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OFFICIAL SERIES.

THE FARMERS' JOURNAL,

AND

Transactions of the Board of Agriculture

OF

LOWER CANADA.

VOL : XII. SEPTEMBER, 1859. NO. 1

CONTENTS.

(General.)

FARMERS' JOURNAL.—(Editorial Matter;) Application of the Sciences to Agriculture; Grains and Breeds; Poultry Yard; Rural Architecture; Enquiries and Answers; Foreign Agricultural Intelligence; Obituary, and Critical Notices, &c.
HORTICULTURAL JOURNAL.—(Editorial Matter;) Entomology, Meteorology; Ladies Department; Markets.
EMIGRATION.

All communications to be addressed—If for the French Journal, to J. PERRAULT, Esq., Secretary-Treasurer and Editor.—If for the English Journal, to JAMES ANDERSON, Esq., F. S. S. A., &c., &c., Editor, Board of Agriculture, Montreal.
N. B.—Communications received before the 15th of each month will appear in the ensuing Number.

*O! fortunatus vincens, sua si bona noris,
Agricolae! quibus spes, procul discordia cessat,
Favente hinc Jove, hic ceterum justissima tellus.*
Vinc. Gae.

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SEPTEMBER, 1859.

CORRESPONDENTS.

- WM. HUTTON, ESQ., Secretary to the Bureau of Agriculture, Toronto.
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 EDWARD VAN CORTLAND, Honorary Member of the Literary and Historical Society of Quebec, &c.

PUBLISHED UNDER THE DIRECTION OF JAMES ANDERSON, ESQ.,

(Of Gorthleck,) F. S. S. A., &c., &c., &c., Government Drainage Commissioner for Scotland; Life Member of the Highland and Agricultural Society of Scotland; Late Commissioner Factors for the Right Honble. the Earl of Hopetoun; Author of "the Philosophy of Duty," "Lectures on the Currency," and other Economical and Social Subjects; Series of First Class Prize Essays, "On the Application of the Sciences to Agriculture and the Arts," "The Allotment System," &c., &c.; Contributor to the Mark Lane Express, and English Farmers' Journal, &c., &c., &c.

CONTENTS.

FARMERS' JOURNAL.

	page.	
Our new Volume—To our readers—Editor.....	1	—Their comparative merits—Editor..
General Trial of Machines and Agricultural Implements at Logan's Farm, near Montreal; under the direction of the Board of Agriculture for Lower-Canada—Editor.....	2	Influences of Soil on Vegetation—Editor.....
Canadian Agriculture and Agricultural Resources decried and vindicated—James Caird, M. P. Editor.....	5	Atmospheric Influences on soil and vegetation, showing the nature of these influences on soil and vegetation, as affecting the amount and value of the produce, including the modification of these influences from heat and cold; dryness and moisture—Editor.....
Reformatory Labour and the Pursuits of Agriculture—Editor.....	8	The season and the crops.....
Transport of produce from the West to the ocean—Interests and Prospects of Canada considered—Rival Routes		How to sell our crops.....
		Farm drainage. From its initiation to the present time.....
		Flowering of Potatoes.....
		Sanitary Precautions.....
		MARKETS.....

OUR NEW VOLUME.

To our Readers.

It has been much regretted on all sides that the English Readers of the Journal and Transactions of the Board of Agriculture of Lower Canada should have been, for the past year, disappointed for six months of the twelve in receiving the promised quantity, viz : 48 pages of letter press promised them monthly,—on each occasion of receiving the Journal. They have regularly received the Journal, no doubt ; but the Transactions have been long delayed in anticipation of receiving the promised “History of the Agriculture of Lower Canada,” from the hands of the Secretary of The Board of Agriculture, with the intention of having it translated for their benefit.

However, our English Readers may henceforth rest assured, from an understanding just confirmed, that the English and French Journals shall no longer be translations of each other *in any part*,—but they may rely on it these Journals shall be distinct and separate in every respect, as regards the matter contained, and the editing.

Our English Readers shall henceforth regularly receive their full amount of letter press monthly, promised at the outset—being 48 pages, every month, of good practical matter,—and it shall be our especial care to admit nothing exceptional, or of doubtful value or authority ; but we shall take care that our Readers are furnished with information which they may receive and act upon with perfect confidence. We are especially anxious that the portion of the Government Grant set aside for the English Journal and Transactions shall be, every farthing of it—expended to the very best account for their benefit ; and we shall endeavour to exclude every extract of doubtful merit—selecting what our experience tells us to be of sterling value, as a safe guide in the daily and hourly avocations of the agriculturists of this country.

Under this arrangement, besides, the English and French Readers shall each receive monthly 48 pages of new matter in *each* language,—the English containing matter, original and selected, different in every line and every word from the French, and the French, in the same way, from the English ; and there shall be no translation from the one into the other, in either language, for the present ; so that Readers, in either language, by ordering both Journals,—the French and the English—will, henceforth, be receiving two separate works so far as the contents are concerned ; and the desire of the Board of Agriculture of Lower Canada, will be thus most efficiently carried out, so far as the Journals are concerned, under the present management, viz : securing the opportunity for the distribution of the largest amount of usefull practical agricultural information amongst the agricultural and general public of Lower Canada, with the

smallest expenditure of the public money—supplying at sametime the wants of our Readers at a greater distance from the place of publication.

We feel assured with the above explanation,—which we have every assurance will prove satisfactory—that our English Readers will cheerfully give us an opportunity of proving ourselves worthy of their confidence.

J. A.

GENERAL TRIAL OF MACHINES AND AGRICULTURAL IMPLEMENTS.

The General Trial of Machines and Agricultural Implements, under the direction of the Board of Agriculture for Lower Canada, took place on the well known Farm of Mr. J. Logan, Ex-president of the Agricultural Association of Lower Canada, on Tuesday, Wednesday and Thursday, the 16th, 17th and 18th of August. The Farm is beautifully and conveniently situated in the immediate neighbourhood of the City.

The weather proved exceedingly favourable and we had the pleasure of observing visitors from the Upper Province, as well as from the States.

On future occasions of public Exhibitions under the auspices of the Board, care will be taken to announce the intention of holding public competitions for a lengthened period beforehand, in order to insure a large assemblage of competitors, and the largest collection and variety of Machines and Implements for competition, and in order that the days of trial shall become well and widely known, and ample time and opportunity afforded for the preparation of inventions, of novel construction, and for forwarding such from a distance for the examination and approval of our practical men and Judges, and the Canadian public generally.

We heartily and sincerely advocate the frequent repetition of such assemblages at the seasons most proper for the purpose, whether as regards the convenience of agriculturists, or the condition of the soil and crops for the trial of agricultural Machines and Implements. But all this is so well understood by practical men of experience, that no error can henceforth possibly be made by the initiated. However, practical men, who are prudent enough to prefer looking after their interests on their farms, will remain at home generally, in preference to visiting any Exhibition, even in their own line, however tempting, at inconvenient seasons. Prudent, practical men usually keep a steady eye on the main chance—and what reasonable man would blame them. The late General Trial was merely intended as an initiation of the system.

But if the period be properly selected, such Exhibitions and General Trials encourage the practical man to leave his home for the purpose of receiving instructions in what may tend to practical usefulness. Varied models are thus brought

under his observation, and a comparative Trial, under his own inspection in the field, satisfactorily establishes their relative superiority.

No doubt practical men may receive much useful instruction in what may tend to their material benefit from the perusal of reliable agricultural periodicals; but such instruction cannot fail to prove more efficient and impressive, when enforced and recommended by practical trial and exemplification of the relative superiority of rival Machines and Implements in the field, and in the presence of those for whose benefit they are intended.

The Trial of agricultural Machines and Implements, on an extensive and satisfactory scale, will, henceforth, form a great attraction at our future Exhibitions in Lower Canada; and thus care shall be taken that these Exhibitions and Trials shall be widely and timeously announced throughout Canada and the States for such a period before hand, as will enable all intending Exhibitors and Competitors, in every class, to make every necessary preparation for the most favourable exhibition of the triumphs of their Mechanical skill,—that all may appear to the best advantage.

The third day of the Exhibition and General Trial was chiefly devoted to the trial of Stump Extractors on the farm of Mr. Ossaye, Priests Domain, Petite-Côte, St Michel.

The Trials were advertised to take place in the following order.

FIRST SERIES.—PREPARATION OF THE SOIL.

First Day.—Ploughs for light soils, for all purposes.

Ploughs for stiff soils, for all purposes.

Ploughs for deep soilling, sod and subsoil ploughs.

Sub-soil ploughs, swivel ploughs.

Gang ploughs—Stubble-Ploughs.

Second Day.—Heavy harrows for tenacious soils—Light harrows for gravelly or light soils—Clod crushers—Light rollers—Scarifiers—Root extractors—Double mould board ploughs.

Third Day.—Beet, Carrot, and Turnip Sowers—Bean and Maize Sowers—Grass seed Sowers—Horse Hoes—Patatoe, Carrot and Beet diggers—Spades, Shovels—Hand Hoes—Pitch Forks—and other implements intended for the preparation of the soil. The same Jury will be charged with Land Drainage to be executed on the spot.

SECOND SERIES.—HARVEST.

First and Second Days.—Mowers—Mowers and Reapers combined.

Third Day.—Hay Spreaders—Horse Rakes—Scythes—Sickles—Hand Rakes—Hay Forks and other implements for harvesting.

THIRD SERIES.—PREPARATION OF FIELD PRODUCTIONS AND CATTLE FOOD.

First and Second Days.—Threshing Machines for one horse—do. for two horses or more—Horse Powers.

Third Day.—Fan Mills, Separators, Corn Crushers, Straw-cutters—Root-cutters—Cooking apparatus—and other implements intended for the preparation of the products of the Farm and for Cattle food.

The following is the List of Prizes as awarded ; but a detailed Report will appear, as usual, in the Transactions of the Board in succeeding Numbers.

CLASS No. 1.—Ploughs for Stiff Soils—1st, silver medal, James Jeffrey, of Petite St. Cote, Montreal ; 2nd, bronze medal, James Patterson, Montreal.

Ploughs for Light Soils, for all purposes—1st, silver medal, James Jeffrey, Petite Côte, ; 2nd, bronze medal, Wm. Evans ; Nourse Masson & Co., Boston, Mass.; Double Ploughs, silver medal, Nourse, Masson & Co ; - Subsoil Ploughs, silver medal do. ; Swivel Ploughs, silver medal do. ;—Stubble-Ploughs, silver medal do. ; Universal Ploughs, silver medal do.

Bean and Maize Sowers—silver medal, J. Patterson, Montreal—bronze medal, J. Jeffrey, Petite Côte.

Beet, Turnip, and Carrot Sowers—Silver medal, Nourse Masson & Co.

Harrows—1. silver medal, James Patterson ; 2. bronze medal, Wm. Statter, Lancaster, C. W.

Scarifiers—1. bronze medal, Joseph Meddlemas, jr., St. Laurent.

Horse Hoes—1. bronze medal, James Patterson ;—2. James Jeffrey.

Light Harrows—1. bronze medal, James Patterson.

Clod Crushers—1. bronze medal, James Jeffrey.

The Judges in this class were—Hon. J. Alexander, M. L. C., Wm. Boa, L' Desrosiers, C. Perron, and W. Berczy. They reported summarily—in regard' first, to the stiff soil ploughs—that Mr. Jeffrey's gave a main draught of 325 lbs., and was considered superior to the other by the quality of work performed. The second prize plough had a draught of 375 lbs., and the work was inferior. In light soil ploughs Mr. Jeffrey's had a draught of 340 lbs., working six metres by nine. Messrs. Evans, Nourse, Masson & Co's plough 72½, gave equal draught, but the work being flatter, it received the second prize. In harrows, those exhibited by Mr. Patterson were considered the best they could have for Canada. It is considered the best harrow in England, the model having been copied by Mr. Patterson from an English harrow. In regard to clod crushers, the Judges regretted that Mr. Moody did not exhibit his Crosskill, instead of the one he exhibited, as they considered it far superior to the one exhibited by Mr. Patterson. But still his implement, on account of its small cost, and the simplicity of its construction, was thought worthy of a second prize. The scarifier exhibited by Mr. Meddiemas, was considered an excellent and effective implement, but far too dear to be thought of by the generality of farmers.

CLASS 2.—Reapers—1. silver medal, John Helm, jr., Port Hope, C. W. ;—2. bronze medal, B. P. Paigne & Co., Montreal.

Mowers—1. silver medal, W. A. Wood & Co, Hoosick Falls, N. Y. ;—2. bronze medal, Nourse, Mason & Co., Boston ;—3. honourable mention, Mr. Moody, Terrebonne.

Combined Machines—1. silver medal, B. P. Paigne & Co. ;—2. bronze medal, W. A. Wood & Co. ;—3. honourable mention, Mr. Moody, Terrebonne.

Horse Rakes—1. silver medal, G. D. Dewitt, Dewittville ;—2. bronze medal, Mr. Moody.

Fans—silver medal, Nourse, Mason & Co.

Patent Thistle Fork for Barley and Straw—1. silver medal, Jacob Hoffmann, Camdem East, C. W. ;—2. bronze medal, George Lake, Camdem, C. W.

Hay Forks—1. silver medal, S. Whiting & Co., Oshawa, C. W. ;—2. bronze W. Evans, Montreal.

The Judges in this class were—W. McDougall, Esq., M. P. P. ; A. McKellar, Esq., M. P. P. ; L. De Lorme, Hon. G. F. Armand, and P. C. L. Dubois. They report generally that the trial was unsatisfactory in two or three respects.

The ground was unsuitable for repears. The furrows were deep, and there were many of them, and the crop of barley was short and much laid, and grassy at the bottom. There was but one reaper tried—a combined machine, being entered as a reaper, received the second prize. The competition in the several classes was not so extensive as the Jury would have been glad to see. The mowers were excellent, but in the other classes defects were observed which will be pointed out in the detailed report. A collection of small implements—hay forks, dung forks, forks, spades, hoes, &c.—was exhibited by Whiting & Co., of Oshawa, the form, material and finish of which could hardly be excelled.

CLASS 3.—Trashing Machines for two horses—1. silver medal, M. Moody;—
2. bronze medal, M. Johnson. do. Single Horse—1. silver medal, M. Moody;—
2. bronze medal, M. Johnson.

Straw Cutters—1. silver medal, Mr. Evans, and T. H. Wilson, of Harrisberry;—2. bronze medal, Melcher & Co., Boston.

Root Cutters—silver medal, W. Evans.

Agricultural Furnaces—silver medal, W. Evans, Nourse Mason & Co.

Stamp Extractor—silver medal, F. M. J. Ossaye, Priests Farm, Montreal.

Ploughs Threshing Machines silver medal, M. Moody.

A quantity of clover was passed through this Machine, but in consequence of there being no means of separating the seeds from the chaff, no result could be given. But as the Machine seemed to be efficient the judges awarded Mr. Moody a first prize. The same judges who were present at the trial of the Stamp Machines yesterday, including Col. Thompson—were the judges of this class. In regard to the Thrashing Machines they report that Mr. Moody's Thrashing Machine thrashed in $10\frac{1}{2}$ minutes from 100 sheaves three bushels $9\frac{1}{2}$ lbs. of wheat, and Mr. Johnson's Machine $18\frac{1}{2}$ minutes from the same number of sheaves three bushels, 29 $\frac{1}{4}$ lbs.,—showing that there was a difference of 20 lbs. in the quantity thrashed, but the time occupied by Mr. Johnson's Machine being nearly double that of Mr. Moody's. The gold medal was awarded to Mr. Moody.

We took forward with the most pleasurable anticipations to the second General Trial of Agricultural Machines and Implements in Lower Canada, in connection with the approaching Provincial Exhibition of next year.

J. A.

CANADIAN AGRICULTURE AND AGRICULTURAL RESOURCES DECRIED AND VINDICATED,—JAMES CAIRD, M. P.

James Caird, M. P., agricultural writer, son of Mr. Caird of Stranaer, in Scotland, Agricultural Commissioner for "The Times" newspaper, author of "High Farming," "English Agriculture" and other works on Farming, and whose advent to the House of Commons was naturally hailed by the Farming interests of Britain as a gratifying piece of untelligence, seeing that there is many an agricultural subject brought, every year, before the attention of the House, and concluding that Mr. Caird's presence there would be a guarantee of the more practical discussion of such subjects than they had hitherto received, has just published a work on Prairie Farming in Illinois, containing some dispa-

raging remarks with reference to Canada. It cannot be, for one moment, supposed, —however unwilling to impugn the authority of any contributor to "The Times," —a paper we are bound to respect by every personal tie,—it cannot be supposed, we say, that we could pass over the expressions of such opinions silently, —especially in our present position as Editor of the Journal and Transactions of the Board of Agriculture of Lower Canada. The deliberate opinion of an experienced agriculturist, if uncontradicted, might go far to discourage immigration to Canada; and although there appears to be *one* if not *two* substantial and unanswerable reasons why the practical man, if prudent and reflective, — might hesitate to be led passively along by the opinions even of an agriculturist so experienced as Mr. Caird; and although Mr. Hutton, of the Bureau of Agriculture, has noticed Mr. Caird's publication at some length, we cannot, in duty, refrain from adding our testimony to disprove the correctness of the hastily adapted impressions of the author of "High Farming."

Now, we are personally acquainted, with Mr. Caird. He has pushed himself into parliament, from the position of a Common Farmer, entirely on the strength of his practical and scientific acquirements, as connected with Agriculture. He is a man of great energy. Some would have it, occasionally bordering on rashness in his opinions, and ever straining, to say the least, after opportunities which may enable him to give a novel—if not original form and colouring to his projects of agricultural improvement. We are not therefore at all surprised at his so heedlessly adventuring an opinion on the agriculture of Canada, from such ocular demonstration and partial evidence as he was enabled to gain of the Country between Cobourg and Prescott in a trip along the line of rail. Had he only diverged for half a mile on either side of the railway track, he would not have painted the Country as covered with primeval forests, and the fallen trees and branches lying where they were felled which he bemoans in such eloquent terms. He passed along the rear *bush*, or Natural Forest, of well cultivated farms, which rear *bush* is preserved carefully on every well managed Farm, in order to ensure an ample supply of firewood, and timber for other necessary purposes.—Such was the case in some parts of the South and Midland Counties of England,—where even the smallest brush, of value for fagots,—and even the scrubbiest underwood was carefully preserved for similar purposes.

Along the line described by Mr. Caird, and at a very short distance from the route he pursued, he would have found some of the finest farms in America,—without a single stump or obstruction of any kind, and superior to most he would have found near Baldoon,—his own farm which we know so well. It differs from the Country round it, in many respects,—being a large flat of fine alluvial soil, the property of the Earl of Galloway, extending to hundreds of acres—and out of which, from improved culture, large sums have been taken by successive occupants,—although the name of Mr. Caird, from his well known activity and energy, has become most prominent.

Had Mr. Caird found it convenient, therefore, to visit this country more generally, making excursions to the best cultivated districts, and expending a reasonable time in the enquiry—he would have talked more highly of the agricultural re

sources of Canada, and would have reported that it compared favorably, if it did not, in many respects, excel his favourite Illinois :—he would have found it more healthy—with excellent markets—more accessible—with excellent and frequent communication by land and water—the land moderately priced—the very wood on the surface bearing a value of its own for domestic use and for sale—either manufactured or in the form of ashes—the wheat produce of Canada excelling that of Illinois, both in quantity and quality, as per United-States census of 1850-51,—Illinois yielding 10 bushels per acre, and Canada by the census of the same year, yielding from 16, 14—60 to 21 bushels; and the merchants of Toronto paying not much more than half the money for Illinois wheat they pay for Canadian, the former being chiefly used for manufacture into “Stump Tail”—an inferior description of flour—and only of third or fourth rate quality.

The great draw back in Canada is indifferent farming. The land does not produce what it ought to do freely. This can only be remedied by the adoption of a General Drainage Bill, such as, in last number of the “Farmers Journal” we announced we had prepared, for introduction into the House next session.

We are thoroughly *au fait* on this subject; and, as we have already stated, it will be supported by every County Member from Gaspé to Detroit. No energy or activity shall be wanting on our part to see it safely through the House, and, through its operation, the agriculture of the country will be propelled, in a few years, a half century, by the most provident and the most natural means. We are not without proof of the amazing advantages attending the operation of such a measure in the Mother County—followed up, as it has been by an uninterrupted course of agricultural improvement. Draining is the first step towards all judicious improvent. We have dwelt on its many advantages in several of the numbers of our last years volume.* We would beg of such of our Readers as may have read the articles contained in these numbers superficially, to recur to them, and to peruse them again carefully,—deliberately weighing every statement as they go along.

The land when thoroughly drained may be worked at any time, when free of snow;—crops may be planted earlier and the produce sometimes doubled from this cause alone;—less labour will suffice, and no time will be lost in waiting till the superfluous moisture has passed away;—Draining prevents injury from drought, preventing the soil from baking hard;—the soil is therefore mellow and permeable, allowing the roots to penetrate freely in all directions;—growth is consequently more rapid, enabling the superincumbent vegetation to defy its insect enemies and any inhospitable climatic influences;—It permits the through commixture of manures with the mellowing mass—allowing it to operate efficiently for the first time;—the soil becomes a better conductor of heat, and roots of plants are consequently less injured by freezing during winter.—Drained soils, too, do not so readily heave up with alternate thaws and frosts, throw-

* NOTE.—Articles referred above pp. 1, 52, 160, 243, 578, and Address on the Improvement of Agriculture, issued with the March number, No. 7, of the Journal for 1858-59.

ing out the plants adhering to them ;— and in fact, if we were to dwell on the special advantages arising from *effectual* thorough drainage, we might fill a goodly volume, and still come short of giving utterance to the thousand and one recommendations of this first and most necessary of all improvements.

But to conclude,— We trust that the representations of Mr. Caird, which we are wishful to believe were rather the result of the want of accurate information and inadvertance, than arising from any bleamable and interested or, in any sense intentional or unworthy preference—lauding up the soils of Illinois, and at the sametime, proportionally disparaging the soils of a British colony—which he sits in the British Parliament to represent rather than misrepresent :—believing from what we know of Mr. Caird personally and his antecedents, that he would be very unlikely to yield himself to anything so unworthy, we shall rest contented to excuse him—taking his work as the *Obiter Dictum* of a gentleman who paid a flying visit to Canada—and to whom no adequate opportunities were afforded of judging, or forming any accurate estimate of her agricultural resources and capabilities.

J. A.

REFORMATORY LABOUR ; AND THE PURSUITS OF AGRICULTURE.

We had the honor, sometime ago, of calling the attention of the authorities of this country to a plan setting forth the possibility of finding some mode of industrial occupation for our convicts, which should be at the sametime more profitable than the present, and should be free from the objection raised against the existing method, competing, as it does, in the open market with the tradesmen of the country.

In a country like this we do not see why such Correctonal Institutions should not be rendered self sustaining, by turning to account, in the several localities most conveniently situated for the purpose, the resources of a fruitful soil—selecting from the public lands, in every case, the portions, best adapted for such a purpose.

Farming on a moderate and suitable scale might, for such a purpose, be adopted with the certainty of success ; and besides, having the primary recommendation of healthfulness as a source of labour, many more immediate results of a favourable character would certainly arise from having a farm of the necessary extent connected with such institutions, for the purpose of raising the ordinary agricultural products for domestic consumption, the surplus, to be disposed of in the public market,—the receipts arising therefrom to be applied towards the out-goings of the Establishment.

The inmates, during the period of their detention, should be employed on the farm in the kind of labour to which they may appear best adapted, judging

from their antecedents,— they should be trained to assist on the farm, and schooled, even in executing the minutest details, in the best system,—that which securs the most profitable results.

At all events, we should recommend the immediate adoption of this system in the Juvenile Reformatories. The inmates should be accustomed to a healthful and profitable exercise of their energies; and under the instruction of a competent master of the establishment, they should be taught practical Farming such as they themselves might carry out, were they, in after life, so improved by the precept and example set before them, as to be fortunate enough to find themselves engaged in the most ancient of all human pursuits,— in a pursuit which must occupy the attention of by far the largest portion of the people of this Country for many a day to come.

We ourselves have examined the subject of Industrial occupation in detail in several countries, making a wide circuit to collect the necessary information to enable us to write the *first class Prize Essay* "ON THE ALLOTMENT SYSTEM," which carried off the first class premium of the Highland and Agricultural Society of Scotland. We devoted sometime to the necessary inspection of the various Model, Active and Experimental Establishments; and came to the conclusion, that a great error had been too frequently committed in placing such establishment in remote and often sterile situations, having apparently in view more the amelioration of the soil than the reformation of humanity.

We are prepared at any time, to go into detail, if it should be required in the proper quarter,—communicating the benefit of our experience and knowledge in this connexion; gained by travel and patient investigation. In a country like Canada, we are very sure that such knowledge and experience, if turned to account by the selection of the proper parties and localities, would not be long in operation without producing a very beneficial and appreciable social effect on a considerable portion of the people of this country.

If these suggestions should be disregarded when laid before the authorities of the country, we shall endeavour to introduce the subject to the attention of the public through an independant Member of the Legislature, during the next session.

J. A.

TRANSPORT OF PRODUCE FROM THE WEST TO THE OCEAN— INTERESTS AND PROSPECTS OF CANADA CONSIDERED— RIVAL ROUTES—THEIR COMPARATIVE MERITS.

In our last number, concluding the volume for our Agricultural year, according to the new arrangement with the Board of Agriculture, we inserted an article from the Mark Lane Express, intimating, at same time, that we did not by any means entirely acquiesce in the views therein contained.

Although few even yet would seem to appreciate the incalculable magnitude

of the prize, yet securing to ourselves the Western Trade is an object of the first importance ; and it will not do to defer action much longer, otherwise our observant and active neighbours will most certainly forestal us and carry it away, and we may hereafter find it difficult, if not impossible, to regain it.

There are two rival routes, to the Ocean from the great inland basin,—the one by the Mississippi River, — the other by the St. Lawrence—the only gap in the Alleghanys being penetrated by the Hudson and its tributaries,—and this third route by the Mohawk and Hudson, though not so prominent superficially considered as the others, in reality possesses great natural advantages.

The Mississippi route is depreciated by some very serious disadvantages ; arising from the variable regimen of its tributaries—being one half of the year in freshet, and the other half of the year nearly dry. But a more serious objection still, is found in the fact, that the heated waters, at its debouche, and in the Mexican Gulph are very unfavourable to the preservation of cereal products ; while the products of the hog, which are not slaughtered in time in the fall to reach the Northern Water lines before they are closed by frosts, may continue to find their way, from within a certain circuit, by the Mississippi River.

The St. Lawrence is the other rival for the Western Trade ; and we must bestir ourselves, if we wish to see it attract that Trade, and retain the trade of Upper-Canada.

Previous to 1850, the largest part of the Western Canadian Trade was done through Montreal and the St. Lawrence, and the trade with the United-States was insignificant ; but no sooner had protection to Canadian products ceased in British Markets, and the differential duties in favour of the St. Lawrence super-vened, than a trade sprung up between the two neighbouring countries, and has been greatly extended by the United-States Bonding Act, coming into effect in 1850, followed by the Reciprocity Treaty in 1855. The New-York Canals and Railways thereafter succeeded in absorbing the Trade of Canada West to such a degree, that in one year, from 1854 to 1855, the St. Lawrence trade lost \$15,203,600, while the United-States trade gained \$16,856,624,—No doubt the Lower Canadian Merchants are, by the Grand-Trunk Railway, enabled to make their spring importations through Portland previous to the opening of Canal Navigation, but the principal portion of the deficit has been diverted through the State of New-York. So that the trade of the West finds its easiest exit through the low level of the Mohawk Valley to the Ocean.

We have shown, in a previous article in the August number of the Journal, the large export of agricultural produce to the neighbouring States. In the last (the August) number we have given, in some detail, the anticipations of many as to the prospects of the Mississippi Route;—in which, from what we have said above, and may in future numbers explain in a very clear light, we by no means acquiesce.

We shall now say a few words as to the pretensions and capabilities of the several new routes, that we may judge of them fairly by comparison.

From Chicago we have two lines of water communication to New-York, one by Buffalo and the Erie Canal—the other by the Welland and Oswego. The

first has been enlarged to double its late capacity, but both will be speedily choked up with a plethora of trade from the Great West. The opening of the Welland and St. Lawrence Canals has been proved by official returns to have conferred an annual benefit of over \$1,000,000 on the trade of Canada.

The new projects are three in number. The first to open up a ship canal from the St. Lawrence to Lake Champlain, including the enlargement of the Welland locks to a size sufficient to pass propellers, &c., of 1,000 tons burden.

The second to build a ship canal on the same scale as that of the Georgian-Bay of Lake Huron to Lake Simcoe, and thence to Lake Ontario.

The third to open up a navigation, on the same scale, from Lake Huron with French River, to Lake Nepissing, and thence down the Ottawa to Montreal.

The entire distance of the first is $32\frac{1}{2}$ miles:—lockage 29 feet—fed from Lake Champlain:—estimated cost from \$2,000,000 to \$3,000,000:—and in connection with this project, the enlargement of the Welland at a cost of \$6,000,000: and it is maintained by many that such an amount of trade would be diverted into this route, that it would eventually pay 6 per cent on the outlay provided the State of New-York could be induced to make a simultaneous outlay in the enlargement of the Champlain Canal from Whitehall to Hudson River. But it is doubtful whether the State of New-York could be induced to take this step to the prejudice of the Erie and Oswego Canals, which already afford here a revenue of \$450,000, levied on articles of Canadian Trade passing through them at present, until these avenues become inconveniently choked up with business—demanding enlargement.

The second—the Lake Simcoe route—is estimated at 94 miles—cost \$25,000,000, lockage 585, against 360 by the way of the Welland and St. Clair River—involving a cutting of 200 feet for $1\frac{1}{2}$ mile, and an average do. of 250 feet for $6\frac{1}{2}$ miles.

The third—the Ottawa route—whole distance from Lake Huron 421 miles—with about 60, obstructed by falls and rapids:—total, rise and fall about 700 feet;—necessitating the building and rebuilding of about 48 miles of canal,—beyond that already executed, and involving a probable cost, in whole, of \$12,000,000.

Now it ought to be especially kept in view, that this route would enjoy one great advantage over all the others, namely, of returned freights, arising from the inexhaustible supplies of valuable timber growing along the line, and the abundant water power distributed in every direction, to convert it, on the spot, into sawed lumber. The export to Chicago and the West would be enormous and yearly growing, and the influence of the demand would be felt all along the route of the improvement.

It has been proved beyond dispute on a comparison of routes and charges, that the Ottawa Route is the cheapest, the cost of ten barrels of flour being \$4,41—next comes the enlarged Welland and Caughnawaga—costing, with the enlarged Champlain Canal, \$4,79—Oswego, \$5,04—Toronto, \$5,17.

Cost of carrying a ton of freight to Quebec :—

	Miles.	
First—By the Welland Canal Route.....	1,657	\$477,
Second “ Enlarged Welland.....	1,657	3,79
Third “ the Ottawa	1,176	3,49

Cost of carrying a ton of wheat or flour from Chicago to Liverpool :—

	Miles.	
Chicago to New-York and Liverpool.....	4,765	\$10.56
“ to Quebec and Liverpool.....	4,567	13,77

Showing a difference at present in favour of the New-York route of \$3,21.

Taking the most favourable case ; the construction of the Ottawa Canal alone* we would have the cost to Liverpool just \$1,93 dearer than the New-York route.

This arises from the fact, that the majority of vessels arrive out to Quebec *in Ballast*, depending upon the *home voyage* for their profits at *present*. But, if a trade should spring up between Chicago or Liverpool to London, by opening the most direct and convenient routes, the state of things would immediately alter materially, and give to Canada the advantage now enjoyed by New-York. The rate of insurance too, at this moment absurdly and unnecessarily high, on a fair and exact comparison of casualties, would be immediately and greatly lowered, and Canada would thereby be placed in a very favourable position.

Some gentlemen would appear to be disinclined to seek for extraneous aid in the completion of these routes—although the future and permanent commercial prosperity of Canada be mainly dependant on the issue. We are of a very different opinion, and hold that those who are to benefit equally with us by securing the immense trade of the Great West as a permanency, whether directly, or indirectly, though the reflected prosperity of these colonies, — as an exceptional, and *almost prejudged and predetermined concession*,—we are assured that, if properly approached, could not and would not stand in the way inactive to obstruct the flow of the mighty advantages which nature would appear almost to thrust upon them, but would willingly and cheerfully acquiesce in any judicious proposal to promote their mutual benefit. This is no small matter to accomplish for the individual benefit of this country alone. The mother country must largely participate therein ; and, if properly approached, would not hesitate to do her part in the work liberally.—cheerfully. At all events, if parties specially interested in other routes should decline advantaging themselves of such extraneous aid, so desirable, and, as it is, not without good grounds, believed, for such a national purpose, both easy and certainly attainable, there can be little doubt there will be no such feeling of reluctance sofar as those interested in the success of the Ottawa route are concerned, and steps will be taken to seize the mighty prize before the prescience and energy of our sleepless neighbours bear it beyond our reach. It is needless to explain how this might be accomplished. Suffice it to say, that the accomplishment is practicable—and, if others do not look after their interest, it may not be distant.

With two remarks, sufficiently brief, we would venture to conclude. The first is, that there need be no jealous feeling between rival routes to the West—despite the statements with which we have been surfeited and discouraged. Those who have studied the progress of the Western Trade will have no chicken hearted fears on this score. The second is equally true and pertinent, and it is, that the Ottawa route would, to a large extent, tap different countries and markets to the St. Lawrence, and that herein again the country might largely benefit.

J. A.

INFLUENCES OF SOIL ON VEGETATION.

CONTINUED.

The prevalence of one or other of these ingredients will determine the degree of cohesiveness, or tenacity of soils, and also their power of attracting and retaining moisture; and different admixtures too, are otherways favorable to different orders of plants. The prevalence of one substance is favorable to the growth of one plant, and another to another. The texture of soils is of great importance; for it is evident that, in a light and unstable soil, no plants can live except those distinguished by very humble growth, and possessed of large or fibrous, tangled, and creeping roots, or trees or shrubs whose roots sink into the earth, and so retain their position in comparative security. It need hardly be added that compact soils are distinguished by a vegetation of a different character. We thus see, then, that the texture and proportional admixture of soils operate powerfully, along with other causes, which it would be impossible here even to glance at, and which are not embraced under this paper, in regulating the character of vegetation and its gradations of luxuriance: and that consequently the successful cultivation of any vegetable on a particular soil must depend on an adaptation of the texture and admixture, or composition of that soil to the habit of growth and choice of that particular vegetable.—It may be here remarked, that we find plants affecting a dry and high soil, often distinguished by a covering of a hairy or woolly nature, which may be presumed to afford them a multiplication of absorbent pores, and to assist them in clinging more securely to the very unstable body in which they are imbedded. Perhaps both objects, and others which we must not go into, may be contemplated and ensured by this wise provision.

As it may escape us afterwards, we may here mention another very extraordinary and wonderful provision of nature in the power with which she has endowed some plants of adapting their growth to certain unfriendly situations and conditions. It is well ascertained, and we have *proved* it, that many fibrous rooted plants, if placed in an arid soil, acquire the bulbous form of root; and that, when is removed again to a congenial soil, the fibrous type is restored. This is no doubt intended to furnish the plant in an arid soil with a provision against

a long continued drought. Several plants are known to be endowed with these wonderful powers of adaptation ; and this knowledge might, no doubt, be turned to advantage both in the garden and in the field, — particularly if the investigation were prosecuted with diligence, and with a view to usefull practical results.

We may remark too, generally, that the useful valuable products of plants bear some proportion to the fertility of the soil which produced them ; and that those plants which afford, in whatever form, the greatest amount of nourishment and valuable products generally affect the most fertile soils. That all vegetables, generally speaking, prefer moderate fertility to approaching sterility ; altho' several of inferior value can be more successfully, and, of course profitably cultivated, than the more productive varieties, on inferior soils.

We may now go on to state generally that as silica prevails beyond a certain proportion soils proportionally sink in the scale of fertility,—that when either alumina and carbonate of lime prevail and increase in just proportions, soils ascend in that scale.—That these two ingredients form the principal part of the highly comminuted or unpalpable portion of the best soils, and that they resemble one another in their affinity for moisture, and adhering to and combining with various fertilizing substances. That lime operates chemically in reducing and pulverising soils. That besides, it increases their powers of attracting and retaining moisture and carbonic acid from the atmosphere, and acts chemically in forwarding decomposition. That alumina,—as we have just mentioned,—has a great affinity for moisture. That magnesia in excess, and indeed some salts of Iron have been considered inimical to vegetation, although plants exist when it is present in large quantity. That the fertility of soils is mainly dependent upon the proportions of decomposing and decomposable matter present, and their capacity for admitting the free action of atmospherical influences. That, deprived of moisture, or, if, by a fall of temperature to 32 and below it, the moisture be congealed, all soils are incapable of communicating nourishment to plants ; and that this important solvent or menstruum percolating through the soil, dissolving and holding in suspension the salts, gasses, extractive and other matter with which it comes in contact, furnishes to all plants the measure of the nourishment which they derive from the soil. We now come to consider the admixture of soils best adapted for the germination and growth of some of the useful plants, the objects of cultivation. But, before proceeding to this our special task, we may state abstractly of the three principal substances or components of soils :

That the degree of cohesiveness in soils depends on the quantity of finely divided matter they contain ; that their adhesiveness increases with great rapidity with a small additional proportion of alumina ; more particularly on a retentive subsoil ; tho' it is possible that this may be obviated, perhaps to a greater extent than is at present dreamt, of, by means of thorough and effectual drainage. That in such a soil the interstices, or minute cells and passages enclosed within or pervading it, are filled with water, which necessarily excludes the atmospheric

air, and reduces the temperature, while it excludes and prevents the supply of wholesome nutriment from reaching and entering the pores of the root-fibres.

That, altho' carbonate of lime increases their retentiveness, its presence in great quantity does not necessarily increase their adhesiveness so rapidly as alumina, - altho' it will nevertheless operate beneficially in sands, from the minute division of its particles, in communicating desirable compactness and retentiveness,—particularly when aided by the judicious application of organic manures.

That an excess of silica produces poverty of vegetation ; but tho' present in large quantity in soils combined with carbonate of lime and organic manures, they become of very considerable agricultural value.

We shall begin then with the cereal grasses, as holding the most important place, and affording the elements of food and nourishment to so great a proportion of the inhabitants of all countries ; and, unless we have some purpose for deviating occasionally, shall consider them in the order of their relative value. They are the never failing attendants, and may be regarded as the principal promoters of civilisation over the world. And first in order stands,

WHEAT (TRITICUM) OF THE ORDER GRAMINEÆ.

The several varieties of this Genus are most remarkable for the nutritive qualities of their seeds.—These contain a large supply of farinaceous matter, combined with gluten, and the excess of this last substance or principle, contrasted with the other cerealia, is the distinguishing characteristic of the superior varieties of the genus triticum. Wherever this cereal grass is found, it is, from universal observation and by universal consent, in all latitudes, acknowledged to be the tenant of what is familiarly denominated in each several locality a fertile soil. The conditions and requirements of fertility already detailed in this paper are absolutely essential to the perfection of the several varieties of this invaluable gift of bountiful nature. When the fertility of the soil is capable of supporting them, the superior varieties of triticum are always distinguished by a strong and robust vegetation ; and, unless this obtain to an extraordinary degree, it may be carried far, in a favorable climate, without affecting unfavorably the quality or weight of its seminal product.—On the contrary, under favorable circumstances as to climate, a luxuriant crop is generally found the most productive in quality and quantity.—Luxuriance of growth in a favorable climate and soil may be indulged, then, in wheat more safely than in any of the other cereal grains perhaps, particularly when treated as a biennial,—as its habits of growth are comparatively more upright, and its culms of a more firm and stronger growth than the other cerealia, and this is of essential importance in harvesting ; altho it must be admitted that this firmness of texture, and the consequent advantages, as in harvesting, decrease with the rank luxuriance and succulence of the straw. It may be cultivated in most situations except in the highest latitudes ; but its produce under the 46th degree of north latitude is very inferior and precarious indeed. It succeeds better in a moderately dry mild, and warm climate, than in a moist and cold one. In warm climates, too, its

close spike is a good protection against any great extreme of heat ; but, in a moist and cold climate, this is a disadvantage, as it is apt, from not drying quickly after exposure to wet, to become covered with fungi, which produce the common appearances of mould and rottenness. The growth of Sardinia and Sicilly, the Italian Valleys of the Pô and Varno, the Plains of Poland, the Southern Russian Provinces and the States of Germany, the Grecian Shores and the Plains of Flanders, the North American Colonies, the Young American States, Asia and even Africa attest the wonderfull acclimating powers and properties of the various varieties of this companion of civilisation all over the Globe. In the Abyssinian Plains and similarly conditioned localities moisture and solar heat are in such excess, as to produce a vegetation so rank as to preclude the profitable growth of wheat, except in comparatively elevated situations in that fruitful country. It is a well ascertained fact, and we have remarked it frequently, that from excessive nourishment, the stamens of plants,—indispensible organs—become obliterated, and, as a necessary consequence, fecundity is prevented. In Britain, the South and East Shores and the Channel Islands are supposed to produce the best samples.

The higher the latitude to which wheat culture is extended, the more necessary does it become that the soil should be characterised by proportionate dryness ; and this is primarily attained by judicious draining, when requisite, and persevering, and deep aration, and comminution of the soil by means of the common implements the harrow, Roller and Grubber, and in the most important degree by supplying to the soil those constituents that may be wanting, to aid in procuring fineness of tilth and mellowness, so gratifying to the eye of a practised observer. As the latitude encreases, the proportion of alumina should decrease, and vice versa, the tenacity of soils and their excessive retentiveness being mainly dependent upon the presence of alumina in too great quantity.

Wheat of all the cerealia is the richest in nutriment ; and by the law already stated, that plants affect fertility in direct proportion to the nutriment which they contain, a wheat soil must be distinguished by all the conditions of fertility which we have shown to be necessary. A wheat soil must contain a sufficient portion of alumina to ensure moderate cohesiveness, suited to attract and retain the moisture deposited by the atmosphere, and to yield up in regular and healthful abundance its treasures of nutriment, and particularly to continue these supplies in copious plenty during the progress of the *seminal formation*, and until its thorough perfection is accomplished. Silica in proportion to assist in maintaining a just comminution and looseness in its texture, and to supply the epidermis of the plant with its compliment of this substance. It would appear from frequent analyses, that this earth and lime, associated with other substances, as carbon, in the vegetable creation, and differently arranged in different individuals, form the framework of the delicate structure of plants in many cases, analogous to bones in the animal creation. A plentiful sufficiency, but not an injurious excess of animal and vegetable substances in a state of progressive decomposition ;—lime to aid in pulverisation, and in producing those chemical changes favorable to decomposition and recomposition, and which this subs-

tance powerfully aids by direct action, by its powers of absorbing and retaining moisture, and by its chemical action in encouraging changes of structure in substances. It is itself, too, in the state of a carbonate, partially soluble in water containing carbonic acid, as rain water, and is thus rendered capable of entering into various combinations, and prepared for absorption by living vegetables. This substance is also believed to act directly upon vegetables as a stimulant, both to their powers of absorption and digestion; and all soils are improved by its judicious application,—the poor, if properly applied, equally at least with the rich. In wheat soils its presence is peculiarly desirable; as several soils have been rendered capable of bearing wheat after its application, which could not carry this crop before.—This may be easily understood, from a consideration of its active properties, which are absent in alumina. The soluble salts also assist in the process of chemical conversion, and they themselves, the products of decomposition and recomposition, have also, it is believed, a stimulating effect, as well as the earths, as components in the physical structure of plants. The alkalis too have a direct chemical action upon the salts of lime and constantly tend to restore that substance to purity, by which operation it may become again possessed of the power of reducing the insoluble vegetable matter in soils, and thus once more contribute to productivity.

J. A.

(To be continued.)

ATMOSPHERIC INFLUENCES ON SOIL AND VEGETATION;

Showing the nature of these atmospheric influences upon soil and vegetation, as affecting the amount and value of the produce, including the modification of these influences arising from heat and cold, dryness and moisture.

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CONTINUED.

It has been remarked in some late seasons, in Northern latitudes, that when the summer is wet, and without a sufficiency of sun-light and heat, the young shoots of trees often die down and wither in winter. The bark being thus not sufficiently ripened and matured, the shoot, from its succulence, is easily affected by frost and destroyed.—On the other hand, powerful summer heats enable trees to endure excessive cold, as is proved in innumerable instances from many unsuccessful attempts at acclimating individuals; and from among many others, nearly equally familiar, we may mention the very familiar instance of the weeping willow, which attains to the highest degree of perfection in England, while, in Scotland, except in very favored spots, it never succeeds; the summer heat in England being much greater than in Scotland.

The distribution of plants over the Globe depends much on the distribution

and variation of temperature, particularly on the extremes of temperature, whether as regards cold or heat, and sometimes its distribution in the different months of the year. Thus, in a country whose climate is remarkable for excessive cold or heat, such vegetables can alone live in a state of nature, as are capable of enduring such extremes. But it may still be possible, in such a country, if the interval between the extremes be considerable, to cultivate by art such plants, as if left to themselves, would neither survive nor propagate their species.

The distribution of heat in the different months of the year, has perhaps the greatest effect on the distribution of plants. A cool summer and moderate winter is generally found in the neighbourhood of the Ocean, which has a tendency to preserve an equability of temperature. A hot summer and cold winter may produce a similar mean temperature, but will always produce a very different vegetation. Annual plants which pass the winter in the torpid state of seeds, and which have been already explained to be, in this state, little injured by variation of temperature, are most abundant in countries having the greatest extremes of temperature—Perennial plants prefer the Temperate Zones; and plants with deciduous leaves can suit themselves better to extremes of temperature, while evergreens prefer a greater equability of temperature. Yet every country, with a well marked and distinct natural boundary of mountain, sea, or desert, has, generally, a vegetation peculiar to itself, even although placed in the same degree of latitude; and, even in the same country, we do find plants confined to one region, without being able to assign any plausible scientific reason for their occurrence. Plants that require a long and moderate heat depend on the average summer temperature; those that require a short but great heat, on the temperature of the warmest month; and those that dislike great cold, on that of the coldest month. Climate then decides the natural habitation or range of plants. The difference of the mean temperature of summer and winter is nothing at the Equator, and gradually increases with the latitude. The extreme difference of the seasons is greatest where the mean annual temperature is low; as along a great range of the American Coasts, owing to the cold winds from the Polar Regions. The extremes of temperature are much felt also in the interior of large continents, and little felt in some Islands at a distance from them, or on the shores of large Islands, or continents themselves, for instance, the western shores of Europe and America. In the Polar Regions the temperature is much regulated by the melting of the ice in summer, which lowers it, and by the freezing of the water in winter, which, by giving out great heat raises it considerably. Were it not for this wise provision of omnipotence, neither plants nor animals could exist in those dreary and inhospitable regions.

In the Temperate Regions, the distribution of plants depends more on the mean temperature of the summer season,—in the Equinoctial, on the mean temperature of the whole year. The acylidinous class of plants proportionally increase in number as we proceed from the Equator to the Poles, with the single exception of the Felices (Ferns) which however are generally mountainous plants in the Tropical Regions.

Of the Monocotyledonous class the Palmæ (Palms) are exclusively Tropical ; and the Liliaceous plants abound in warm latitudes—of the Gramineæ, Gyperacæ and Junceæ, the two latter increase, more particularly towards the North.

The Dicotyledonous class are more generally distributed over the Globe,—the Compositæ (or compound plants) are however more numerous in the Temperate Zones,—and, in very low latitudes, many of them are semi-mountainous plants. The order Legumenes (Leguminous) affect the Tropics, and gradually decrease towards the Poles. One class of the Rubiaceæ prefer the Temperate, the other the equinoctial Regions, and the Umbelliferæ and Cruciferæ are Tenants of the Temperate Zones, and are always mountainous plants in Tropical Regions.

We may state generally that the Felices, Ericæ and Rhodoracæ (Rhododendrons) increase towards the pole. The Rubiaceæ, Euphorbiæ and Leguminæ increase towards the Equator, and the Umbelliferæ and Cruciferæ abound in the Temperate Zones.

The Frigid Zone contains but few species,—their vegetation is very rapid ; and in such countries the verdure is generally confined to southern aspects, and is composed of Musci and Algæ (Mosses and Lichens) and some dwarf shrubs. As we enter the Temperate Zone, we meet the Fir and Pine ; afterwards, as we proceed, the Oak, the Elm, the Beech and Lime, and all the ordinary forest trees. Then follow the Apple, the Pear, the Cherry and the Plum, and, as we proceed onwards, the Grape, the Olive, the Lemon, the Orange and the Fig ; the Mulberry, the Cedar, the Cypress and the Cork tree. On reaching the Tropics, we find the Coffee, Palm, Sugar Cane, Bread Tree, Date, Cocoa, and all the Aromatics and other rich productions,—the growths of these magnificent Regions.

THE SEASON AND THE CROPS.

From all sections of the country, the indications received are invariably, to the effect that the harvest of 1859 will be unusually abundant one. In New England, the corn though backward is looking well. Potatoes, so far as early ones are concerned, are yielding well, and the prospect for the general crop was never more promising, though we notice the blight accompanying the rot in some fields. Tobacco, particularly that set early, is in remarkably good condition ; we hear of some over four feet high, and already so covering the ground as to prevent proper worming.

From all the sections of the West, even where so much damage was supposed to have been done by the frosts of early June, we hear very favorable reports of the wheat crop. It is supposed, indeed, that the frost saved the wheat by destroying insects then just developing into maturity, while the growth of the grain was only temporarily checked. There is doubtless much truth in this ; at all events, nowhere is the wheat better in quality or its yield heavier than in the frost-bitten regions. Corn was generally killed to the ground, but either sprouted again or was immediately replanted, so that in this staple also, the crop is even beyond the average of former years. Fruit was generally cut off in the blossom, and the young wood in the nurseries and vineyards cut off as by shears, but probably to their ultimate advantage. If the weather continues favorable

for harvesting, there is reason to believe that the agricultural products of the whole country will be greatly beyond that of any previous year.

How will this affect the prices? The declaration of peace in Europe has checked the speculative advance which all kinds of grain were assuming, but we apprehend, not greatly to the disadvantage of the people generally. Speculators would have laid fat on their ribs, but the producers and the consumers of the country will be as well off now as though fancy prices ruled in the market. There is no prospect that we can see if the country is active, and though excessive importations may cause too great an outflow of specie, it cannot again cause a panic, and in the process of time the country will have learned its lesson. We believe prices of produce will be moderately good—remunerative to producers, and within the means of hungry consumers.—*Mas. Ploughman.*

HOW TO SELL OUR CROPS.

A celebrated English writer has declared that this is the only country in which there is constantly a supply of food for all its inhabitants, and that nowhere else occurs so frequent a vibration of prices, now up, now down, each change from high to low occurring so suddenly as to cause immense pecuniary disaster, though the quantity of food remains the same. The casualties of this year and the last will help the reader who may be desirous of verifying the formula. It is quite certain we shall have an abundance of food for a year to come. It is granted that the Wheat crop has been a full one, and that its price cannot be forced up in consequence of a failure of the Corn crop, because the hot sun and abundant rains of the last few weeks have insured that the latter will be of average yield. The fact, then, is manifest that the country is full of food—of Corn alone the crop is estimated at 700,000,000 bushels, in place of 592,000,000 ten years ago. Indeed, it is so well known that the prospect of high prices in Europe, as a consequence of the Italian war, stimulated the planting of unusual quantities of grain, that careful men look for more than an average quantity. But a few millions of bushels either way is of little consequence. Another fact of equal importance now stares the farmers in the face—prices are low, and the foreign market has disappeared. Worse than this, the farming interest throughout the West is deeply in debt, contracted when grain brought high prices, and to be paid now when it has sunk to less than half. The sad evidences of this indebtedness appear in many ways. Brokers and money-lenders in all the Eastern cities are overrun with applications from borrowers, many of whom offer prime mortgages, bearing twenty per cent interest. Property in growing towns is offered at extremely low prices for ready money. Western newspapers are filled with advertisements of large quantities of houses, lots, and lands for sale. Trading is eagerly solicited, merchandise being sought in exchange for real estate, and that, too, without much scrutiny as to prices affixed to the former. Merchandise, being portable, can be peddled off for money. This demand for money from the West is not to prosecute new enterprises, but to mitigate the disasters of old ones. It is a mere staving off of the evil day of payment, devoured in the mean time by excessive interest. When times were flush and real estate, even in paper towns, doubled in value annually, men felt twenty per cent per annum to be no burden. On the contrary they appeared to grow rich under the depletion. But with corner lots no longer saleable at any price, the case is essentially different; and as some men grow rich by lending at six per cent, those are likely to become beggars who pay ten.

While the West is thus seeking to borrow of the East, it is already deeply in debt to it. Every one must remember how, before the crash of 1857, the West

was vehemently appealed to, to pay what it owed us, how the financial Cæsars of the press laid at her unlucky door the onus of the great stricture which preceded the great crash; how the mails groaned with dun-colored appeals to distant debtors; how sharper creditors sent out their clerks, or went themselves to make collections; and how, after the crash came, ten per cent exchange was willingly paid to realize. Millions of that debt have since been paid under every possible disadvantage to the payer, and the big honest West will doubtless continue its efforts to discharge the millions that remain due. This condition of indebtedness, however, must not be accounted as a crime in the West. The misfortune has been brought on her by the bad Government she has unfortunately helped to fasten on the country. She has been entrapped by demagogues into believing that Europe was her legitimate food market, and that it would be a constant one. But while thus exporting a ton of food, she was at the same time importing five tons of foreign food in the shape of cloth and iron, that ought to have been manufactured at home. The balance has been paid for in gold, the drain of which is at this moment driving home her local currency, and stripping her of the hope of even a shipplaster salvation. At this port alone, \$3,000,000 of this foreign food was received last week. Had it been wheat, or corn, or pork, her presses would have proclaimed the folly, and even her demagogues might have condescended to notice it. But being concentrated into cloth, and silk, and hardware, it is hailed by Treasury chuckleheads as a sign of national prosperity! While it keeps the Treasury measurably full, it keeps the pockets of the farmers hopelessly empty. They have raised twice as much food as the whole country can eat, destroyed the manufacturers who would have eaten it, and the dependence on Europe is now realized to the uttermost. Let us see to what it must lead.

The destruction of the manufacturers have driven them to open new farms, the glut of food they have now created is apparent. But these farms have been established by going into debt for land, improvements, and a living while the crops were growing. All these were entered on when prices were high, and therefore cost much. The debt created was in proportion; but while the crop to pay this debt was expected to keep up in price, it has fallen more than half. Yet the debt remains at the old figure. Meantime, judging from what reaches us from the West, we gather that the farmers refuse to thresh and sell their grain because of the low price, intending to hoard it for a higher one. The receipts of new wheat at the great centers are less this year than for the corresponding period of the last. Merchants who have kept the farmers going, relying on payment now, are embarrassed by their refusal to sell. They in turn owe in the East, but cannot pay for this reason. Money consequently becomes dearer, exchange rises, and is now higher at some points than at any time during the year, and the cloud which a full crop was confidently relied on to dissipate, still hangs over the country. The movement of this new crop from West to East has been for months past the sole dependence for the railroads, but their receipts instead of increasing, have been diminishing.

It is clear that this condition of things cannot last. The East is indebted to Europe for importations of unexampled magnitude, and is increasing that debt every week. It must be paid. Immense as have been our exports of specie, the balance owing is even more so. We have no more gold to spare, and the banks have shut down because they are satisfied of the fact. We have therefore no resource but to liquidate by exporting food. But food in Europe is cheap. We must therefore sell ours a little cheaper, and so compel Europe to buy. If Europe will not give our price, she must take it at her own, and this she will unquestionably do in the end, as we have insisted on having her for our only customer. The sooner we begin the process of thus paying our debt the better

will it be for us. It is the delay which occasions much of the general embarrassment, and which if continued will end in another revulsion. The hoarded surplus at the West must come forward in payment of debts, no matter at what sacrifice. This will draw money from the East, set all the wheels of Western business in motion, give large receipts to railroads, improve stock values, and infuse new life into the community. The farmer who sells now will be likely to get a much higher price than by holding on. All the experience of the past, all the facts of the present moment, point to a season of extremely low prices for food, and we believe that he who realizes the soonest will receive the greatest return.—*N. Y. Tribune.*

FARM DRAINAGE.*

It is but a few years since the subject of systematic drainage has received the attention of scientific men. In the olden time, if land was not so situated as to allow the surplus water which fell thereon, or was contained therein, in form of springs, to be easily conducted off, by means of ditches, dug with the plow or spade, it was considered of little value, and allowed to remain uncultivated, the portions better situated being only devoted to tillage. This plan answered very well for a time, but it was found as population increased, the crops that could be raised from these tillable portions were scarcely sufficient for their support. An increase in the price of the land and high rates for provisions was the consequence. This being the case, thinking men began to inquire, how shall this state of things be remedied? Judge French, in the work before us, gives accounts of deep drainage having been advocated in England as early as 1650, and occasional reference being made to it thereafter, but nothing of importance until 1790, when the British Parliament voted to Joseph Elkington a reward of \$1,000 for his valuable discoveries in the drainage of land. Mr. Elkington was a Warwickshire farmer, of considerable genius but illiterate. The board of Agriculture consequently appointed Mr. John Johnstone to visit Elkington, and study his system, which he did, and afterward published a work popularly known as "Elkington on Draining," which, according to Gisborne, was but a poor exponent of the principles and practice of Elkington. The book, however, had an extensive circulation, and was reprinted in 1838, by Edmand Ruffin, of Petersburg, Va., as a supplement to the *Farmer's Register*, of which he was the Editor. Elkington's system seems to have been the tapping of springs by boring. He seemed to have a peculiar faculty for discovering these springs and their underground water-courses, which has died with him, as no one will undertake to do what he did.

Next to Elkington, in point of time, came Jas. Smith, of Stirlingshire, in Scotland. His peculiar views first came into notice about 1832. His system differs from that of Elkington in that he advocates systematic operations over the whole field, at regular distances and shallow depth, believing that more injury arose from the retention of rain water than from springs; while Elkington considered springs as the chief source of the evil.

Next, in point of time, we find Joseph Parks, who advocated less frequent but

* Prepared from FARM DRAINING; the Principles, Processes, and Effects of Draining Land with Stones, Wood, Plows, and Open Ditches, and especially with Tiles, including Tables of Rain Fall, Evaporation, Filtration, Excavation, Capacity of Pipes; cost and number to the acre of tiles, etc., etc., and more than one hundred illustrations. By Henry F. French. New-York, A. O. Moore & Co. 12 mo., cloth, pp. 384. Price, \$1.25

deeper drains, with pipes of one inch bore. The committee appointed by the House of Lords, 1846, adopted his plan, so far as *depth* was concerned.

About 1854, Mr. Joshua Trimmer introduced, under the patronage of Lord Berners, what is now known as the Keythorpe system, the peculiarities of which consist in that the parallel lines are not equi-distant, and that they cross the line of the greatest descent. The success of this plan seems to have been consequent on the geological structure of the ground where it was tried. Next is the Wharnccliffe system, which proposed drains four feet deep, from eighteen to twenty yards apart, and others between and leading into them, only two feet deep. This plan cannot be adopted in the Northern States, because the drain at two feet would be frozen in winter, and disturbed where the subsoil plow is used in summer.

These are the principal systems that have been used in England—a combination of all of which forms the system now practiced there.

A history of draining in America is soon given. Before 1835, with the exception of occasional bush and stone under-drains, nothing but surface drains were to be seen here. In 1835, Mr. John Johnston, of Seneca Co. N. Y., by birth a Scotchman, imported patterns and made drain tiles by hand, for use on his own farm. The effect of the drainage was so striking, that in 1848, John Delafield, of the same county, imported a machine for making tiles, since which time, in that county, draining has been thoroughly tested with satisfactory results. Tile works are now established in many of the States, but there is not yet sufficient competition to enable us to purchase them, except at prices that pay exorbitant profits to the manufacturer.

FLOWERING OF POTATOES.—Dr. MANBY, an eminent English agriculturist, and the author of a Prize Essay on the cultivation of Early Potatoes, says in that essay, which has recently been published, that “a flower to an early potato is considered a sign of deterioration, the first symptom of *growing out*, it being contended that all the strength of the plant should be thrown into perfecting the tuber, and not into the opposite extreme.” He would therefore eradicate them as soon as they appear, and save seeds from plants which have shown no indication of flowering. Experiments have shown that potato plants beginning to show a tendency to flower, perfect their tubers less early and perfectly than before that tendency was developed.

SANITARY PRECAUTIONS.—In the height of summer all persons are called upon to look around their dwellings and consider whether there is not something unfriendly to health that might and ought to be removed without delay. Constant attention is requisite that nothing offensive be suffered to remain within doors. Liquid in which vegetables have been boiled, soapsuds, dirty water of every kind should be immediately thrown away: also cabbage stalks, potato peelings, and offal of every kind. The liquor in which greens have been boiled, if suffered to remain even a few minutes, or thrown down a scullery drain, emits a most unpleasant and unwholesome smell, which prevades the whole house. Many very cleanly people are not attentive to this particular. Among other things that require attention, fallen leaves should be frequently swept up and properly disposed of.

THE FARMERS' JOURNAL.
MONTREAL RETAIL MARKETS.

September 1859.

	BONS: COURS.				ST. ANN'S.			
	s.	d.	s.	d.	s.	d.	s.	d.
FLOUR.								
Country Flour, per quintal	18	9	a	19	0	0	a	0
Oatmeal, per quintal	17	9	a	18	0	0	a	0
Indian Meal, per quintal	0	0	a	0	0	0	a	0
GRAIN.								
Wheat, per minot	0	0	a	0	0	0	a	0
Oats, per minot	2	9	a	3	0	2	3	a
Barley, per minot	3	9	a	4	0	0	0	a
Pease, per minot	4	3	a	4	6	0	0	a
Buckwheat, per minot	3	6	a	3	9	0	0	a
Indian Corn, yellow	4	6	a	5	0	0	0	a
Rye, per minot	0	0	a	0	0	0	0	a
Flax Seed, per minot	7	0	a	7	3	0	0	a
Timothy, per minot	9	0	a	9	6	0	0	a
FOWLS AND GAME.								
Turkeys, (old) per couple	5	0	a	7	6	10	0	a
Turkeys, (young) per couple	0	0	a	0	0	6	0	a
Geese, (young) per couple	4	0	a	6	0	3	6	a
Ducks, per couple	2	6	a	4	0	2	6	a
Ducks, (wild) per couple	3	0	a	3	6	0	0	a
Fowls, per couple	2	6	a	3	0	2	0	a
Chickens, per couple	0	0	a	0	0	1	3	a
Pigeons, (tame) per couple	1	0	a	1	3	0	0	a
Pigeons, (wild) per dozen	2	6	a	3	0	3	6	a
Partridges, per couple	0	0	a	0	0	0	0	a
Woodcock, per brace	0	0	a	0	0	0	0	a
Hares, per couple	0	0	a	0	0	0	0	a
MEATS.								
Beef, per lb	0	4	a	0	9	0	4	a
Pork, per lb	0	5	a	0	7	0	6	a
Mutton, per quarter	5	0	a	7	0	7	0	a
Lamb, per quarter	3	6	a	0	0	2	0	a
Veal, per quarter	5	0	a	12	3	5	0	a
Beef, per 100 lbs	35	0	a	40	0	30	0	a
Pork, (fresh) per 100 lbs	35	0	a	45	0	27	6	a
DAIRY PRODUCE.								
Butter, (fresh) per lb	1	3	a	1	6	0	11	a
Butter, (salt) per lb	0	11	a	1	0	0	8	a
Cheese, per lb, skim milk	0	0	a	0	0	0	0	a
Cheese, per lb, sweet do	0	0	a	0	0	0	0	a
VEGETABLES.								
Beans, (American,) per minot	0	0	a	0	0	0	0	a
Beans, (Canadian) per minot	7	6	a	10	0	0	0	a
Potatoes, (new) per bag	4	0	a	4	9	4	0	a
Turnips, per bag	0	0	a	0	0	0	0	a
Onions, per bushel	0	0	a	0	0	0	0	a
SUGAR AND HONEY.								
Sugar, Maple, per lb, (new)	0	4 $\frac{1}{2}$	a	0	5	0	4	a
Maple Syrup per gallon	0	0	a	0	0	0	7 $\frac{1}{2}$	a
MISCELLANEOUS.								
Lard, per lb	0	8	a	0	9	0	8	a
Eggs, per dozen	0	8	a	0	9	0	8	a
Halibut, per lb	0	0	a	0	0	0	0	a
Haddock, per lb	0	3	a	0	0	0	0	a
Apples, per barrel	25	0	a	30	0	15	0	a
Oranges, per box	20	0	a	22	6	0	0	a
Hides, per 100 lbs	0	0	a	0	0	0	0	a
Tallow, per lb	0	4 $\frac{1}{2}$	a	0	5	0	0	a
BREAD.								
Brown Loaf	0	11	a	0	0	0	9	a
White Loaf	0	0	a	0	0	0	9	a