Good, Esq.,

That Mr. Sheriff Ruttan be Vice-President.

Moved by George Crawford, Esq,
Seconded by Mr. Sheriff Conger,

That W. G. Edmundson, Esq., be Secretary and Treasurer.

Moved by Mr. Sheriff Conger,
Seconded by George Crawford, Esq.,

That the Committee of Management shall consist of the Officers and such Delegates as may be duly elected by the various District Agricultural Societies, five of whom shall form a quorum.

Moved by Mr. Sheriff Conger,
Seconded by George Crawford, Esq.,

That the Treasurer be required to give security to the satisfaction of the Committee of Management, and that all sums over £5 shall be deposited in such Banking establishment as the said Committee may direct.

Moved by Col: Burrowes,
Seconded by Mr. Sheriff Conger,

That the first Meeting or Fair shall be held at Toronto, on the third Wednesday in October next, and that the following gentlemen be a Committee of Management, viz:—The Mayor of Toronto, the President, Vice Presidents, and Secretary, the Hon. Adam Fergusson, Mr. Sheriff Jarvis, Col. Burrowes, Franklin Jackes, W. Thompson, J. B. Ewart, and David Smart, Esqrs., with power to add to their number.

Moved by Allen Good, Esq.,
Seconded by James Cowan, Esq.,

That the proceedings of this meeting be circulated in the shape of handbills, and twenty sent to the Secretary of each District Agricultural Society, with a request to act as Collector in getting Subscriptions for the funds of this Association.

Moved by W. H. Wrighton, Esq.,
Seconded by Col. Burrowes,

That the Chairman do leave the Chair, and that Col. Dixon do take the same.

Moved by W. H. Wrighton, Esq.,
Seconded by Col. Burrowes,

That the thanks of this meeting are justly due and are now given to E. W. Thomson, Esq., for his able and impartial conduct in the Chair.

E. W. Thomson,
President.

W. G. Edmundson,
Sec. & Treas.

New York State Agricultural Society.—We beg to inform our readers that the Annual Show and Fair of the above Society is to take place at Auburn on the 15th, 16th, and 17th inst. It is anticipated by good judges, that this, the sixth exhibition of the Society, will be equally as interesting and important as any that preceded it.

We purpose attending the Show ourselves, and shall be highly gratified to meet a large number of Canadian friends, who will be better prepared, after witnessing the great display that will doubtless be seen at Auburn, to give valuable assistance at the Provincial Agricultural Exhibition to be held at this city on Wednesday, 21st of Oct. next.

Rust on Wheat.

The following communication is penned by a practical farmer, who has been trained to the business from early boyhood, and therefore the views he advances are worthy of a careful examination. We are prepared to admit that the disease known as rust is most difficult to be understood; and indeed with the present light upon the subject, it is almost hopeless to recommend any method of managing the land for the wheat crop that would in every instance be calculated to carry it safely through to maturity, without being attacked more or less with this disease. But few farmers have observed more closely than ourselves the operations of rust upon the wheat plant, and after all we have not been able to fully establish a theory, which would in every instance be applicable in demonstrating the cause of this great enemy to the wheat grower. We are, however, quite certain, that in a great majority of cases, rust may be nearly, if not altogether prevented by skilful cultivation. In advancing this view, we know we are some years in advance of public opinion, but time alone will shew whether we are in error or not.

—

Mr. Editor,—I have read with attention and interest the various articles which have appeared in the *Cultivator*, from time to time, on the subject of rust on wheat. There appears to be a diversity of opinions among writers as to the cause of the disease; some ascribing it to the sowing of grass seeds amongst the wheat, and others to the application of unfermented manure to the land, whilst the general and prevailing opinion appears to be, that it is caused by a luxuriant growth of the wheat plants in the early part of the season, and consequently an overflow of sap, which causes the sap vessels to burst, and that some of the sap exudes from the ruptured vessels, and dries upon the outside of the stalk, and causes rust.

In reference to the opinion that the sowing of grass seeds amongst the wheat causes rust, it needs but to be named to be rejected, for in seasons when rust prevails, we find that fields of wheat that has no grass seeds sown amongst, equally affected with those that have. We must therefore ascribe the cause to some other source.

The same thing may be said of unfermented manure; for if it is caused by this, the rust would be confined to fields of wheat, which have been thus treated; but every observing person knows that this is not the case, and before I can subscribe to the last named opinion, that it is caused by the bursting of sap vessels, I must have the following queries satisfactorily answered:

1st. If rust is caused by the rupturing of sap vessels, why is it that we discover the rust on the chaff upon the head, and also upon the outer husk of the stalk, and even upon the leaves, which appear perfectly dry and sapless at the time the rust affects them? and also why is it that that part of the stalk which is protected by an outer husk or covering, upon stripping it off, appears perfectly bright and free from rust?

2d. And if the rust is caused by the bursting of the sap-vessels, would it not take place when the wheat arrives at a certain stage of perfection? and would not the wheat in those localities where it ripens earliest, show the appearance of rust sooner than in places where it is more backward, because it would arrive at the proper state for the sap vessels to burst sooner?

Having made the above observations upon the opinions of others, I may venture to give my own views upon the subject, but with little hope, however, that my opinion will become very prevalent, since men of scientific knowledge differ so widely as to the cause of rust on wheat.

I have observed that in seasons when the wheat is affected by the rust, that it is all attacked at the same time. Frequently after a foggy or misty day or night, I have noticed the appearance of rust upon the wheat within twenty-four hours afterwards; and if accompanied by a gentle breeze, a field of wheat will present a much more rusty appearance in viewing it from the windward side than it will in viewing it from the opposite direction; hence, I am of opinion, that it is caused by certain particles of matter contained or carried in the atmosphere, and which falls upon the external surface of the stalk, when, if succeeded by a hot sun, is almost sure to cause rust; but if the wheat is forward, or nearly ripe, it will suffer but very little from the effects of it, but if it is backward, whether caused by late sowing or by being winter killed, or by being attacked by the disease earlier in the season, it is almost ruinous to the prospects of the farmer.

The present season the wheat is pretty generally affected by the rust. I have noticed in a field of mine, which has a bank in it facing the sun, that the wheat upon the hill-side, is large

and plump, it being a week or ten days more forward than the rest of the field, which is considerably shrunk, although the straw that grew upon the side of the hill is equally as rusty as the other part of the field.

I believe that by care and skill in the preparation of his seed and ground the farmer may almost, if not altogether prevent the appearance of smut and chess amongst his wheat, (for I am not one of those who believe that wheat will turn to chess) but I do not believe that all the care and skill of man can avert or prevent the rust, when it is the will of Providence to afflict us with this scourge, any further than by good tilling and early sowing, which will bring the crop forward sooner to perfection.

Should my hastily written remarks have the effect of inducing some other person to take up the subject, and throw light upon it, I shall be much gratified.

Yours truly,

LEVI WILLSON.

Trafalgar, July 24, 1846.

We invite the careful attention of our readers to the following extracts from the *New York Farmer & Mechanic*. They will, we fancy, conclusively illustrate the practical benefits of manufacturing enterprises, when viewed in connection with agriculture and the general prosperity of a country.

The two branches of manufactutes treated upon by our able cotemporary, are among the least important, but nevertheless, their value, both in an individual and national point of view, are sufficient to influence men of enterprise to engage in the business. It is scarcely necessary for us to state, that unless manufacturing enterprises be engaged in, that Canada cannot possibly rise to the zenith of prosperity :—

Glass Manufacture in the United States.—We learn from the returns actually made to Messrs. M. J. & M. Sweeney, glass manufacturers at Wheeling, and communicated by them in a letter to the Hon. Andrew Stewart, Member of Congress from Virginia, some very important facts respecting the manufacture of glass in the United States, and also its bearing and utility in regard to our agricultural and mining interests, with which it is in a measure connected.

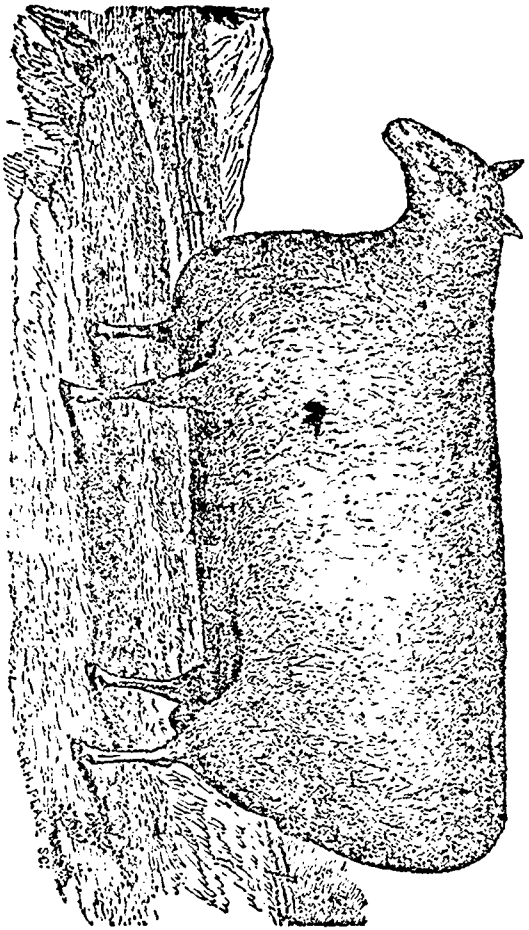
The present number of flint glass manufactories in the United States, is nineteen, and the quantity of materials consumed is stated to be as follows, viz:

1,200,000 bushels American Bituminous Coal.
50,000 " Foreign " "
5,500 tons Anthracite "
8,666 cords Wood.
2,800 brls. Rosin.
3,555 tons Silex or fine Sand.
956 tons Fire Clay.
970 tons Iron.
20,400 lbs. Borax.
3,016,000 lbs. Missouri Lead.
2,875,000 lbs. Pearl Ash.
272,000 lbs. Saltpetre.
1,700 tons Straw.
475,000 Staves.
270,000 Hoops.
1,400,000 Boards.
6,500 lbs. Manganese.
22,500 lbs. Arsenic.
$200,000 worth of Brass, Britannia, and Tin Ware.

In some remarks of the *Tribune*, on the subject, it is stated that the cost of these articles to the manufacturers is not less than $800,000. To procure them requires the employment of a very large number of men, who consume and pay for a vast quantity of agricultural produce, thus directly be efiting that portion of our population devoted to farming. The coal is chiefly obtained in Pennsylvania, the other articles principally from Virginia and the West. The shipping required to convey these materials to the various manufactories is estimated to equal the constant employment of 5,393 tons. To this must be added nearly as much more for conveying the manufactured articles to the point of consumption —making in all 10,000 of coastwise, lake, river, and canal tonnage employed in this comparatively small branch of home industry.

Straw Manufacture.—The extent of the straw manufacture in this country is almost incredible. The wheat or rye from which the straw is used, is cut when green, and bleached. In New England straw plaiting and braiding is carried on to a great extent,—Massachusetts alone employing upwards of 12,000 females in business. The small town of Foxboro', in Norfolk county, with scarce two thousand inhabitants, employs 1428 persons in the straw business, and manufactures annually 266,260 bonnets valued at $320,929.

LEICESTERSHIRE SHEEP.



The above engraving is a correct likeness of a *Leicestershire Ram.* This breed is extensively scattered through the best settled districts of Canada, and are justly celebrated for their long staple of wool, abundant weight of fleece, and for their superior grazing or feeding qualities. The wool is well adapted for the manufacture of blankets, and for combing purposes; but as the fibre is strong and coarse, it makes a heavy article of cloth, and on the whole does not find a ready sale in the Canadian market. The manufacture of blankets and strong worsted goods might be engaged in on a pretty extensive scale, with a reasonable degree of certainty of success here, inasmuch as an abundant supply of superior wool for the purpose might be had at reasonable rates, and the demand for such goods is constantly on the increase.

At the Provincial Show to be held in this city on the 21st of October next, there will doubtless be a very large and respectable competition in this race of animals, and we shall withhold any further remarks on this subject until after the close of the exhibition referred to.

Cure for a Cough.—Take two ounces of syrup of poppies, and as much conserve of red roses.—Mix, and take one spoonful for three nights.

Prevention of Bloody Murrain.—I cannot omit to mention the important results which have attended my former recommendation of salting cattle and hogs, with a composition of salt, ashes, and clay. You may recollect that I advised to take water saturated with and mix it with two parts of dry ashes and one part of dry clay, and when the whole was brought to the consistence of clay mortar, to mould it into a pyramid shape and suffer it to burn, and then put it into the field where stock could lick it at pleasure. This experiment has been fully tested, and herds together, hitherto afflicted with the bloody murrain, have been exempt from any further attack. The clay is not, I suppose, so material.—Ashes and salt in equal quantities, mixed, if convenient, with bran, may be given to cattle, horses, sheep, and even hogs, once or even twice a week, with the most happy results. The solid cakes, however, allow the feeble stock to obtain their share; indeed, this plan gives to all as much as they desire and at the time they desire it.—Sheep will usually lick the cake every day.—*Mich. Far.*

Manure for Fruit Trees.—No tree appears to be more benifitted by animal manures than the peach tree. We may often observe that when it grows near a barn-yard, so as to reach the manure, that the growth is greater, the leaves greener and the fruit larger, then when it stands on sterile ground; and even as a general rule, fruit of the same variety is flavored in proportion to its size; the larger, the finer. Urine may be very advantageously applied to this tree, especially while it is small, as well as to young apple trees. It not only hastens their growth, but, by its offensives odor, repels the *borer* from the latter, and the peach-worm, (Ægeria) from the former. A small tree will bear a pint once a fortnight, and perhaps more and oftener; I have never injured any of my trees by this application, and consequently have not ascertained the amount which may be used upon them; certainly large trees will bear much more.—*Am. Quar. Jour.*

Tooth-Ache.—We copy the following simple receipe for the cure and prevention of this most excruciating complaint, from a city paper. Put a piece of lime, about the size of a walnut, into a quart bottle of water; with this, rinse the mouth two or three times a day, and clean the teeth, using this water every morning. If it tastes strong, dilute it, for it should be just strong enough to taste the lime, and no stronger. I was tormented with the tooth-ache for several weeks, till I used this mixture, and never had it since.

Superior Method of preparing Potatoes for Feeding Stock.—Mr. Boggild, of Copenhagen, washes his potatoes well, steams them thoroughly, and then, without allowing them to cool, he cuts them in a cylinder furnished internally with revolving knives, or crushes them in a mill, and mixes them with a small quantity of water and three pounds of ground malt to 100 lbs. of the raw potatoes. This mixture is kept in motion and at a temperature of 140 to 180 deg. F., for from one to five hours, when the thick gruel has acquired a sweet taste and is ready for use. Given in this taste, the results of experimental trials are said to be—1st, that it is a richer and better food for milk cows than twice that quantity in the raw state. 2d, that it is excellent for feeding cattle or sheep, and for winter food; that it goes much farther then potatoes when merely steamed; and that it may be economically mixed up with choppiug hay and straw.

Recipe.—It is well known to most persons that horses and cattle by accident or otherwise do sometimes eat too much grain; and I have known such cases to prove the death of some in a short time; others again linger for some time, and the disease seats upon some part,—most commonly the limbs—and renders the creatures almost or wholly unfit for use. The simple remedy, when you are satisfied that an animal has eaten too much, is only to take for a horse, one and a half pints of melted lard, put it in a common junk bottle, and turn it down his throat by taking hold of his tongue with your hand and pulling it out one side of his mouth, and put the nose of the bottle in the other side. Manage in the same way with cattle, only the dose may be one pint. And this same remedy I would recommend for creatures that are hoven or swollen by eating too much green clover or any other thing that brings on this complaint.—*Prairie Farmer.*

Plaster of Paris.—This substance is excellent to scatter about the sink drain and the stable, and other places where the odor during summer is likely to become offensive. It will absorb all the gases, such as ammonia, and also form a useful ingredient with any manures with which it may mingle.

Some think that plaster added to the manure heap will add 50 per cent. to its fertilizing qualities. If it will add 20 per cent. it will be a profitable substance to mix with the manures.

Ammonia.

BY THOMAS GRAHAM.

It will be our endeavour to point out some of the leading effects produced by that most energetic and stimulating of all manures, namely, the combinations of ammonia, for, in proportion to its presence or absence, all our notions of fertility and sterility are strictly formed. Ammonia is the simplest of all the compounds of nitrogen and hydrogen. united they constitute the volatile salt or alkali, commonly called hartshorn, it is owing to its presence that we discover the pungent smell emitted on entering closely confined stables, or wherever the putrefaction of animal matter is going on. Ammonia appears to be the universal manure, whilst others appear to act in the more subordinate capacity of carriers or store-keepers, or vehicles to hold and retain it, and to apply it with the smallest waste to its destined purpose, that is, to the growth of plants. We do not attempt to deny that alkaline bases in general are connected with the development of plants; in the form of organic salts they form parts of their constituency; we particularly wish to convey the impression, that it is ammonia which constitutes the very life of vegetable creation.

Ammonia, in all its compounds, is extremely soluble in water, and cannot long remain in its gaseous state, as it absorbs water from the atmosphere and becomes deposited in the form of rain, dew, snow, &c., when it unites with some one or other of the acids found on the earth's surface. This is one reason of the powerful effect of gypsum or sulphate of lime as a manure, the ammonia deposited with rain, &c., becomes gradually absorbed by the gypsum, which parts with its sulphuric acid, and that combines with the ammonia forming its sulphate, whilst the gypsum undergoes this change, it becomes converted into carbonate of lime, taking part of its acid from air and from the ammonia, which also had its change from the atmosphere. This is perhaps one of the best methods of forming ammonia available for the purpose of an energetic manure.

Bousingault informs us that putrid urine is employed in Flanders with the best results. During the putrefactive process ammoniacal salts are formed in large quantities, it may be said exclusively, for under the influence of heat and moisture, urea, the most prominent ingredient in urine is converted into carbonate of ammoni.

It is perfectly evident the action of gypsum really consists in giving a fixed condition to the ammonia which is brought into the soil, and is indispensable for the growth of plants. The advantage of burnt clay as a manure, is simply its readiness to combine with ammonia, and its power of retaining it, this is owing to the presence of the oxides of iron and alumina or alum, it being the basis of all clays or clayey soils, the process being favored from its porous condition.

Liquid animal excrements, such as urine, after the putrefactive process has made some progress, abound with ammonia, chiefly as carbonate. If, in this state, a meadow be saturated with it having been previously strewed with powdered gypsum, its fertility will be the most luxuriant imaginable; owing to the ammonia being fixed by the sulphuric acid of the lime, and prevented from evaporating into the atmosphere,

The carbonate of ammonia being decomposed by the gypsum in the same manner as in the manufacture of sal-ammoniac. Soluble sulphate of ammonia is found together with an insoluble carbonate of lime; this salt of ammonia possessing no volatility, is consequently retained in the soil: the gypsum gradually disappears, but its action on the corbonate of ammonia continues as long as a trace of it exists The decomposition of gypsum by the carbonate of ammonia does not take place immediately, but proceeds gradually, and thus it is that its benefit is apparent for years. It must also be remembered that every shower of rain, snow, &c., adds to its productiveness, from an increased source of atamonia.

Powdered charcoal is known to possess a similar action, surpassing all others in its power of condensing ammonia within its pores. It absorbs ninety times its volume of ammoniacal gas, which may again be separated by simply moistening the compound with water. Professor Liebig thus expresses himself on the subject. "Carbonic acid, water, and ammonia, contain the elements necessary for the support of the animals and vegetables. The same substances are the ultimate products of the chemical processes of decay and putrefaction. All the ultimate and innumerable products of vitality pre-

sume after death the original form from which they sprang; and thus, death, the complete destroyer of an existing generation, becomes the source of life to a new one."

It has not been ascertained in what form silica or flint manganese, and oxide of iron are contained in plants, yet we are quite familiar with the fact, that the alkalies, soda, lime, potash, and magnesia, can be extracted from every part of their structure, in the form of salts of organic acids. But of this there can be little doubt that a sufficiency of silica, potash, and the other oxides are again conveyed to the soil in the form of putrefying straw, &c. to keep up the necessary supply of these salts requisite for vegetation. Should a meadow become exhausted from overbearing, a dressing with a manure containing much potash would not fail to restore it; the reason is, that silicate of potash would again be restored in sufficient quantity to form the outward surfaces of stalks, leaves, &c., of the herbage which had previously been exhausted by the large quantity carried off; cow dung will answer in an eminent degree, from the large quantity of potash contained in this manure.

We will now proceed to point out the method of obtaining, by the simplest process, this most active and subtile manure. The farmer will find little difficulty in turning the ammonia to profitable account, by introducing small wooden gratings in the stalls of the horses, and letting these be connected by means of conduits, with a receiver placed, as may be most convenient for the reception of the urine, and made air-tight, it may also be conducted to the receiver from the cowhouse, piggeries, and every available source. After a quantity has been so deposited, putrefaction will begin to take place in a few days, and after it has remained for some time, say a fortnight in summer and a month in winter, or until the smell of ammonia becomes very apparent, then mix the whole of what may be collected with pounded or ground gypsum, stirring them until they are completely united, continue to add gypsum as long as any pungent smell remains, indeed there is no disadvantage, but the reverse, from using the gypsum in considerable excess. In localities where gypsum cannot be obtained, its place may be supplied with well-burnt lime, saturated by an acid. This mixture will now have a milky appearance, and have acquired a thickish consistence; this compound must be rendered perfectly dry, which may easily be performed in a large pot, so set that the fire and heat may pass over its surface; by this method you remove all danger of burning the pan. It must be stirred at intervals, so as to expose every particle of the salt to the action of the fire. When it has obtained the consistence of mortar, take it out and lay it in rows upon the top of the furnace to dry, turning the lumps from time to time until perfectly dry; having filled your pan as soon as empty of its first charge, you thus keep both processes in operation at the same time, completing the drying on the furnace top.—Such an apparatus as this is quite simple, and the setting a pan as thus directed, may be performed by any country mason.

A plan similar to the one advised may be seen in whitening works, &c.

The manure, after being thus prepared, must be pounded sufficiently for drilling with the seed; when a manure will be presented to the soil much superior to bones, nitrate of soda guano, &c.

Another method of obtaining ammonia, and introducing it in an acceptable form for the purpose of vegetation, is by forming a compost heap, which is certainly a magazine capable of carrying out decomposition to a most unlimited extent. This is a process only requiring common judgment. In the first place, form a clay bottom for the heap to be laid upon; such a foundation will prevent its acting as a drain to rob the salts in solution.

Having made a choice of a proper situation, and laid a clay bottom, with a foot thick of spent bark, cover this with an equal quantity of sulphate of lime, (this may be formed artificially by taking a proper quantity of fresh-burnt lime, and perfectly saturating it with equal parts of oil of vitriol and water; if the acid be added in slight excess it will be the better) which drench until saturation with putrid urine, or gas water, when this can be obtained; then proceed with a considerable layer of earth, road-scraping, or any such refuse as your locality may afford.—The heap, in this manner, by alternate layers, may be raised to any height required. It must be turned at proper intervals, and at each turning be well drenched as at first; it may then be allowed to remain until its services are required for the farm. This compost, when ripe, or com-

pletely decomposed, forms a remarkably appropriate and profitable dressing for meadows or any green crops, causing an abundant production of dark green oxiginated herbage.

In many instances it might be most beneficial to manufacture the salts of ammonia, to produce them in a chrystalized form; you then have ammonia in its highest state of concentration, but as this requires a process not very intelligible to farmers, it might be desirable to procure the assistance of a competent person to fix an apparatus and teach you the method of manufacturing I will engage to make any individual perfectly master of the whole process, as well as the cause which produces the effect, in one week, at a very moderate charge. In many situations, by taking advantage of the localities, these manures might be formed at an exceedingly low rate, but as these selections would require an experienced chemist, we must content ourselves with merely drawing attention to the fact.—*West. Ag.*

Erratas in the August Number.—Owing to the difficulties connected with the editorial management of the *Cultivator*, from the circumstance that the editor resides at a distance of 27 miles from the place of publishing, errors will occasionally escape the notice of the proof reader, which tend greatly to annoy both editor and reader.—This evil will in future be avoided.

Page 227, 5 lines from the bottom, read *man of genius.*

Page 229, 4 lines from the top, read £100,000

Page 238, 16 lines from the top, read *celebrated.*

Every true friend of improvement has cause to regret that so much apathy prevails among the producing classes, in relation to the important subject of education. Of late the subject has assumed a greater degree of importance, and not a few are now anxious that their sons, who they intend to be practical farmers and mechanics, should at least acquire a proficient education in those branches that would in an eminent degree qualify them to be proficient in their particular calling, and at the same time elevate them socially, morally, and intellectually. Unfortunately, the branches of learning taught at our Common District Schools, are not of that character which would warrant a young man who had attended a few years' course of studies at one of those local institutions, to suppose that he had received a finished education, or that he was even qualified to make the most of his profession, whether it be agriculture or any of the most complicated mechanical arts. What is wanted very much in this country is, a higher order of educational institutions, where the aspiring young farmer and mechanic can, at a mere trifling expense, become intimately acquainted with the practical sciences that would be of use to them in their particular calling, and where also both the hands and the head may be thoroughly drilled and prepared for future usefulness. Such an institution as this we hope soon to see established in Canada; indeed, so satisfied are we of the adaptation of this class of institutions to the wants of the country, that every effort shall be employed to establish one on an extensive scale in some central position of the province.

Franklin College.—This Institution has commenced the second part of its second session, the Faculty and students having returned from the Geological and Botanical excursion, which succeeded the semi-annual examination. The health and spirits of the students give the most flattering indication of a successful session, which will terminate in October. Our object is not at present to enter into a regular history of the institution, but to present our readers with an account, of the regular business of the day.

The physical department of the College, gives us a decidedly different character from any other institution of learning in the country. The people of the west are far from insensible as to the importance and value of inculcating industrious desires in the minds of the youth. Most of our sensible and enterprising citizens know that idleness is the cause of more crime than all other causes jointly; that it produces the destruction of more young men, and especially of those placed at institutions of learning, for the purpose of obtaining an education, than any evil to which they are exposed. Students at Franklin College are expected to labour at some branch of business. To effect this the mechanic arts are cultivated; also, horticulture and agriculture, the great branches of business which are concerned in the production of wealth, and the augmenting of human comfort among any people. The time employed at work will be understood by the following synopsis of business.

The bell is rung about one quarter of an hour before 5 o'clock in the morning to warn the students to rise and prepare for prayers in chapel, where each student is required to attend. After services in chapel the several classes are required to recite regularly until the bell announces breakfast; when the students all assemble in the aisle of the cottage building, and march in procession to the dining room, each having a particular seat at table.---At table the utmost decorum and respect is required. Whilst eating, some one of the students reads to the rest, who preserve profound silence until all are prepared to rise, when they then retire from table in regular order. After breakfast the bell is rung, which is a signal to those engaged in the physical department, to commence their operations, which continue about one hour and a half, when labor ceases by the usual signal. At this season of the year, it is half past 8 o'clock; half an hour is now spent in recreation, cleaning, and arranging rooms, by the students, when they are then warned to study, at 9 o'clock, after which each student is required to be at his room until study hours are over, which *is at noon;---recitations being heard from 9 until* 12 o'clock, by the several Professors in their respective departments.

The students and Faculty dine at 12 o'clock, the same order being observed as heretofore specified for breakfast. After dining there is recess until 1 o'clock, when recitations are commenced *and continued until 4 o'clock*, when all the students devote an hour to music, which is regularly taught in the institution as a part of the system of education. After music, prayers are said in chapel by the President, when the exercises in the physical department commence, and continue until half past 6 o'clock, when all are dismissed from labor, and sup in the usual order. About half an hour after supper the bell announces the time to commence study during the evening, and study hours continue till half-past 9 o'clock. At half-past 10 o'clock all are required to retire to rest.

The observing reader will readily perceive that the students are not idle during the day, at least, and that sufficient exercise and leisure are afforded to secure the health of the student. The most severe study is not injurious to the human constitution when accompanied with proper exercise and a sufficient quantity, but destruction of the vital organs of the body, is the inevitable consequence of great mental, without great bodily exercise. There is no apology for any man who thus destroys his life; and he who would, either through indulgence or carelessness, endanger the health, if a youth, by omitting the means necessary to secure that health, he can by no means be considered free from a very high grade of sin. We are not certain that the American people are prepared to appreciate the relative character of the principles upon which the system of education adopted in Franklin College, is based, but the more enlightened views of our citizens, will soon lead them to adopt this, as the only true and effectual plan for developing the powers of the human mind and body.---*The Naturalist.*

Localities for Peach Orchards.---There is little doubt, that in many parts of the country, where the peach is not raised from the severity of the climate, a selection of locality would give regular crops. The great advantages derived from nearness to large unfreezing lakes, is well known. The superiority of hills over valleys, has often been noticed, the former being colder in *summer, and favoring a more moderate and well* ripened growth of wood, and being less subject to sharp frosts on clear nights.

A very striking case was lately mentioned to us by R. Raymond, of Conhocton, Steuben Co., New York. The river valley at that place, though many hundred feet above the level of the sea, is much lower than the surrounding country, being flanked by hills about 500 feet high. In the valley, the peach cannot be cultivated, he himself, as well as others, having had their trees killed completely to the ground in winter. But on one of the neighboring hills, 500 feet above, an orchard has been planted, where not only the trees themselves escape, but they yield regular crops of fruit. This hill is probably over 1,200 feet above the level of the sea. The experiment, both on the hill, and in the valley, were made on dry, firm soils.---*Alb. Cult.*

Hoarseness.---One drachm of freshly-scraped horse-radish root, to be infused with four ounces of water in a close vessel for two hours, and made into a syrup with double its weight in vinegar, is an approved remedy for hoarseness; a tea-spoonful has often proved effectual, a few tea-spoonsful, it is said, have never been known to fail in removing hoarseness.

A Discussion on the Use of Plaster as a Manure.

Showing how farmer Scott overcome his prejudice against book farming; and how much practical information might be gained by reading scientific books: and how he borrowed a book and took home with him to read—having discovered he was not too old to learn.

Farmer Scott.—Good morning, neighbor L. you appear to be enjoying yourself by a comfortable fire this cold morning; and I see you are still poring over your books.

Neigh. L.—Yes, friend Scott, I was looking over to see what had been said about the use of plaster, as I intend to make use of it again on my land next season.

Far. Scott.—I have just heard that you have been buying some more of that *stimulating intoxicating* Plaster of Paris.

Neigh. L.—I sent to Sandusky last fall, and bought eight barrels, (at a cost of $1,00 per 100 pounds, delivered.) I obtained so much benefit from the 4 barrels I procured before, that I am going to give it another trial.

Far. Scott.—I came over neighbor L. just to give you a piece of advice: I am a plain man, a farmer by *profession*, and have spent the greater part of my life now fifty years gone, on a farm; and I think I have some little knowledge of farming operations, and how they ought to be carried on. *You* are a young man, and have been brought up to another profession, and you have only been on the farm here about two years; and I have observed, with regret, that a considerable portion of your time has been spent in reading the papers, and these books that you have here in this glass case. Now if you will just take my advice, (and it is given in sincere friendship,) you will quit your book farming, and go to farming by hard work, instead of by books. No man ever got rich by farming, without hard work; at least I have found it so; and you will soon find too, if you continue putting plaster on your soil you will *ruin* it, for it kills the life of the land, and I protest against its use in any shape or form.

Neigh. L.—Your superior age and practical experience ought to command my respect for your opinions; and so far as they are founded on reason and the laws of nature, I shall give them great deference. But you have given no reasons for your objections to the use of plaster; and I think you would not condemn it so positively, unless you had some good reasons, founded on your long experience. Will you give me some facts and experiments on the use of plaster which have given you such an unfavorable opinion of its value.

Far. Scott.—I tried it many years ago on my lands, and had sore cause to repent it. I stocked down a field to clover, and sowed on plaster, in the usual way. The clover grew monstrous large, from four to five feet high—no, I mistake—from four to five feet long,—for long before mowing time, it was completely lodged down, and twisted every which way. It was a great yield, but it was no very desirable job to mow it. The next year I had about an ordinary yield; the third year I again put on plaster; but it had no visible effect, and I had only about half a crop of hay. The fourth year it was hardly worth mowing. I then plowed it up and planted it with corn; but the life of the land was departed; the corn grew only three to four feet high. And it did not yield more than ten bushels to the acre. To make up for the deficiency, however, I had a small crop of sorrel and stunted moss, and I have always observed that these last mentioned productions are a constant attendant on lands much exhausted.

Neigh. L.—Although I have been farming but two years, yet in that time I too have tried an experiment with plaster; and the result has been quite different from yours; and it has given me a very favorable opinion of the efficacy of plaster, when it is properly used. In the spring of 1843, I had 16 acres well set in clover, on which I sowed 16 bushels of plaster. It yielded a very large crop of hay, which was cut in June. The second crop was intended for seed, but the plaster made the clover grow so rank, that there was not seed enough to be worth saving, and the crop was pastured off. The next season the first crop was cut for hay, and the second crop which was an average yield was well plowed in, and the field sown with wheat. In sowing the plaster, which was done on a windy day, there were several strips across the field, that received no plaster; and the difference in the growth of the clover and of the wheat, was very perceptible; and could be observed almost as far as the field could be seen; and when the wheat was cut, it was found by a careful examination, that on the plastered part, the straw was of a brighter color, and full six inches higher. the heads longer and heavier, and the wheat on this part was fit to cut

fully a week before that on the unplastered strips.* Now here are two experiments, made by different persons, and exhibiting different results; *and each one of us has drawn a different* conclusion, as to the efficacy of plaster. But how are these results to be reconciled? Suppose I look into this book and see what is there said about the nature and composition of plaster.

Far Scott – Stop, stop, I don't want any of your *philosophising;* for experience is every thing. The man that sows clean seed wheat, and in time of harvest finds one fourth, or one half of it cheat, *knows for a certain* that wheat will turn to cheat, *for he has seen it* And the man who critically observes the influence of the moon on the weather, and on vegetation, knows it to be a fact; and all the reasoning, and burlesque, and ridicule of book learned men, who have paid no attention to the subject, can not convince me to the contrary, for it is a truth fully established that facts are stubborn things.

Neigh. L.—I fully agree with you, friend Scott, that facts and experiments ought to be the guide in doubtful cases. But people are sometimes liable to err in their observation of facts. Here are two experiments apparently conducted alike, presenting different results; it may be possible that some apparently trifling circumstance has been overlooked in one or the other of the experiments, which may have been the sole cause of the different results; and it would be well to repeat the experiment, which I intend to do, and *to examine what has been done by others,* as well as the nature of the soils, and the plaster itself, to see if these difficulties can not be explained: and perhaps some improvement may be made in the manner of using plaster when these things are fully understood.

Far Scott.—I know all about it now; I don't care what any body else says about it; I have tried it, and I can give as good reasons for my opinions as any body else can for his. Plaster does not contain one single principle or property of manure. It operates only as a *stimulus;* and by its use, *one* large crop of clover may be produced, as was the case in both our experiments, and then it leaves the land in a worse condition than it was before. It is just so with the whiskey drinker; by drinking large quantities of liquor, it raises his ideas, stimulates his feelings, and he *may do more work* for an hour or two;—but can he do more work for a week, a month, a year? It is even so with plaster. Larger crops may be produced for a few years, or rather a year or two; but when the effect of this stimulus is over, the strength of the land is exhausted, and, like the drunkard, literally lays down in the furrow!

Neigh. L.—I think you told me the other day, that you were well acquainted with Judge Buel, many years ago?

Far. Scott.—Yes, I knew him when I lived in the State of New York. He was a *real practical* farmer, and worked with his own hands. and whatever *he* would say, I should have confidence in, for he was not one of your modern scientific book learned farmers.

Neigh. L.—I suppose, then, if I should read to you what he says in this *book,* about sowing plaster, you would not dispute the authenticity of it, because it was *printed?*

Far. Scott.—I would believe it, if it did not contradict *my own* experience. But what does the book say?

Neigh. L.—Then you are willing to hear it *now!* Judge Buel says he has made a great variety of experiments, in the use of plaster, and from his experience, he is satisfied that it should be sown very early in the spring—*even* before the snow goes off.

Far. Scott.—That, *certainly is a new idea to* me. I never heard of any body sowing plaster on snow before. I sowed mine on the clover, after it was leaved out, some time in April; and I believe this is the general practice. I would like to know what good it would do to sow plaster on snow; or to sow it before the clover was up.

Neigh. L.—Here is another book, which was written by a German named Liebig, in 1840;—but he is one of "your modern scientific book learned men," and you will put no confidence in what he says.

Far. Scott.—That depends on circumstances. But what does he say about sowing plaster on snow?

Neigh L.—I believe he says nothing about that. But he says that snow and rain water contain a considerable quantity of carbonate of ammonia; particularly after a long drought.

*If the rust in wheat is developed by a peculiar state of the atmosphere at a particular stage of the growth of wheat, would not the earlier ripening of the wheat thus produced, be the means of preventing the attacks of this destructive parasite?

Far. Scott.—Carbonate of ammonia!—now you are going into your scientifics. I would like to know what that is, for I am no wiser now, than I was before.

Neigh. L.—Here is a little bottle; you see I keep it corked tight; but just put it up to your nose.

Far. Scott.—Sn-e-u-w,—why, that's harts horn!

Neigh. L.—Mr. Liebig says that all putrifying animal bodies, and animal manures, are constantly giving off this substance, which passes into the atmosphere, and every shower of rain and fall of snow brings it down to the ground again.

Far. Scott.—Well, but we were just now talking about sowing plaster on snow. What has this bottle of harts horn to do with that?

Neigh. L.—I must give you a little more book knowledge, before I can explain the matter properly. Here is another book written by Sir H Davy, another "scientific book learned man" We shall find in this, that 100 parts of plaster, when pure, consists of about 33 parts lime, 46 parts sulphuric acid, and 21 parts water; and also that harts horn is composed of 39 parts ammonia, 50 parts carbonic acid, and 11 parts of water. I will put a little of this harts horn in the saucer and dissolve it in water, which you see it will do very readily;—now I will put in a little plaster Do you see what a commotion it makes?

Far. Scott.—I declare! that's curious. What is the cause of its boiling so?

Neigh. L.—I have not time to tell you now: but here is a book I will lend you, called Parker's Chemical Catechism, which will give you the desired information. We have now in the dish neither harts horn nor plaster; but two other compounds entirely different from either: one is sulphate of ammonia, and the other is carbonate of lime.

Far. Scott.—I can easily see *now*, that when plaster is sown on snow, or when rain falls upon it, the plaster instead of being *dissolved*, as has heretofore been supposed, it undergoes a decomposition; and its constituents form other compounds in the soil. But then I can't see what effect these other compounds can have on the clover, or the soil, more than the plaster.

Neigh. L.—You are progressing very well in your study of chemistry. But to answer your last question, you must take another lesson or two from the Muck Manual, written by Dr. Dana. He says that all soils contain geine,—that geine consists of decomposed animal and vegetable matter in the soil. Geine exists in the soil in two states, soluble and insoluble. Soluble geine is the food of plants. It is soluble both in water and alkali, in alcohol and in acids. By the action of an alkali, geine is converted into a substance having acid properties; and in this state it combines with earths, alkalies, and oxides forming neutral salts, called geates. These are all very soluble in water. By the action of growing plants upon silicates contained in the soil, potash and other basis are set free. It is also laid down as a general rule, that carbonic acid and the carbonates, decompose the earthy, alkaline, and metalic silicates of soils. And his tenth principle is, that the *base* of all salts, acts ever the same in agriculture. Peculiarity of action depends upon the *acid* of the salt.

Far. Scott.—There is too much of your scientifics there for me—(I wish you would not let me forget to take that book home with me, that you mentioned a while ago.)

Neigh. L.—It is true, it requires a great deal of study to understand the nature of all these matters. But it is not necessary that farmers should understand the whole details. It is enough that they understand the general principles of the action of the various substances composing the soil, and of the manures applied to it, and of the action which growing plants exert upon them. Dr Dana has studied these subjects thoroughly, and has demonstrated every proposition by many and varied experiments; and he has been careful not to make an assertion until he has fully tested it by experiment. We may therefore place the utmost confidence in his statements. What he means by the word "salt" is a compound of an acid with a mineral substance. Harts horn is a salt, and plaster is a salt, in the sense he uses the term. Plaster being a salt, the base of which is lime, on being decomposed, the lime acts on the geine of the soil in the same manner that common lime would; which he says, will decompose the earthy alkaline, and metalic silicates of soils, and will also convert solid vegetable matter into soluble food of plants. The sulphuric acid, having entered into combination with the ammonia contained in the water and snow, forming sulphate of ammonia, which is very soluble in water, will form new combinations

in the soil with the geine, or other substances, rendering them more suitable to be received into the pores of the roots of plants. How far the *sulphuric acid contained in the* plaster may operate when set free, in the production of electrical action in the soil, and thereby producing an increased vigor of the plant, and causing it to perform its functions with greater force and rapidity, has not yet been fully ascertained by scientific men.

Far. Scott.—Can you tell why it is that plaster will sometimes have as great effect in a dry season, and often better than when it is wet?

Neigh. L.—The soil is an immense chemical laboratory; and combinations, decompositions and changes are constantly going on in the soil; and the vital principle of vegetation is a great agent in producing these changes. It is well known that there are several other substances besides ammonia that will decompose plaster. Carbonate of potash will decompose it; and potash is set free by the action of growing plants upon the silicates in the soil, which will decompose the plaster, as well as ammonia. Carbonate of soda, and of magnesia, and common ashes when mixed with plaster, will decompose it. It *is reasonable to infer, then, that* similar changes take place in dry weather as well as wet.

Far. Scott—I should like to know one thing more. Why was it, that when I put plaster on my land the *third* year, that did not get as large a crop of clover as I did the first year?

Neigh. L.—I will answer that *question too by* looking into another book. This is called Flora Cestrica, and was written by Dr. Darlington of Pa. You will find on page 407, as follows. "Authors generally consider clover a *perennial* plant. But a distinguished Agriculturist of New England asserts positively that it is *biennial;* and my own observations incline me to the same opinion. It is certain that a large proportion of the cultivated plants disappear after the second year, and those which apparently remain may be *only small plants from fallen seeds.*" The reason, then, that you had no clover the *third* year, was because there was but little left there to grow—the old having died out, and you cut it off without letting it go to seed.

Far. Scott.—I would be glad if you would satisfy me about another matter. How did it happen that my ground after receiving *two* dressings of plaster, was still poorer than your land which was plastered but once?

Neigh. L.—You have seen that geine is the food of plants, and that geine consists chiefly of decomposed vegetable matter; now upon the supposition that both soils contained an *equal amount* of geine when the experiments were commenced, you will see that you carried off from your land *four* successive crops, *before you planted corn.* I took off but *two* crops, and buried *one* in the soil, to form more geine in the place of that I took away. But I can show you that my land was actually richer in geine when the wheat was sown, than it was when the experiment was begun; because the clover crop that I plowed in returned more to the soil, than the two crops of clover that I carried away, took from it, besides the beneficial effect of the clover in decomposing the salts and geine, and likewise in shading the ground.

Far. Scott.—Now you need'nt try to fool me that way; you can't make me believe that a *half* is more than a *whole.*

Neigh. L.—Well, I shall, nevertheless, try to explain my statement. Some of my books say that the atmosphere contains a quantity of carbonic acid gas, besides its constituents of oxygen and nitrogen, and they state too that clover consists of carbon, oxygen, hydrogen, and nitrogen, besides its earthly materials. Now all these matters, except the mineral ingredients, come from the air and water, and the earthly materials bear but a very small proportion to the others. You may therefore easily perceive, that if the greater part of the subst. nce of clover is extracted from the air and water, and but a small proportion from the soil, that one crop of clover plowed *into the soil may return more vegetable matter,* than two crops extracted from it. This is a wise provision of nature, and one which it is very important should be understood by a farmer; for if this was not the case, the land would soon become barren, without the possibility of restoring its fertility.

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*Dr. Dana says, "The mere presence of a living, growing plant in a soil, in one year effects a greater amount of its decomposition, than all atmospheric influences, in many years." This suggests the propriety of using clover, and the impropriety of naked fallows, to enrich soils.

†It has been ascertained by repeated experiments, that sulphuric acid produces nearly or quite as good effects on clover as plaster.

Far. Scott.—Well, I must confess, I have learned a great many things that I had not thought of before. I have a mind to try the effects of plaster once more; for I can't see why it may not do my land as much good as yours. I wish you would give me your plan of using plaster, and I will try it again upon your plan.

Neigh. L.—I would not use plaster upon the supposition that it is of itself a manure (except in a slight degree) but I would use it for the purpose of *producing* manure. And to that end I would always use it in connection with clover; and I would sow the plaster at the same time I sow the clover seed—say in February—for both science and practice confirm the utility of sowing the plaster early—even when the snow is on the ground.—And I would give the clover another dressing of plaster in the following year, in April, after the leaves of the clover had nearly attained their full size. By this means, the poorest lands may be made to yield a large crop of clover, and if the land had not been too much exhausted, I would take off one crop of hay, and then plow in the second crop in August, and prepare the ground for wheat. But before turning the clover in, I would sow a bushel or more of plaster on the clover, and plow the clover and plaster in together.

Far. Scott.—That is another new idea! I have always seen plaster put on the clover when it was young, to make it grow. But I never before heard of sowing plaster on clover after it had done growing. What is the philosophy of that?

Neigh. L.—The reason of this is thus stated in the *American Farmer*. "It has been ascertained by *repeated experiments*, that a liberal application of plaster to clover at the time of turning it down, and preparing for a wheat crop, is by far the most advantageous to the crop, and much preferable to turning in the clover in the usual way, and plastering on the surface. The action of the plaster, thus excluded from the atmospheric air, upon the clover covered over, is instantaneous, and the putridity is so certain, as to cause considerable gas, which in its passage through the clod impregnates it with all its manuring qualities and the root of the plant shoots down, and feeds on a bed of manure." You will observe here, that I use plaster for two different purposes—First, to cause the clover to grow, to afford manure to enrich the land; and secondly for the purpose of cooking or preparing the clover so as to bring it sooner into a state suitable for the food of the wheat plants.

Far. Scott.—I will certainly try your plan as soon as I can make arrangements for it. I perceive it is nearly noon, and I must go;—I came over in a great hurry; but the time has slipt away very quick. I will be much obliged for the loan of that *book*. I perceive I am not yet too old to learn.

Neigh. L.—You are entirely welcome to the use of that or any other of my books. And I hope you will give the plaster another trial; and then do not fail to write the result, and send it to the *Ohio Cultivator*. D. L.

Mount Tabor, Ohio, January, 1846.

Chemical Farming.

In drawing the comparison made in our last betwixt the crops on the farms of Hillington and Lochinch in the County of Renfrew, our object was to show to those farmers who may be resolutely averse to experiment, that, aiding the bountiful hand of nature by mechanical means alone, they may still produce results equivalent to those of agricultural improvement, by careful and attentive culture.

We have since paid a second visit to Lochinch farm, with the view of developing, on the other hand, the results of chemical culture; for which purpose, the well-informed and enterprising tenant Mr. M'Lintock, has openly and candidly furnished us with the particulars of his mode of management. These we consider it of no slight importance to make known, as the farm of Lochinch is, we may say, the only one to which we can at this moment point as a purely experimental farm, held by a tenant farmer. This circumstance alone would by no means justify our holding up the example and efforts of Mr. M'Lintock to produce a chemical revolution in the farming system, were it not also the fact that the *precept* of those great agricultural chemists, Professors Johnston and Lyon Playfair, "Science with profit" is his *practice*. This gentleman's farm may truly be pointed to as one where bulky crops are attained, out of all rotation and just at the will of the farmer, by chemical agency—with a manifest saving of expense. He by no means advocates the sparing of labor, however, and that it must be performed

The principles applied to effect the results which may here be witnessed undoubtedly require

scientific knowledge, practical skill, foresight, prudence, courage and perseverance. And without an abundant stock of these qualities no farmer need attempt them. The farm of Lochinch, for instance when it was taken by Mr M'Lintock one year ago, was in very bad condition. It was predicted that he would never rear particular crops off this part of it and off that part of it; but, having been practically conversant with chemistry previous to becoming a farmer at this time, he felt confident in the course he contemplated adopting, and heeded not the objections urged against it. The result might well convince the most sceptical He has had a large quantity of drainage put into Lochinch; has pursued a scientific system of top-dressing with chemical mixtures calculated for the various kinds of produce to be reared; has set the theory of rotations at defiance; and although employing steeps and pickles for his seed, has disregarded the notions urged in some quarters respecting thin sowing, having a very poor opinion of crops which have only become thick by greatly tillering out, and considering the saving of seed to be but a poor compensation for deficiences both of straw and grain. The circulation of air, as will be seen by and bye, is very little retarded by moderately thick sowing.

The steading is a quadrangular court, with *runs* for liquid manure from the cow-house, stable, &c., to an adjacent tank. The mode employed by Mr. M'Lintock of fixing the ammonia in the dunghill is worth mentioning. It is that of watering the surface of the heap occasionally with a solution of sulphate of magnesia, thereby effectually fixing the ammonia, which, as our readers know, would otherwise be driven off by the fermentation. The sulphuric acid bottles to be seen in the yard proclaim at once the character of the farming, and an apartment was pointed out intended to be converted into a farm laboratory—an appendage which we may hope yet to see attached to every farm-steading in Britain. The threshing-floor of the barn is a composition of Mr. M'Lintock's, far superior to asphalte or any bituminous and brittle composition—smooth and hard as polished wainscot—cheap and durable. He has also employed it in his kitchen, where the feet of a warm pot set down off the fire would, of course, melt and perforate asphalte, this composition however is impervious to heat. Its constituents are a kind of cement:—

We shall notice the principle crops on the farm in their order.

Potatoes.—The potato experiments are the first which attract notice on entering Lochinch farm—as two sets of experiments are going on upon a series of short ridges, running off on either hand from the approach. It is well known that the Neilston potatoes are employed far and near for seed—the character of the change from the soil of that parish, which rests chiefly on a subsoil of trap, being favourable to the growth of the plant when removed to the low country. Mr. M'Lintock has attempted to supply chemically the conditions for raising seed potatoes equivalent to the Mearns and Neilston produce upon any soil; and for this purpose has tried to produce a chemical action on the growing plant precisely the same as that which proceeds from the Neilston subsoil. In this way he expects to grow seed potatoes identical with those of the far-famed parish in question! His next set of potato experiments are adopted for the purpose of testing the value of 20 different kinds of potatoes for domestic use—allowing each kind all the advantages of culture best adapted for it; and he is of opinion that the black Irish seedling, a potato highly approved in Ireland for quality, also offers best in the meantime in point of quantity. It will be impossible, however, to speak more decisively of these important trials until the potatoes are taken up and weighed, when we expect to to have it in our power to state the exact results. We may, however, take this opportunity of recurring to a topic we have frequently urged upon our readers' attention—the establishment of a farm garden on every farm, for the purpose of instituting experiments of a similar nature, and on the limited scale in this instance adopted by Mr. M'Lintock, and thus ascertaining their fitness for being followed out in the field. The utility of a farm garden in raising new varieties of all kinds of seed need not be enlarged upon, nor its vastly important instrumentality in leading ultimately to a uniformity of kind in the seed used for each particular crop or section in a field. Mr. M'Lintock has this year raised on Lochinch two very splendid fields of potatoes, one of which, and the best, received 20 tons farm yard dung per acre, with the following additions in the shape of chemical manures, viz., 5 cwt. guano, 1 cwt. sulphate of soda, and ½ cwt. magnesia, costingalto-gether only £9 per Scotch acre, though yielding

from 50 to 60 bolls per acre of produce. The potato field next the high road also shows a splendid crop, raised at a cost of £5 per acre in chemical manures, as follows, viz:—

10 cwt. guano,
1 cwt. acidulous sulphate of soda,
1 cwt. sulphate of magnesia.

Beans:—Mr. M'Lintock favors us with the following account of his treatment of this extraordinary crop. "When you were at Lochanch I promised to send you the quantities of the different kinds of chemical manures used for top dressing my bean field. There will be about 15 acres of beans; and to each Scotch acre the following manures, sown on the surface a few days previous to the beans being sown.

2 cwt. guano,
1½ cwt. bone charcoal,
28 lbs. sulphuric acid,
56 lbs. nitrate of potash,
1 cwt. acidulous sulphate of soda,
56 lbs. sulphate of magnesia.

"The bone charcoal and sulphuric acid were first mixed together; then all the manures carefully mixed and put through a riddle before being sown.

"The beans were steeped 48 hours in as much water as covered them, and 1 lb. of guano to each bushel of beans. After being taken out of the steep they were dried up with bone charcoal, and spread on the barn floor about one foot thick for 10 days. They were then taken out considerably sprung, or germinated, and sown on the 9th of April. The field was very poor, natural hay having been cut off it for a number of years; the cost per Scotch acre will be about 51s. I need say nothing about the beans—you had an opportunity of seeing them yourself." This crop stands at once thick and strong—and is the most remarkable crop of beans to be witnessed in this quarter, notwithstanding the very inferior character, or rather unprepared state of the soil. It is a remarkable thing if a bean crop begins to pod lower down than within 12 inches from the ground. The crop in question has begun to pod within 4 inches upwards Of course they promise an immense addition of grain, because besides the additional pods, the largest and best pods are below, dwindling as they approach the top of the stalk. This fact is in favour of Mr. M'Lintock's practice of thick sowing; for if the pods were to be so much enlarged as is imagined from the free access of air, &c., why is this advantage not sufficient to counterbalance the larger and disadvantageous vegetating position of the upper pods? We could see that very little inconvenience was experienced by this crop from the closeness of the stems.

Wheat.—This crop—a remarkably fine field—expected to yield about 12 bolls per acre—is raised after oats, and actually takes the place which in the usual rotation would be occupied by a green crop The following is the treatment:—Ground ploughed and subsoiled at the same time in the beginning of December—wheat seed steeped 60 hours in a solution of guano, 5 lbs. to the bushel, then dried up with bone charcoal—got at that time 2 cwt. guano, ½ cwt. acidulous sulphate of soda, ½ cwt. sulphate of magnesia, and ½ cwt. bone charcoal, per acre, sown on the surface and harrowed in along with the seed. In the month of April top-dressed with ½ cwt. sulphate of ammonia, 1½ cwt. bone charcoal, with 40 lbs. sulphuric acid, 56 lbs. nitrate of potash, and ½ cwt. sulphate of soda. The field will undoubtedly be in much finer condition than before this crop was put upon it. Having been very foul with weeds, the wheat has latterly grown up so powerfully as to over-master them, and most of them must be choked and dead.

Oats.—The crop of oats is perhaps the finest grain crop on the farm. It comes partly after oats and partly from lea ground. It should yield nearly 12 bolls per acre, and in some parts more. It was top-dressed with 2½ cwt. guano, 1 cwt. sulphate of soda, ½ cwt. sulphate of magnesia, 28 lbs. nitrate of potash. The peculiar feature of this field is the absence of blight and smut, attesting the perfect efficacy of Mr. M'Lintock's guano steep. The seed was sandy oats, partly from Musselburgh, and partly of Mr. M'Lintock's own growing. It is not known whether the Musselburgh seed had been tainted with smut; but the other was very much smutted, as all the sandy oats of last year were. The seed was steeped, however, 78 hours, in a solution of 5 lbs. of guano to each bushel of grain,—and dried up with bone charcoal. There is now no smut to be seen in the field where the steeped oats were sown; and that reared from the Musselburgh and the other seed cannot be distinguished.

Turnips.—This crop has been raised in the usual way on oat stubble,—the ground having

been subsoiled at the end of the season, which Mr. M'Lintocks makes a point of practice,—and regards it as a most important one. Manure for the turnips, 6 cwt. guano per acre, 1 cwt. sulphate of soda, 1 cwt. bone charcoal, and 1 cwt. sulphate of magnesia. The anticipated result will be 25 tons per acre, the expense of the manures being about £3 per acre.

Hay.—This crop to all appearance would not have been 100 stones per acre, had it not been for the top-dressing of nitrate of soda, sulphate of ammonia, and nitrate of potash, applied in the month of April—by which means it has turned out about 300 tons per acre.

These facts speak for themselves; we need not therefore further enlarge upon them—they are practical and not speculative—and the course of practice indicated is so plain, that any farmer in the country round may follow it out to an equally favorable issue.—*West. Ag.*

Potato Disease.

There is every reason to apprehend that this disease, which prevailed so generally last season, will be still more fatal in its effects the present year. The attention of the British press is extensively directed towards this subject, and although volumes have been written by the most scientific men of the age, still the cause and influence that promote the malady is but imperfectly understood. We have inspected some hundreds of fields within the past six weeks, and have invariably found, that the decay and falling off of the leaves, have been occasioned by the destructive work of a little insect, which in many respects resembles the turnip fly. If the work of this insect really be the cause of the disease, we apprehend but little difficulty in preventing their future attacks. We are not prepared to assign the cause of the disease to this source, but we are quite certain, that in every instance where we have seen blighted potato haulm, that it was occasioned by a small black fly not larger than a common pin head.

Agricultural Societies, in our opinion, should institute enquiry, and adopt every proper means to find out, if possible, the cause of the potato epidemic, and then, when the fact is once ascertained, there may be some hope of applying a remedy for the evil. The following extracts from the *Gardener's Chronicle*, show conclusively that the potato crop will be nearly an entire failure in Britain the present season:—

Cork.—Potatoes in every field exhibiting symptoms of disease; tubers small and discolored.—*M. R. W., July* 25.

Cornwall.—Crops, with very few exceptions, showing disease as strongly as last year; some raised from sets imported from the Azores not yet affected.—*Cornawaidd, July* 30.

Devonshire.—Every body hurrying up their early potatoes, crops all diseased; destruction beginning to be grievously felt, and the failure predicted to be greater than that of last year; a sound potato hardly to be met with.—*James Barnes, Bicton Gardens, Sidmouth, July* 28.

Isle of Wight.—Disease has made its appearance; but not general.—*T. B. Salter, Ryde, July* 28.

Mid-lothian.—My seedlings of last year vigorous and healthy, as also the crops in the vicinity from sets procured from the north and west country, and among them some from Rio Janeiro. Many fields look miserable, which have been planted with diseased tubers.—*G. S. Mackenzie, July* 27.

Norfolk.—All varieties of potato affected nearly alike; those manured with lime the worst in one instance; disease spreading rapidly.—*J. Wighton, Norwich, July* 29.

Perthshire.—Several fields much diseased; one of some acres, close by the Perth and Dundee road, a perfect wreck; several others in the same state; spreading fast.—*Wm. Sharpe, Pitfour Castle, July* 22.

Shropshire.—Crops generally affected; one field a month ago flourishing, now a pitiful spectacle; the leaves entirely stripped from the blotched and fast-decaying stems, and the tubers near the surface discolored. Winter sorts presumed to be a total failure.—*W. M. Rowland, Bishop Castle Vicarage, July* 27.

Surrey.—Disease spreading rapidly; those on poor soils least affected.—*H. Bowers, Bushbridge, Godalming, July* 28.

Worcester.—I fear we have again the disease of last year, but the plants in my garden *at present* look so well, that if August prove dry, I should hope that the calamity will not be so great as many anticipate.—*John Williams, Pitmaston, July* 27.

Wightonshire.—Disease universal, and proceeding rapidly.—*A Galloway Farmer, July* 27.

Wiltshire.—Disease spreading rapidly; varieties which last year escaped comparatively uninjured, this season becoming affected.—*J. Spencer, Bowood, July* 30.

Yorkshire.—Early crops free from disease; second earlies a fortnight ago sound, now with all the leaves withered as in November, stalks decaying; tubers all show the spot. Winter potatoes in full flower; with no disease discoverable.—*F. H. S. Gledstone, Skipton, July* 22.

Letters on Chemistry and Vegetable Phisiology.--Farinaceous Seed.

Dear Sir,—I feel much pleasure in complying with your request, by contributing to the columns of the *Western Agriculturist;* its establishment is a proof that the farmers of your neighborhood are besturring themselves, and I doubt not that, under your management, it will be a vehicle for the conveyance of much useful and important information. Before agriculture can be placed on a strictly scientific basis, much introductory and fundamental information must be acquired by the farmer; he must be made acquainted with many facts and principles before he can undertake to carry out new experiments, or obtain results on which he can confidently rely.

In my communications I shall endeavor in simple terms to describe the structure of the various parts of which plants are composed, their functions, the changes they undergo during growth, and the effects manures have in influencing these changes, and I shall commence with the seed, as it is from that our plants are derived, and also as the time for committing it to the earth is approaching, some hints may be thrown out which may prove of immediate benefit Let not the practical farmer pass these as the dreams of the mere theorist; but, on the contrary, I entreat him to examine for himself, whether what are asserted as facts be so or not; let him bring the deductions to the test of careful experiment, let him try all things, and hold fast that which is true.

Every seed is composed of two parts, the skin or outer covering and the kernel; with the former we have comparatively little to do, it is the structure of the latter that has the chief claims on our attention. This consists of the embryo, or germ of the future plant, the seed leaves (cotyledons) and nutrient matter for the embryo (albumen,) either existing as a separate body or contained in the cotyledons. This albumen is either of an oily, farinaceous, or horny consistency—is always wholesome, and it is it which renders many seeds, such as corn, &c., so valuable as human food. When a plant can be propagated by buds, as in the case of the potato, we find around the bud a similar stock of nutrient matter deposited, to serve for the nourishment of the growing bud, as the albumen does for that of the germ or embryo.

At present we shall confine our remarks to seeds having farinaceous albumen, such as the different varieties of corn. If we take a portion of this albumen, as wheat flour, and wash it on a piece of cloth with water, it is separated into two parts—a white powder removed by the water, known as starch, and viscid matter left on the cloth, to which the name of gluten has been applied. These two bodies differ from one another in composition, as much as they do in appearance; the one (starch) is composed of carbon, oxygen, hydrogen, while the other (gluten) contains in addition nitrogen. Before these substances can nourish the young plant, they undergo changes in composition, which may be best studied, if we examine them as they occur during the germination of the seed.

When we commit a seed to the ground under favourable circumstances, the root and future stem begin to be developed. At this period a small portion of a substance called diastase is produced in the seed, which, by its action on the starch, converts it into sugar, rendering it thus soluble in water, and fitted for absorption by the vessels of the young plant. It is in taking advantage of this change in the composition of the seed, that the art of malster consists.

Sugar is found in the unripened grain, and were we able to preserve it in this state, it would furnish a ready supply to the plant; and hence, we find that seed not allowed to become dead ripe, germinates more rapidly than when the ripening process is allowed to go on so far as to convert the whole of the sugar into starch.

When the extremity of the young plant becomes tipped with green, it converts this sugar into woody fibre, of which the stem of the perfect plant chiefly consists; and this change from sugar to fibre is effected by the plant adding to the sugar a quantity of carbon, which it derives from the air; the difference of composition between sugar and fibre being

50 lb. carbon, with 72 lb. water, form sugar.
Do. do. 50 do. do. fibre

It is important to remark here, that other substances besides diastase, have the power of rendering starch liquid, and producing the changes which it effects—alkalies, for instance, have this power, and by adding them, or substances containing nitrogen, to our seed-beds, we may be able to assist the efforts of nature, and perhaps obtain a greater produce from the seed. Such additions in the form of solutions for steeping seeds, have long been used by gardeners, especi-

ally for very old seeds, to assist their germinating power. And lime applied to seeds containing much starch, has been decidedly beneficial; for even in some cases when the seed has been fusty, and produced without any application, unhealthy plants, the addition of lime has caused a healthy braird.

Practical men, too, have observed that by steeping their seed corn in urine, solutions of salts, &c, and sprinkling quick lime on them, when wet,—smut, rust, &c., have been prevented; and also that when potato sets have been dusted with lime or powdered gypsum, better crops have resulted.

But lately more astonishing results are stated to have been produced by steeps, and it has been asserted that if proper substances be employed, the use of other manures is completely superseded, and we have been told that doctored seeds will produce as abundant crops on our sandy shores, as in the richest ground.

At the meeting of the Highland Society at Dundee in 1843, a gentleman exhibited several luxuriant specimens of wheat, oats, &c., grown in a soil not manured for at least eleven years, which luxuriance appeared to him to be owing to the action of the steeps. The salts employed were nitrate of soda, sulphate, nitrate and muriate of ammonia, &c. These experiments he repeated with perfect success, finding that not only was the growth more luxuriant, but that the steeped seeds tillered into 9, 10, or 11 stems, while the unprepared ones produced only 2, 3, or 4.

Experiments have been made in the London Horticultural Society's Gardens on grains and leguminous seeds, steeped in solutions of nitrate of soda, muriate of lime, sulphate of magnesia, muriate of ammonia, phosphate of ammonia, &c, and the result is reported that on wheat, barley, rye, and oats, little effect has been produced, but if anything, it appears to be rather injurious especially on the wheat, and in the case of peas and beans, those steeped in water alone were decidedly the best.

The results of experiments on these steeps by farmers in this neighbourhood, with scarcely any exception, are in direct accordance with the above. This appears to settle this question.—But if we do not place so much reliance on these steeps as the inventor does, perhaps under some circumstances they may be beneficial, and even with these results before us, the subject is worthy further investigation.

Not confining the experiments to the action of solutions, but extending them to Victor's plan of mixing the seed with stimulating manures in the solid state, and causing them by means of clay to adhere to each individual seed. Though in this way we could not expect to supply the seed with sufficient materials for perfecting the plant, yet in the one case it is an economical mode of applying manure, as it brings it in immediate contact with the roots: for in all other modes, even when the manure is drilled in, much is removed from the crop it is intended immediately to feed; and in the other case, if the saline materials of the soil be small in quantity, or if the salts contained in the seed be essential to its growth, the addition may be beneficial; for though the seed be able only to absorb a little, still that may add one half more to what it already contains; and as we know that the saline matter in the same kind of seed varies in quantity, its absence may be the cause of feeble germination, and the addition of the required salts, as afforded by steeps, may increase the vigour of the crop.

I have here alluded to three ways in which seed manuring may be beneficial.

1st. By adding substances to assist in the liquefaction of the starch, either directly or by assisting in the production of diastase.

2nd. By bringing the manure in direct contact with the roots, and thus economising the amount required.

3d. By adding to the quantity or making up the deficiency of the saline matters in the seed and soils.

I would therefore recommend such experiments to be repeated, carefully examining the quantity of inorganic matter in the seed and soils, and observing whether, when undressed, the germinating power appears to be dependant at all on the proportion of this matter. It is needless to add, that the composition and proportions of the steep or manure must be known and stated, and that all experiments or secret preparations of quack fertilizers are of no avail, and not worth the trouble of recording.

G. Aitkin, M. D., Agricultural Chemist.
—*Western Agriculturist.*

Black Dye for Cotton.—Acetate of iron as a mordant; and dye in a bath of madder and log-wood.

Choice of Business Pursuits for Children.

"There is a frequent complaint among farmers, that their sons early manifest a distaste for agriculture,—that as soon as they are of an age to be useful, they seek other employments"—*Stone's Address*, 1845.

In the choice of business pursuits for our children, it is undoubtedly the wisest plan to conform as far as practicable to the natural inclination, or as it is familiarly called, suit the turn of mind; for all are not alike, and he who would make a miserable mechanic, may rise to eminence as a lawyer; while he who would find himself totally unable to defend a cause either for plaintiff or defendant may be admirably fitted to be judge, jury, and whole witness box, when rotation of crops, culture of roots, and subsoil plowing, are under consideration. But, unfortunately, there is too good reason for the frequent complaint that the sons, and daughters also, of farmers who by mind and taste are constituted for country life and labor, no sooner arrive at an age when they imagine themselves independent, than they turn their backs upon the farm, perhaps with scorn at the idea of following the honorable employment of their fathers. Among the many reasons assigned for this lamentable fact, I would now notice one, which may be expressed in a sentence, as the want of refinement among farmers' wives.

It may seem, at first sight, that, here is no obvious connection between cause and effect; but I will endeavor to prove that their is, not so much to uphold the children, as to convince the parents that remedy for the evil is in their possession.

Ambition is inherent in our natures, and we are all inclined to opinions that will advance or retard what we consider our best interests. If then we allow our children to draw comparisons manifestly to our disadvantage, we must expect they will shun a calling, the pursuit of which makes, in their estimation, such vast difference between ourselves and others. There is no doubt, that many a farmer's son, who loves the toil of seed-time and harvest, enters a store or studies a profession, because he thinks no woman of intellect and polish would become his wife, were he to remain a farmer; while his sister, with her whole soul yearning for the beauties of nature, refuses a home among them, and condemns herself to an unhealthy existence in the close and crowded city, because she cannot consent to become, what she considers a farmer's wife must be, a mere animal drudge. So universal are these opinions, that when a merchant's daughter has left her father's house, where she had been accustomed to comparative luxury and refinement, to become the mistress of a farm, I have heard her sorrowed for, as if she had sacrificed every earthly comfort and enjoyment. "She, a farmers wife! What a pity that one so fitted to shine in the best circles, should, as it were, bury herself alive!" Again, when the son of a wealthy man, clinging perhaps to the recollection of boy-hood's happiness in country visits, has manifested a desire to follow the plow for a maintenance, I have heard arguments and entreaties used to dissuade him from it, that could not have been stronger had he desired the post of hangman. These things ought not so to be, and yet a change cannot be effected until our farmers become less what they now are, a peculiar people. True, agriculture is making rapid progress, and fast becoming what it should be, a science and a profession, but it cannot reach the high point among the sciences and professions which it is most worthy to occupy, until the "sons of the soil" more generally acknowledge for themselves and families an intellectual as well as a physical existence; until they combine with hand-work head work, with the rough labor necessary for subsistence, the polish and refinement which gild the humblest home. I would not be understood on a moment as an advocate for the follies of fashionable boarding-schools or expensive dress, but I would contend for my hardly tasked country-women, that they be allowed books to study, time for daily mental-culture, even for the accomplishments (if they have a taste for them) which might have been attended to before marriage, that in their dress,—but here I must pause for a question or two.

An English writer in some excellent advice to his daughters says:—"It is a good rule, to follow the fashion in dress just so far that you shall not be marked as singular," and as no woman who sufficiently respects herself, can wish to be considered singular (unless for her *goodness*,) I would ask, is there not as much reason in wearing our dresses as far in conformity with the prevailing fashion as modesty and good taste will allow, as there is in making it questionable whether we have adopted the costume of the ark? Or if, in purchasing our garments, there is not as much economy in procuring a pretty and becoming article, as in selecting one intolerable ugly, both being the same price and texture? And as outward appearance, by conventional rules, is in some degree a stanard of the station we fill, if it is not better to give few-mer-

utes more to the duties of the toilet, or adopt some little distinction whereby a stranger may not feel in perplexity whether he is addressing himself to mistress or maid? The answer to these queries I must leave to wiser heads than mine, as there may be some good, unknown reasons for that love of the obsolete which prevails so extensively among a certain class of females.

If we are "never too old to learn," we are certainly never too old to amend; and I call upon my sisters of the craft, who have been induced by many cares and duties to lay aside the little refinements that characterize the lady, to shut up their books, and in losing the key of the library, lose the intellectual woman—I call upon them, though long wedded to mechanical habits, to rouse themselves for their children's sake, to look constantly for that lost key and those departed graces, and resolve to do all that in them lies, towards making the farmer's profession what it was intended to be, in the eyes of their children and the world, the noblest, the happiest. And let those just commencing, remember that, while they should consider no labor derogatory, it is yet possible to cultivate polished manners while attending upon necessary household affairs, and that no one is so thoroughly accomplished, as she who adds to the attainment of learning, complete practical knowledge of all domestic duties. If they resolve in the beginning that their occupations shall be so arranged as to give time for all they wish, and strive to impress upon their husbands the justice of a division of labor within doors as well as out, they will doubtless succeed in becoming not only intelligent companions but excellent housewives; for as a clever female writer has remarked, "other things being equal, the woman of the highest mental endowments will always be the best housekeeper, for domestic economy is a science that brings into action the qualities of mind as well as the graces of the heart."

And if better companions and wives, then better mothers also, for the higher the cultivation of their own minds and manners, the more fitted will they be to control the minds and manners of others; and when their children see them moving in polished circles abroad, or presiding over the little group at home, with equal grace and dignity, suffering nothing in a comparison with the most highly intelligent, then will their father's occupation become honored for the parent's sake, and if not chosen as their own, yet not rejected because degrading.

E. M. C.

Lynn, Mass., June 3rd, 1846.—*Am. Ag.*

A method of taking the Honey without destroying the Bees.—The common practice of killing the Bees, in order to obtain the honey, few can witness without some little compunction; and there is a very simple method of effecting the object without any injury to this most interesting little animal, (which on the score of interest, as well as humanity, claims regard.) I beg leave to communicate it through your paper, should you deem it worthy a place in it.

In the evening, when the Bees have retired, take the hive gently from the stand; spread a table cloth on the ground; set the hive on it, placing some thing under to raise it 3 or 4 inches; then draw up the corners of the cloth, and fasten them tight around the middle of the hive, leaving it so loose below that the Bees will have sufficient room between it and the hive—then raise the lid of the hive a little, and blow in the smoke from a segar; a few puffs of which, as it is very disagreeable will drive them down; continue rising the lid gradually blowing all around, and in a few minutes it will be found that they have gone out of the hive. You may then take off the lid and cut away as much honey as you may think proper. If the operation be performed the begining of July, you may take nearly all, as there will be time enough to provide a sufficiency for their support during winter. As soon as you have taken the honey, put on the lid, loosen the cloth, and spread it ont and in an hour or two the bees will have returned to the hive. It may then be replaced on the stand, and on the following day they will be found at work as usual.

This method is very simple preferable to that sometimes practiced of driving the bees into another hive as you get all the honey, and moreover the new comb which is still empty, and the young bees not yet out of their cells, are preserved. There is also danger in driving, of their not liking their new habitation, and in that case, of their sallying out and making war upon their neighbours.

The above method has frequently been practised by himself and others, and we have always found it to do well.

A. Mellis,

Sweet Apple Pudding.—Take one pint of scalding milk, half a pint of Indian meal, a teaspoonful of salt, and six sweet apples cut into small pieces, and bake not less than three hours; the apples will afford an excellent rich jelly. This is truly a most luxurious pudding.

Vegetable Analysis.

BY THOMAS GRAHAM.

Notwithstanding the infinite diversity of form which vegetable substances assume, it has been proved that they are all composed of the same ultimate elements, namely, oxygen, hydrogen, carbon, and nitrogen. These again, by combining amongst themselves, form the compounds which constitute the vegetable structure, and are termed their proximate principles; they also contain certain earths and salts, particularly soda, potash, ammonia, &c.

All the hydrogen necessary for the formation of an organic compound, is supplied to vegetables by the decomposition of water. The process of assimilation in its simplest form, consists in the extraction of hydrogen from water, and carbon from carbonic acid, whilst the oxygen of both the water and carbonic acid is separated and exhaled.

We now come to the very important part, *nitrogen*, knowing the fact that nitrogen exists in every part of the vegetable structure. The first question that presents itself is, how and in what manner does nature furnish the nitrogen, so indispensable to the production and growth of plants? As the nitrogen present in the air cannot be made to enter into combination with any elements except oxygen, by the most powerful means, there is no reason for believing that the nitrogen present in the atmosphere takes any part in the process of assimilation of plants; on the contrary, it is known to be the fact that many plants emit the nitrogen which is absorbed by their roots, either in the gaseous form, or in solution in water, or in the form of exudation, as gum, resin, &c. There are numerous facts showing that the formation in plants of substances containing nitrogen, such as gluten, takes place in proportion to the quantity of this element, supplied to the roots in the state of ammonia, which is derived from the putrefaction of animal matter.—Ammonia has been found capable of undergoing so many changes and transformations when brought in contact with bodies, that in this respect it is not inferior to water, which possesses the same properties in an eminent degree. Now as ammonia is the simplest of all combinations of nitrogen, and hydrogen is the element for which nitrogen possesses the most powerful affinity, ammonia is formed to a considerable extent by hydrogen and nitrogen uniting together.—*W. Ag.*

Apple Molasses.—Most of our sweet apples are either summer or fall fruit, and of course cannot be preserved for winter use. They must therefore be fed out to cattle or hogs, or made into cider, or dried. The following method of making molasses from sweet apples, which we find in the transactions of the N. Y. State Agricultural Society, may be of service to many of our readers.

Molasses, partaking slightly of the flavor of new cider, is obtained by boiling down the freshly expressed juice of sweet apples, and is not less agreeable to most palates than cane molasses, and equally useful for most purposes of cookery.

A better mode, however, of making it, is to place the apples in a hogshead made tight for the purpose, and subject them to the operations of steam.

The saccharine juice soon begins to ooze from them, and drops down into a vessel (a broad tin pan is best) covering the bottom of the hogshead and placed there for that purpose, from which it runs off, evaporated by boiling. Grinding and pressing is thus avoided, and the remaining apples are ready cooked for hogs. Even sour apples afford good molasses when treated in this way. Ten gallons may be thus obtained from fifteen bushels, or a gallon from a bushel and a half.

There is little doubt that if the same attention were bestowed on the manufacture of molasses from apples which has been given to others, it would prove one of the most valuable branches of American manufactures.

The liquid thus obtained is a much purer article than that from the beet or from the corn-stalk by a similar process; that is, before clarifying, straining, &c., while the cheapness of the article is strongly in its favor.

We hope some of our farmers, who raise large quantities of apples suitable for this purpose, will institute some experiments, and let us know the results. It is certainly a simple process, and may be easily tried. The steamer may be a common iron pot, with a wooden cover, and a tube inserted into the bottom of the hogshead.—The whole apparatus, with the exception of the pot, would not cost a dollar.

Slippery Elm Poultice.—Take slippery elm in powder, and mix it with water until somewhat thick, then boil a few minutes. It is to be applied warm.

Westphalia plan of Smoking Hams.—A room in a garret; fire in the cellar; smoke gathered in a tunnel and led to the smoke rooms by a small pipe; by the time it gets there all the heaviest part of the pyroligneous acid has condensed and the smoke has become cool. Nothing touches the hams but a pure, light, cool smoke, which is allowed to pass off by a number of small apertures about as fast as it is supplied.

To wash Flannels.—Make two tubs of soapsuds and wash the pieces in it while it is as hot as the hands can bear it. Rinse in hot, soft water, wring lightly and shake well and hang where they will dry quickly. Do one piece at a time, for if allowed to become cold while wet, and then again hot, the flannel will inevitably shrink and become harsh. When nearly dry fold them very smooth and press with a hot iron.—Am. Agriculturist.

A California Farmer—A gentleman writing from California to the editor of the St. Louis Reville, says his stock consists of about four thousand head of oxen, one thousand seven hundred horses and mules, three thousand sheep, and as many hogs. They all pasture themselves without difficulty in the rich prairies and bottoms of the Sacramento, and only require to be attended. This is done by Indians, of whom he employs four hundred. His annual crop of wheat is about twelve thousand bushels, with barley, peas, beans, &c. in proportion.

Blind Teeth in Horses.—Wm. Little, Poland, relates a case of a stallion of his having gone entirely blind without any apparent cause. A friend who examined him, found "blind or wolf teeth," which were immediately knocked out, and the horse soon recovered his sight.

Patent Grain Cradle.—We have been shown and requested to notice Wood & Loveland's Patent Grain Cradle the right of which is now owned by Messrs. Frisbee & Osborn, of Rensselaerville, N. Y. The improvement or patent consists in substitution of hollow metal in places of wood fingers. The extremities (about half) of the fingers of the cradle shown us were made of hollow tin—the wood entering the tin about half way from the foot of the finger. The proprietors of the patent claim the following advantages over the common cradle: that the fingers are stronger, lighter, not liable to warping, &c., where the grain is wet, and more easily mended.—*Geneseo Farmer.*

Borers.—Soap Suds and Sulphur to Kill.—About twenty-five years ago I set out an orchard of about one hundred and fifty apple trees, in a hard gravelly soil, rather inclining to clay: for about fifteen years I kept it constantly under cultivation, well manured, and the trees flourished covering the ground so much that it was very difficult to plough it. I then laid it down to grass, but in four or five years I found the trees began to fail; they did not exhibit that dark green foliage indicative of vigorous health. I concluded it was owing to the length of time it had lain in grass, and to renovate it, I ploughed it as well as I could, and dug around the trees. In this process we discovered that the borers had attacked almost every tree. As a remedy I took some large knitting needles, and myself and boys searched carefully for their holes, when by inserting the needles we put an end to further depredations. (This answers every purpose, and is much better than a knife or chisel.) I then had the rough bark scraped off, and the last of May the trees were washed with strong soap suds and sulphur, (2 quarts of soft soap, and ¼ lb. of sulphur to a bucket of water,) this operation was again repeated in August and has been repeated yearly since. I have not been able to discover a borer since the first application, and my trees flourish and bear fruit abundantly.

This wash I think is far preferable to potash and water, as that is liable to injure the young trees unless great caution is used in its application. The soap suds and sulphur answers all the puposes of exterminating the insects and their eggs, and as the latter is obnoxious to all insects, they are not fond of selecting trees thus washed for laying their eggs and commencing housekeeping.

As respects canker worms I think they "have their day," they come and disappear without any known cause. A few years since I had three large trees whose foliage had been destroyed for several years in succession by these depredators. I had the following remedy recommended in the papers: "bore a hole in the root of the tree near the surface of the ground, with an auger, fill it with brimstone." I tried this on my trees and have not been troubled with canker worms since, yet I am inclined to think their "time was out," and that they had ceased to trouble me of their own accord.—*Ploughman.*

Overgrown Wheat and Tender Straw.—Some highly cultivated farms, where dung only is used as dressing, having attained an average of about 5 quarters Wheat per acre, and finding it subject to lay from overgrowth, it is proposed to check this overgrowth by burning or other means of reducing the richness of the soil, thus something like limiting the produce to about 5 quarters per acre, a limit within that of cottage gardens and allotments, and which has been doubted even under the plough. Surely, then, there is room for trying other means of stiffening the straw and promoting the formation of grain, before taking measures to check the fertility of the soil. Salt is well known to produce both these effects; the wheats on our sea-board being noted for heavy ears, and thin stiff straw; and Wheat will bear much salt, Johnson says, 10 to 20 bushels per acre. Mild lime produces a like affect, but not caustic lime, on rich soils, where it can liberate ammonia. To check the overgrowth, therefore, and increase the grain 10 or 12 bushels (say 6 to 7 cwt.) of salt, with twice as much mild lime, where required, might be harrowed in upon the seed, or perhaps better top dressed on the young plant in spring, especially if winter proud; superphosphate of lime should conduce to the same result, its acidity retarding the stimulative action of ammonia on vegetation, and its phosphorus determining to the formation of grain; 2 cwt. per acre might be mixed with the salt, varying the quantities experimentally, on the small scale, as a guide, and eventually we may hope attaining a stiff straw under crops much heavier than 5 quarters per acre. Special manuring is particularly applicable to cases of this kind; but my impression is that almost every crop might be improved by special top-dressing in its early growth. Alkaline silicates have a direct tendency to harden the stalk, but silicate of potash appears, from the experiments on record, to promote the growth of straw; of silicate of soda, which costs less, I have seen no reports, it might be tried at the rate of 1 cwt. per acre, mixed with the dressings above, but would be safest on quite a small scale.—*Ag. Gaz.*

The French Modes of Drying Pears.—In France, pears are dryed two ways—one, for family use, by putting them into an oven, without being pared, after the bread is withdrawn, either on bricks or on raised frames of tin or boards.—They are put in two, three, and even four times, according to their size, and to the degree of heat contained in the oven. The only things necessary to be observed, are, to see that the oven is not so hot as to burn the pears, and that they are not left in so long as to become hard. Melting sugary pears, of a medium size, are the best for this purpose; and when properly prepared, they may be kept in bags, in a dry place for several years. The second mode is that used for preparing the fruit sold in boxes, at the shops; and for this purpose, rather small pears are considered the best. They must be gathered before they are quite ripe and care taken to preserve their stems. They are then parboiled in a very little water, peeled, and placed on dishes, with the stems upwards. In this state a kind of syrup runs from them, which must be carefully poured off and set aside. They are next placed on raised frames, and put into an oven, after the bread has been withdrawn, or heated to a similar degree, and left there twelve hours; after which they are taken out and steeped in syrup, sweetened with sugar, to which there have been added a little cinnamon, mace, and a small quantity of the best brandy. The pears, when taken out of the syrup, are again placed in the oven, which should not be made quite so hot as it was the first time. The operations of alternately steeping and drying, are repeated three times and are finished by putting the pears, for the fourth time, into the oven, and leaving them there till they are quite dry; when, if they have been properly treated, they will be of a clear, pale-brown, with fine translucent flesh. They are then arranged in boxes, garnished with white paper, are and kept in dry places, or offered for sale. They will remain good, in this state, for three years, but are considered best the first year.—*Am. Ag.*

Indian Pudding.—Boil in a quart of milk, and stir in Indian meal till it is nearly as thick as as you can stir it with a spoon; then add a tea spoonful of salt, a cupful of molasses, a tea-spoonful of ginger, or ground cinnamon, and cold milk enough to make a thin batter. Boil in a thick bag four hours, or bake the same length of time. Care should be taken that the water does not stop boiling while the pudding is in. Pudding made in this way, with the addition of a quart of chopped sweet apples, and baked from four to six hours, will be found delicious.

Tho Harvest Home.

When autumn freely yields
All her golden treasures,
Then those who reap the fields,
Partake of harvest pleasures.
This, lads, is harvest home;
Those who labour daily
Well know 'tis sweet to come
And pass the evening gaily.

Then let each heart be light,
Here's no room for sorrow,
Joy holds her court to-night,
Care may come tomorrow.

Now let the lab'rer wipe his brow,
Rest and plenty wait him,
Barn, cellar, rick, and mow,
Are fill'd to recreate him.
Scythe, sickle, rake, and hoe,
All are now suspended,
Like trophies in a row,
For future use intended,
Than let each heart be light, &c.

Now gay Pomona's store,
Past exertion blesses,
Rich streams of nectar pour,
Sparkling from her presses.
Full goblets streaming broad,
Crown the farmer's labors,
These real bliss afford,
When shared by friendly neighbors:

Then let each heart be light,
Here's no room for sorrow,
Joy holds her court to-night,
Care may come to-morrow.

—*Alb. Cult.*

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Toronto, Jan, 1846.