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# THE AGRICULTURIST

## AND CANADIAN JOURNAL.

Devoted to Agriculture, Literature, Education, Useful Improvements, Science, and General News.

WM. McDOUGALL, PRINCIPAL EDITOR. }  
W. G. EDMUNDSON, PUBLISHER. }

{ W. G. EDMUNDSON, } PROPRIETORS.  
{ WM. McDOUGALL. }

VOL. I.

TORONTO, MARCH 1, 1848.

NO. 4.

### GOOD AND BAD LUCK.

**HINTS TO YOUNG FARMERS.**—We are in the habit of hearing the misfortunes of life, and particularly in the management of the farm ascribed to *bad luck*, and of hearing the blessings and comforts of these ascribed to *good luck*; but if we take a view of the matter properly we shall be convinced that our good and bad luck comes through our own agency. The faithful discharges of known duties, with due restraints upon our passions, seldom fails to produce good luck; while indolence, extravagance and lack of probity and good will to our fellows, are almost certain precursors of bad luck, and even though our crops may grow from the exuberant bounty of nature, they are not to be compared with those that result from prudent industry, and rectitude of conduct—from a consciousness of having performed the highest duties incumbent upon us to our friends to society and to our God.

Let us trace some instances of good and bad luck in the business of the farm, to their causes.

The diligent farmer who personally superintends his own business, who rises before the sun, sees that his labourers are at their appointed work, that his farm stock is in good condition, his employments and fences in good order, and his work all timely done, is pretty certain of enjoying a round of good luck in all his farming operations. He will have good stock, good crops, and good profits; and if he takes care to bring up his sons and daughters in the way of their father, he will have *good luck* with his family.

On the other hand, look at the man who spends a large portion of his time at the grogshop or gossiping among his neighbors and trusts the management of his farm to others, and ten to one that he is heir to bad luck. The drone too is generally late with his work, he plants and sows late and suffers the harvest to waste in the fields before his crops are gathered or housed.

The diligent farmer destroys the weeds that rob his crops, and bushes that cumber the ground; he carefully applies the manure destined to feed his crops and keep up the fertility of the soil, and though it may be naturally unproductive, yet by industry, economy and scientific farming he makes it produce abundantly.

We have one more suggestion to make, which may extend to the fair sex. Idleness is the parent of mischief, of tattle; now the men and women who attend to their own business have little time to attend to the business of their neighbors; they can also save themselves from much trouble, and materially advantage society, by following their calling industriously.

M. OLDHAM.

Near Cambridge, Dec. 28th, 1847.

**A HINT TO FARMERS.**—When our calves and lambs are taken too soon from the dam, and turned with little or no experience into the pasture, they eat indiscriminately every herb that presents itself, and many are lost. Had they been suffered to browse a little while, or a little longer, with the mother, she would have taught them to distinguish the sweet and wholesome herbage from the deleterious and destructive. This is a point of agricultural economy not sufficiently attended to.—*Youatt's Veterinary Lectures.*

### HAY SEED.

"Have you any herdsgrass seed?" enquired an individual the other day of a grocer, at the door of whose shop we were standing.

"Yes."

The man walked in, and after examining several specimens, selected the poorest, because it was cheaper than the first quality by *two shillings the bushel*?

His excuse was, that he had several acres to "lay down," and that, "so far as his experience furnished ground for an opinion, the *low priced* seed was the cheapest in the end." To corroborate the correctness of this logic—rather peculiar, it must be confessed—he adduced, very confidently, the practice of some of his neighbors, who never purchased *any* seed, but stocked their lands with the seed saved from their barn floors. Now, the fact is, when grasses are late cut—that is, after the seed has fully matured—this is probably the safest method a farmer can pursue. He gets no poor seed, none that has had the germinating principle emasculated or destroyed by any of the causes which so often destroy the vitality of most grass seeds when purchased and sold expressly for seed. Much of the clover seed retailed in some part of our State, is greatly injured by fermentation; and this is one *principal* reason why we hear so many complaints of clover not "catching." The same remark applies equally to herds-grass, or timothy, red top and brown-top. Seed "got out" in a proper condition, if picked or stored in large masses, and in a place facilitating the absorption and retention of moisture, undergoes a process which, if not actually fatal to the germinating principle, greatly diminishes its vigor. A healthy and vigorous plant can spring only from a healthy and vigorous seed.  
—*Maine Farmer.*

**REMEDY FOR HOVEN OR BLOAT**, occasioned by the eating of wet or luxuriant clovers, and young grasses, turnip tops, &c.—Two or three table spoonful of liquid ammonia, (hartshorn,) diluted in a half pint of water instantly stops fermentation, and causes the gases (carbonic) to discharge.

**ANTI-FRICTION COMPOUND FOR WAGON WHEELS.**—Two parts in bulk of hogs lard, one each of wheat flour and black lead. Heat till the lard begins to melt, and stir the whole into a paste mass. In very cold weather it may be softened by the addition of any cheap oil. This composition will well repay the trouble of making, and will kill all friction and *squealing* long after is dry.

**GOOD FARMING.**—Here is the secret of good farming. You cannot take from the land more than you restore to it, in some shape or other, without ruining it, and destroying your capital. Different soils may require different modes of treatment and cropping, but in every variety of soil these are the golden rules to attend to:—Drain until you find that the water that falls from heaven does not stagnate in the soil, but runs through it, and off it, freely. Turn up and till the land until your foot sinks into a loose, powdery loam, that sun and air readily pass through them. Let no weed occupy the place where a useful plant might possibly grow. Collect every particle of manure that you can, whether liquid or solid. Let nothing on the farm go to waste. Put in your crop in that course which experience has shown to lead to success in their growth, and to an enrichment, and not impoverishment, of the land. Give every plant room to spread its roots in the soil, and leaves in the air.

# Agriculturist and Canadian Journal.

TORONTO, MARCH 1st, 1848.

## CANADIAN BUTTER—HOW TO BE PREPARED FOR EXPORT.

We have received a circular from the Montreal Board of Trade, containing some important suggestions on this very important subject. It is the intention of the Board to petition Parliament at its present sitting for an Act to establish an Inspection of Butter, by which it is hoped that uniformity will be secured both in the quality and in the mode of packing the article. Something of the kind is much needed. At present there is very little butter made in Canada that is fit for exportation. The subject is one of no great practical difficulty, if our dairy farmers would only turn their attention to it, and endeavor to adopt something like a system. Till this is done, our butter will never command a remunerative price in foreign markets. The Secretary of the Board says:—

"It is not contemplated to make the inspection of Butter compulsory, but optional, as in the case of Flour,—but no butter will be eligible for inspection, unless it be in packages of the description provided for in the Act. One of the intended provisions of the Act, I am directed to state, is, that Butter Kegs or Firkins, shall be made of White Ash Wood, that being in every respect the most suitable. Every Country Merchant, Dairy-man, or other person engaged or interested in the packing of butter, must therefore see the necessity of having a sufficient quantity of white ash staves prepared, and properly seasoned, ready for making into firkins as soon as the Act of Parliament (which will establish the size and form of the firkins to be used,) shall have been promulgated."

He further says:—

"I am directed to draw your attention to the importance of a careful observation of the various recommendations contained in Mr. McDonnell's Letter, not only because many of them will probably be required by the intended enactment, but because the obvious tendency of their general adoption is to increase the value of the article, and to establish for Canadian butter, a higher character in foreign markets than it could otherwise attain."

The following is the report of the Inspector temporarily appointed in October last:—

To the Chairman and Council of the Montreal Board of Trade.

GENTLEMEN,—I beg respectfully to submit the following Report of the progress made in the inspection of butter since my appointment as Inspector.

The quantity of butter inspected and branded from the 23rd October (the commencement of my operations,) to the 8th instant, (the close of the season,) is 4772 kegs of various qualities, as follows:—256 kegs first quality; 1920 do. second do.; 1813 do. third do.; 559 do. fourth do.; 136 do. fifth do.; 38 do. Grease.

The large proportion of inferior quality, I attribute principally to the short notice given of the intention to establish an Inspection, in consequence of which the trade was totally unprepared for the requirements of such a system.

Very little dairy-packed butter came under my notice, the quantity inspected being nearly all store-packed, and put up in a very slovenly manner. In some packages the butter was thrown in in rolls as received from the producer—in others, made of various colors and qualities mixed together, obliging me to give a low character to the whole package—others contained several pounds of salt on the top—others had large quantities of coarse salt mixed in with the butter, and I have seen some butter which was strongly flavored with *leak*, and thus rendered most unpalatable.

The irregular size and slovenly appearance of the packages in which butter is brought to this market, is also to be deprecated. This, as well as the other faults alluded to, may, by a little care, be so easily remedied, that I beg to submit the following suggestions for the future regulation of the trade, in this important article.

A uniform shape and size or sizes of firkin or cask, should be established. Say two sizes, one to contain 56 pounds of butter, and to weigh 12 pounds tare, and the other to contain 84 pounds of butter, and to weigh 16 pounds tare. The firkins or casks should be made of white ash, tight, and full-hooped, and the full weight or tare should be branded, with the cooper's or maker's name on each one. None but well-seasoned wood must be used in making the casks, and to ensure this important point, the store-keeper should have his supply of casks made in anticipation, and give them out as wanted to the farmer or dairy-man, to be filled and properly packed at the dairy before being brought to the store.

The firkin should be well scalded and soaked with strong brine or

pickle before the butter is put into them. Fine salt only should be used in packing, and that only in sufficient quantity to preserve the butter, and it should be distinctly understood, that whenever coarse salt is used, the butter, however good in other respects, shall not pass inspection as *first quality*. Butter should always be washed with pickle instead of water, as it improves its quality, and renders little or no salt, necessary to make it keep. Scalding should not be resorted to, to force churning, as it deteriorates the quality of the butter. Too much cannot be said or done to promote cleanliness in the vessels, hands, and everything that comes in contact with butter.

In connexion with this subject, I may mention the importance of good pasturage, and proper food for cows, without which good butter cannot be obtained. Of roots, carrots will impart the best color and flavor to butter, and together with fresh grass and hay, will be found the most nutritious and productive food. Milch cows cannot be too carefully kept from such herbs as impart an offensive taste or smell to butter. In autumn, butter will be found to be better, and of richer color, than that made in winter. Nevertheless, if properly made in winter, it will be found good in quality, although not so rich in color.

Being fully convinced of the beneficial effect which a well regulated system of inspection must ensure, by raising the character of Canadian butter in Foreign markets, and that both the producer and shipper will find their interest advanced by it, I would respectfully suggest, that any Legislative enactment, which the Council may recommend, should not make inspection compulsory, but leave the buyer and seller free to avail themselves of it, or not, at their own option.

I have the honor to be, gentlemen,

Your most obedient servant,

(Signed)

FRANCIS McDONNELL.

Montreal, 10th December, 1847.

## THE SHORT HORN DISCUSSION.

Mr. L. F. Allen, author of the American Herd Book, has replied to the remarks in our second number, on his previous communication. It would appear from his letter, which follows, that the point at issue between us is narrowed down to very inconsiderable dimensions. We expressed disbelief in the theory that the improved breeds were in fact not improved, but originally better than others. That they owed little or none of their superiority to the management of skilful breeders taking advantage of certain well known laws which nature has established in the animal economy, but derived it mainly from an original, natural, and physiological difference of breed. We could not assent to this doctrine, and asked for something like proof. We looked in vain through the works within our reach, as well as Mr. A.'s Herd Book, in which he professes to give the history of one of these breeds. It seemed to our mind, that such a fact, if it were admitted to be one, would take away nearly all the credit we had supposed due to the efforts of distinguished breeders, besides having the effect of preventing a proper attention to the breeding and improvement of the common kinds of cattle. We now find that Mr. A. repudiates his own book as an authority on this point, and also excuses himself for having "carelessly" used the word "improved," it being according to his theory an improper word. We are satisfied to leave the discussion for the present with our readers. Our friend has raised no new points in this communication, nor has he to our understanding, proved his position by any stronger evidence. We would not on any account hurt his feelings, or treat him with the least show of disrespect, for we regard Mr. Allen as one of the few men, that a lover of agriculture in its practice and theory, can look up to with a feeling of pride, confidence, and pleasure. We should rejoice to see among ourselves a greater number of such men;—well informed, public spirited, generous hearted, practical agriculturists, glorying in their noble profession, and devoting their talents and leisure time to the improvement and elevation of those who follow it. But though we are bound to listen to the opinions of such a man with attention, we must not omit to examine the grounds upon which they are based. There may be something wrong in the reasoning which supports them, and we certainly think Mr. A. has in this instance used the

*petitio principii*, or in plain English, begged the question.—The Cotswold sheep existed as a distinct breed in the time of the Plantagenets, therefore there is "no good reason" why the Short Horns did not exist then! "At all events it remains with those who assert that these superior races of animals are of recent origin, to prove the fact!" Surely not. It remains with those who assert that they are a distinct breed, and have been for hundreds of years, to prove it. That is the affirmative. As we said above, the question is now much narrowed, for it is only one of time. The word "original," as used by Short Horn writers, is not absolute, but merely carries us back a little further than we may have consented to go. Well, we will not quarrel with them about that. Instead of making a clear title to aristocratic distinction for one hundred years only, we may admit that they can give presumptive evidence to support a claim for three or four hundred, but this only removes the period of "improvement" somewhat farther from us. It by no means proves that such improvement never took place.

We hope Mr. A. may live long enough to supply the omissions in his history, and completely establish his theory, if truth, and the further evidence which he appears to have discovered, will support it. We shall be very happy to agree with him as to the *origin* and nature, as well as to the *fact* of superiority. He is mistaken in assuming that we are disposed to "controvert" the fact.

To the Editors of the *Agriculturist*.

BLACK ROCK, February 20th, 1848.

GENTLEMEN,—

I have received your paper of the 1st inst., containing your strictures on my communication, inserted in the first number of your consolidated paper. I find, not unexpectedly, that you are disposed to controvert my position, in relation to the improved breeds of domestic stock, at which I certainly take no offence. But as I did not propose, when penning those remarks, to *argue* any position which I hold, or then expressed, you will excuse me when I remark, that I do not feel disposed at present to follow the subject at length. It is a matter of too much magnitude for light or casual controversy, and to go further into it at the present time, is beyond the bounds of either my inclination or the time that I can devote to it. Life and health being spared to me, however, I hope at some future day to look into the subject somewhat at large, and in such process, I trust; that although I may not convince every one of any affirmative theory of my own, I may raise a question in the minds of some others, whether their own existing notions on the subject are quite so conclusive as they at present imagine.

You are pleased, in relation to the origin of the breed of Short horn cattle, to question my opinion of the antiquity of their date, and infer, even by my own showing, that they are but little, if at all, over a hundred years old, according to their history in the American Herd-book; and which authority being my own, I cannot dispute. You also talk about "Noah," and all this sort of thing, which is very well as far as it goes; but when it is recollected that father Noah lived some 5000 years ago, and that the chronicler Moses does not say *how* many, nor *what* "breeds" of cattle he drove into the Ark with him, it will hardly do to refer back to any *distinct* race, as being the *original* of cattle kind. We may therefore, perhaps, as well let that alone.

Of one thing, however, we are very sure; and that is, that Short horn cattle of the very best quality, were bred much longer ago than one hundred years back in England by *existing* record, and *tradition* says, for centuries back of that—without any accession or "improvement" from "foreign" blood: and as to the Collings, who were eminent breeders of their day, from about 1780 to 1810 and 1818, and gave great eclat and notoriety to the Short horns from their success in breeding them, it is a well established fact, that the very stock from which they bred the most celebrated animals, in the production of which they achieved their greatest reputation, were *purchased* from several old, experienced breeders of Short horns, who had bred them for more than half a century before they—the Collings, for there were two brothers of them—commenced breeding, and the genealogy of whose original stock was lost in the still older breeds of *their* (the old breeders'), ancestors, through whom the cattle descended to them. As to Berry, whose authority every body quotes, and of whom I also make mention as a Short horn author, every day I live convinces me that he is but very imperfect authority. His *first* history, and he wrote two—a dozen years apart, and very unlike—of the Short horns was pretty good as far as it went; but had I the same information when I wrote the Herd Book that I have since discovered, his assertions would have had much less weight with me. He was an *interested*

writer, having a pecuniary object in view in his later history as published by Youatt, which he partly accomplished, by making it appear that the race of Short horn cattle were comparatively a *recent invention*, and that *himself* and others were among the *improvers* of that race. In speaking of these superior breeds of cattle, I have carelessly fallen into the use of the general term "improved" with others; but I am not yet convinced that the Short horns of our day are a whit better than they were (the best of them), of two centuries ago. Certainly not, if the recorded proof they then showed in beef, tallow, and profitableness might be believed.

Curley and Baily wrote about Shorthorns before Berry was born; and Berry, if he read what they wrote—and no doubt he did, for he *mis-quotes* them—knew better than to give them as authority for many things he said. Berry is given quite too much credit in the American Herd Book, for strictly correct history, and which, should its substance ever be re-written by me, would be corrected.

As to the "improvement" of the English Short horns, by an admixture of the blood of cattle imported from the continent, on further examination I much doubt any such improvement. There is certainly no authentic evidence of the fact, although such has been asserted; but the most celebrated animals of that race cannot be traced to any particular relation with such importations. The "Cotswold" sheep—still are of the most celebrated of the long woolled breeds of England—were equally celebrated early in the fifteenth century, during the reigns of the Plantagenets, and I know of no good reason why Short horns, Devons, (this peculiarly fine race of cattle, so unlike any others, is claimed by some English authors to be an *aboriginal* race in that kingdom, and they assert that the Devons were known in their distinctive breed, so long back as the time when the Romans occupied a portion of the country), Long horns, and some other of the strongly established breeds of cattle, should not have existed so long back as the Cotswold sheep, among a people confessedly the most methodical in their habits of any in the civilized world. At all events, it remains with those who assert, that these superior races of animals are of *recent* origin to *prove* the fact.

As to what you say, of showing me the very superior specimens of *native* cattle that exist in your neighbourhood, and which indeed I have no disposition to doubt, I apprehend that if the facts can be ascertained, they owe their superiority to an infusion in *some* degree, though perhaps remote, of the blood of some of the breeds of acknowledged merit, which have been introduced of late into the Canadas. When you can show natives of the *old unadulterated* stock, which have existed since the settlement of your country, that are equal to what the friends of the better kind can demonstrate by *actual observation* to exist in theirs, I shall certainly, and with promptness acknowledge it.

There is another position, which you gentlemen, who are disposed to controvert the superiority claimed for the better kind of farm stock over the inferior kind assume, and that is, that all *real improvement*, and in almost every thing has been made within the last century, as if all knowledge was locked up for discovery in this steam engine, locomotive and telegraphing age; and that father Moses, Lycurgus, St. Paul, King Alfred, and Lord Bacon would be mere neophytes to the *Savans* of the nineteenth century. Hippocrates and Galen I think knew somewhat of animal physiology, as well as we of 1848, and it may be matter of some doubt, whether the patriarch Jacob did not know a little something of the science of cattle breeding, as well as Charles Colling or his successor, Mr. Berry; at least I fancy the diminished herds of his father Laban testified somewhat to his skill in that profession. Is the Arabian horse peerless in beauty and in grace among his species, at all lessened in the matchless qualities which endear him to the admiration of all who love the beautiful, that he is bred and owned by Barbarians of 4000 years' duration? and here is certainly an evidence of the antiquity of a race of animals, which can, to human eye, scarcely be "improved," and may not other fine animals have been equally well and perfectly bred by others in an obscure age?

But I have done. Please publish my history of, and strictures on English Short horns from the American Herd Book, and argue your objections as you proceed. Although I might add to what is there stated, the main question and its argument is before you, and I need not say more on what may now be considered a "tired out" subject.

Yours very truly,

LEWIS F. ALLEN.

## UNDER DRAINING.

[Continued from page 28.]

To meet this difficulty, the expedient has been devised of making clay pipes. These carry off the water effectually, and at the same time lessen the cost of the drain. The tiles first used were made in a horse-shoe form, each piece being about fourteen inches in length, and having a flat sole of corresponding dimensions to place under it and prevent sinking in the soil, or undermining by currents of water. These were much more cheaply transported than stones, one load going as far as 5 or 6, and the cost of digging was also considerably reduced; for the tile, being only about 4 inches wide, occupies a bed much narrower than the stone. The several pieces of tile were joined

together in the bottom of the trench, and formed a connected channel for water. The earth was compactly filled in, and the water found its way through the joinings of the pieces. These tiles were very effective, and have been employed to an immense extent in all the better cultivated parts of Great Britain and Ireland. Whole counties are now underlaid by them, and some of the most enormous income have been doubled by this simple improvement. At present, however, another form of tile is coming into general favour. It is a simple round pipe, made in lengths like the first, and for the cross drains of not more than an inch and a half in the diameter of the bore. These can be made much cheaper than the other kind, as they are smaller, and all in one piece. They are not more than half the weight of the old fashioned tile and sole, and therefore an additional saving is effected on the transportation. The trench for their reception is also much smaller, being at the top just wide enough to allow the trencher to work, and cut at the bottom with a narrow tool, to exactly the proper size for the reception of the pipe. The pieces are simply laid end to end, and wedged with small stones when necessary. The water finds its way in at the joints. Many have expressed doubts as to the operation of these drains, thinking that water would scarcely penetrate into so small a channel, through such minute apertures. No difficulty has been experienced in any case. One gentleman, residing in the south of England, who has employed these small pipe tiles in draining exceedingly stiff clays, laying them at the depth of three feet, and ramming the clay hard down, offered a premium of £100 to any person who would keep the water out of them. These tiles, of both varieties, are made by machinery. The clay is worked in an ordinary pug mill, such as used in brick-making, care being taken that no stones are present; it is then forced through a die of a circular or horse-shoe shape, according to the kind of tile intended to be made. It passes through in a continuous stream, which is cut off into the proper lengths by hand, or by a little apparatus connected with the machine. After drying sufficiently, they are burned in a kiln. By the use of machines, and by manufacturing on a large scale, the price of tiles has been brought very low. In some parts of England, the small round pipes now cost only ten shillings, or \$2.50 per thousand, each tile being fourteen inches in length. This would make them only about four cents per rod. There is no doubt that should the demand be great, they may soon be obtained here at as low rates. I hope to receive in the course of a few weeks such information from one of my Scotch friends, as will enable me either to give me directions for the making of the best tile machine, in this country, or for the importation of a small one from England as a model. If the farmers only call for them in great quantity, I have full confidence that our American mechanics will soon improve upon the best English model that can be obtained. Even at \$5.00 per thousand, or eight cents per rod, the employment of tiles would be cheaper than that of stones in most situations, unless they had to be transported many miles. It is moreover much easier for inexperienced persons to cover them properly. In the Restoration of Arts in this city, are to be seen several of the horse-shoe shaped tiles; they are made, I understand, at Enfield, but there seems to be no soles accompanying them, and I do not know their cost. It may not be inappropriate to mention in this connection, the importance of such an institution as this Repository; it is now in its infancy, but if patronised as it ought to be, will become a place where models or specimen of much useful articles may be found,—a place of reference for all professions.

We now come to the important question—How deep should the drains be made, and how far apart? Smith, of Deanston, and many distinguished British farmers agree in the opinion, that the proper distance of separation is from sixteen to thirty-six feet. That first named is proper on stiff clay soils, and the latter only on those which are very light and sandy. From eighteen to twenty-four feet is, I should think, the more common distance. Upon the subject of depth, great diversity of opinion has been expressed; but I believe that all of the best farmers are now united in the conviction, that shallow draining is in the end bad economy. One of the principal benefits derived from the introduction of the drain, is the deepening of the soil, as I have before explained. But this benefit is never fully, and in many cases not at all felt, until the drain is followed by the subsoil plow. The layer of earth immediately over the drain, should never be disturbed; if the plow breaks it up, particles filter in, and soon impede the exit of water. It is clear, therefore, that the tiles or stones should be laid so deep that the point of the plow cannot approach within four or five inches of their upper surface. The improved implements now in use for subsoiling, go down in some instances as far as twenty inches. Our farmers may never have gone more than ten, but they ought not, by putting in shallow drains, to preclude themselves from the ability to adopt improvements in this direction. Another argument against such drains, is the fact that they do not draw as well as the deeper ones, nor dry so wide a surface. I have known repeated instances where farmers who had made them shallow, were so disappointed in their efficiency as compared with deep ones, that they went to the great expense of taking them up, and relaying them some inches deeper. From twenty-six to thirty-six inches, is the depth ordinarily employed at present, although some maintain that four feet or four and a half is still better; this, however, seems carrying the matter to excess; and there can be no doubt that at distances of from sixteen to

twenty-four feet, drains at a depth of from twenty-six to thirty-six inches, will dry the stiffest and wettest land.

Several plows have been contrived for the purpose of cutting the drain trench at one operation. These are drawn by from eight to twelve horses, and following an ordinary plow take out the earth to the depth of from eighteen to twenty inches. A few inches more are then removed by the spade. This plow is said in some parts of Scotland to have greatly reduced the cost of trenching, but has never been generally introduced. I should think it too unwieldy and expensive an implement for this country.

(Concluded in our next.)

#### FARMERS' CLUBS.

We are glad to find that there is a good prospect of seeing several of the useful institutions in operation near this city. The time has arrived when farmers must meet together and discuss questions relating to their own interests, and adopt means to carry their wants and wishes into effect, or they will be pushed aside by others and made the stalking-horse of less important but more active classes.

We attended a meeting of the York Township Agricultural Society, held at York Mills, on the 18th inst., which, being the Anniversary, we were sorry to see so poorly attended. We introduced the subject of organizing a Club to meet monthly, to hear lectures and engage in discussion on farming topics. The proposal was immediately taken up, and all present put down their names as members of the Club. The first meeting will be held at Powell's Tavern, (formerly Montgomery's), on the 16th of March next, at six o'clock in the evening. George Buckland, Esq., (the English Agriculturist) will deliver a lecture, after which, the organization of the Club will be completed, and a subject for discussion at the next meeting agreed upon. We hope to see a very large attendance of both old and young.

Measures have been taken to organize a Club in this city, which we have no doubt will result in success. Will not the farmers in the neighborhood of Reesorville, Newmarket, Thornhill, Weston, Cooksville, and in a hundred other places, begin the work? Let us see. We shall publish a form of constitution in our next, for the regulation of such Associations.

#### PROCEEDINGS OF THE PROVINCIAL AGRICULTURAL ASSOCIATION OF UPPER CANADA.

The movements of the Provincial Association being of interest to agriculturists generally, we make room for the following resolutions passed at a meeting of the Directors in this city, on the 15th inst. We are obliged to omit some passages from the Address of E. W. Thomson, Esq., at the Annual Meeting of the Home District Society, which we had intended to insert in this number.

The Treasurer gave in a report of the Receipts, Expenditure, and Debts of the Association, after which the following Resolutions were unanimously adopted:—

Moved by A. A. Burnhath, Esq.,

Seconded by T. Page, Esq.,

1. *Resolved*—That Messrs. Thompson, Cooper, and Wells, be a Committee to audit the Treasurer's Accounts, and that they be presented to the President, on or before the 15th day of March next, and that the said Committee be requested to draft a report to the Government, embodying the Proceedings of the Association, to be submitted to the President, at the earliest possible period. Carried.

Moved by James Wettenhall, Esq.,

Seconded by E. W. Thomson, Esq.,

2. *Resolved*—That application, by Memorial, be made to the Government, to recommend to the Legislature a Grant from the Public Funds, of £1000 per annum; to the Provincial Agricultural Association of Upper Canada, and also that £500 be granted to the Association, for the purpose of enabling it to liquidate the outstanding claims of the year 1847, and that the President be requested to prepare and forward to John Wettenhall, Esq., M. P. P., one of the Vice Presidents of the Association, now in Montreal, a Memorial to the above effect, with as little delay as possible. Carried.

Moved by G. D. Wells, Esq.,

Seconded by J. P. Lovelock, Esq.,

3. *Resolved*—That an appeal to the several Agricultural Societies of Western Canada be drawn up and immediately circulated, urging the necessity of renewed and vigorous action on the part of the friends of agriculture, manufactures, &c. &c., throughout the Province, and especially for the purpose of sustaining this Association; and that T. Page and Henry Ruttan, Esqrs., of Cobourg, be a Committee to carry this resolution into effect. Carried.

European Agricultural News.

THE ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

It gives us great pleasure to observe that this powerful combination for the promotion of British agriculture, continues steadily to advance. We call the following items from the half-yearly report presented by the Council in December last.

After adverting to the various beneficial operations of the Society since the previous report, the Council observe, "That they have the satisfaction of finding, that as the sphere of the Society's operations becomes enlarged, it maintains its progress in a uniform and steady course; but that while every advantage is taken of the light which science may throw on its path, they can securely rely on that beacon which practical experience has established. They trust that the motto of the Society, "*Practice with Science*," will continue, as it has hitherto done, to regulate its movements; and that science will be regarded simply as that knowledge of principles which is derived from observation or experiment, and its deductions will be adopted only when the cases are similar in circumstance and condition: that while theory suggests modes of improvement, practical experience will ever be held as the only safe test whereby to decide the question of their adoption." The Society consists at present of 93 Life Governors, 190 Annual Governors, 634 Life Members, 5359 Annual Members, 20 Honorary Members,—making a total of 6306 Members. Its next Annual County Exhibition will be held at York, in July. The Corporation of that city have raised a subscription of £1000 towards the purposes of the meeting; and the Yorkshire Agricultural Society, so long distinguished for its public spirit and extensive usefulness, have placed £450 in the hands of the Council for the same object. We observe that the Council have offered the usual £50 prize for the best Essay on the Agriculture of each of the three Ridings of the County of York.

It has been for several years the practice of the Railway Companies in England to carry, free of charge, all cattle and implements intended for exhibition, both to and from the Society's Annual Show—an act of enlightened liberality. The Council have unanimously appointed Professor Way to be the consulting Chemist of the Society, in the place of Dr. Lyon Playfair, whose increasing engagements prevent him from devoting to the office that amount of time and attention which he conceives its importance demands. Professor Way is making arrangements for collecting and analyzing the principal agricultural productions of the different geological districts of England and Wales; a task involving an incredible amount of labor, but one which, in the hands of a competent chemist, will throw much light on what are now confessedly dark and unsatisfactory points in the chemistry and practice of agriculture. We select the following concluding remarks in the report: "The Council congratulate the members on the great amount of good conferred by the Society, directly, as well as indirectly, both in pointing out improved modes of culture and management, and in proving in many instances a safeguard against the delusion and error arising from untried theories or unsound practice. The first successful evidence of the value of the Society's operations has been to disseminate whatever has come under its notice as most valuable for adoption, rendering that knowledge of instances of good farming more general, which had been so long confined to particular local districts of the kingdom; and the Council entertain every well-grounded hope, that so long as the Society promotes as it does, the united and friendly energies of the owners and occupiers of land in the common cause of the improvement of the country, its operations will continue equally practical and important, and tend to the mutual interests of such parties themselves, as well as to that of the community at large."

GUANO.—The amount of this substance annually used for manure in Britain, would appear really incredible to many of our Canadian farmers. It has hitherto been chiefly procured from the coasts of Peru and some Islands on the coasts of Africa, and consists mainly of the excrements of sea birds. The following account we condense from a paper read by Professor Low before a recent meeting of the Highland Society of Scotland, from which it would appear that a new source for procuring this highly fertilizing substance is likely to be opened up. The Professor presented three specimens of guano from Malacca and the neighboring Islands. No. 1, consisted of the excrements of the larger frugivorous bats, which frequent in enormous numbers the rocky caverns of the coasts. No. 2, consisted chiefly of the excrements of the smaller bats which feed on insects, and is mixed with the former in the same caverns. No. 3, consisted chiefly of the dung of insectivorous birds, apparently of the smaller kinds. The two last varieties are much esteemed for manure by the natives, but as yet they have not been introduced in any quantity in England. It would appear that these substances have been employed as manure by the Chinese, and other countries that produce them from a very remote period. They are used for any kind of crop, particularly rice

Moved by E. W. Thomson, Esq.,  
Seconded by G. D. Wells, Esq.,  
4. Resolved—That a Committee be appointed to make the necessary preparations and arrangements for the Provincial Exhibition to be held at Cobourg, on the first Tuesday, Wednesday, Thursday, and Friday of October next, and that the President, two Vice Presidents, E. W. Thomson, Esq., Samuel Wilnot and John Robson, Esqrs., of Durham; W. S. Conger and J. Walton, Esqrs., of Colborne; Asa A. Burnham, D. E. Boulton, Thos. Page, and Henry J. Rutan, Esqrs., of Northumberland, be the Committee for that purpose; and that such Committee shall revise the Premium List, procure and arrange the Books of Entries, and generally make all the necessary arrangements for the Exhibition, and from time to time give such instructions to the Secretary of the Association as they shall see fit; and that they have full power to add to their number such gentlemen as, in their judgment, may seem needful. Carried.

Moved by Henry Rutan, Esq.,  
Seconded by E. W. Thomson, Esq.,  
5. Resolved—That Asa A. Burnham, of Cobourg, shall be Treasurer for all the purposes connected with the ensuing season's local business, and that he give such security for the due fulfilment of his Office as the above Committee may demand. Carried.

Moved by E. W. Thomson, Esq.,  
Seconded by H. Rutan, Esq.,  
6. Resolved—That the Secretaries of the District Societies shall be considered by virtue of their office, Assistant Secretaries to the Provincial Association; and the competitors in each District for the Provincial Premiums, shall be directed that all articles intended for competition shall be entered with the Secretary of his or their District or County, together with their Entrance Fees—said lists to be closed at least five days previous to the Annual Exhibition, and forwarded to the Secretary of the Provincial Association. All members exhibiting more than one article for competition, shall for every succeeding one, pay a sum of sevenpence halfpenny into the funds of the Association. Carried.

Moved by Hon. Adam Ferguson,  
Seconded by Henry Rutan, Esq.,  
7. Resolved—That as a copy of the Transactions of the New York State Agricultural Society, consisting of Five Annual Volumes of Proceedings, has been transmitted to the late President of the Association, E. W. Thomson, Esq., by Mr. Johnson, the Recording Secretary, for the use and benefit of the Association, the Committee desire unanimously to record their sense of the kind feeling shown to the Provincial Association by the New York State Society, and that a copy of this resolution be transmitted to Mr. Johnson and further, that the correspondence between Mr. Johnson and E. W. Thomson, Esq., the ex-President of the Association, be published with this day's proceedings. Carried.

[Mr. Johnson's note and Mr. Thomson's reply, which were appended to this resolution, we have omitted, being merely complimentary.]

Moved by Hon. A. Ferguson,  
Seconded by Henry Rutan, Esq.,  
8. Resolved—That the Association has taken into consideration the important subject of our intercourse with the United States, as relates to the reciprocity of duty upon agricultural products, and the Committee is strongly impressed, under present circumstances, of the expediency of leaving the whole matter in the hands of the two Governments, until some result shall be made known. Carried.

Moved by E. W. Thomson, Esq.,  
Seconded by John Robson, Esq.,  
9. Resolved—That the Secretary be authorised to have printed 200 Circulars, containing the Proceedings of this day, and that a copy be forwarded to each of the Editors of Newspapers in Canada West, and also a copy to each of the Presidents and Secretaries of District and County Societies. Carried.

ADAM FERGUSON, President.  
W. G. EDMUNDSON, Secretary.

NEW LAW FOR THE PROMOTION OF AGRICULTURE.—We have given some thought to the defects of the laws at present in force in Upper Canada, for the encouragement of agriculture, and intend to sketch the outlines of a measure which, in our opinion, will be better adapted to secure the accomplishment of the important objects of such a law. We had two or three interviews with some of the leading men in the present Parliament, previous to their going to Montreal. Every encouragement was given that their attention would be directed to the consideration of such a measure, and we were requested to make suggestions and furnish information. We every day see the evils resulting from hasty and ignorant legislation. Will not intelligent farmers in different parts of the country, furnish us with their opinions, either privately or for publication, as to how such a law should be framed? If we desire a good measure, this is the most likely way to obtain it. Let it originate with those who are directly interested in its operation.



## CIVIL AND SOCIAL.

## FINANCE—BANKING.

There is no public institution so little understood by the public as a Bank,—the machinery and operation of which are hid from the public gaze. We are induced, from a consideration of the immense importance of the subject to the public at large, to go into an examination of the machinery, operation and effects upon public prosperity, trade, commerce, and all the industrial affairs of a country, of the present banking system in Canada, under its present management.

We will first answer the inquiry, what is a bank? A bank is an association of individuals, who are protected by a special charter in carrying on the business of lending money, or promises to pay money, to any person into whose hands these promises may fall. Their business partakes of the nature of a monopoly, for no other persons can enter into it without first obtaining a special charter from the legislature. All monopolies are false in principle: favors given to certain classes or individuals, at the expense of the general interests of society. And for this reason, banking should be regulated by a general law, so that every man in the community, by conforming to the required regulations, should have the same facilities afforded him to engage in it, as every other man who has already engaged in it. Care should be taken to give the banker no class privileges, for in all communities the great majority of persons cannot engage in banking from want of the necessary means. Before we have disposed of this subject, we shall see whether, under present circumstances, the banker possesses any undue advantages over the rest of the community. We have defined a bank to be an association of individuals whose principal business is to lend money, or promises to pay money.—

When a banking company is formed, a certain amount of money must be paid in, and this is called the capital of the bank. A bank issues its paper promises in the shape of bills of almost every denomination—these bills form no part of the capital of a bank,—they are its debts, which it is bound to pay in real money, gold, and silver, whenever the holder thinks proper to demand the amount. If it issues more promises than it has specie in its vaults to redeem, its existence hangs on the forbearance of the public. If, for instance, the nominal capital of a bank be £500,000; and it has £100,000 in gold and silver, and the remainder of its capital in the notes of other banks, or something equally unsubstantial, it is evident that it will not, at any one time, be able to redeem more than £100,000 of paper promises. But it will issue a much larger amount of "promises to pay," than it can at any one time redeem, otherwise it might as well loan its real money, the gold and silver which is kept in its vaults. If it did so, the banking company would obtain precisely the amount of interest which a private money lender can legally obtain. But a bank is generally allowed to issue promises to three times the amount of its nominal capital. If (as is never the case,) only one third of this nominal capital be specie, the bank at any time is at liberty to put out nine times as many promises to pay, as it has gold and silver to meet. We may be told that from prudential motives, it does not do so. The answer is that it may do so, and the public is every moment exposed to all the consequences which such a course may involve. But suppose the bank not to issue promises to a greater amount than its nominal capital. If a large portion of this consist of other things than gold and silver, and if some rumour affecting its solvency, cause the holders of those promises to present them for payment, it is evident that a part only of them could be paid.

Looking at our present banking system in the most favourable light, there is no real security that the public will not suffer from the blundering or dishonesty of bankers. Specie or specie and public stocks, convertible into specie any day, can alone form the basis of a system of banking, which affords real security to the public. As an illustration of the undue gains of a banking company, on all their paper promises beyond what they have specie to redeem, we will suppose a case. We do not give it as an actual case, but as a legitimate illustration. There are two farmers in the country, living side by side, each in good circumstances, but neither of them rich. The proceeds of their farms are sufficient to support and edu-

cate their families, but neither of them has the means to enter into any extensive speculation, or to carry out any considerable improvements. One would build a grist mill, and the other would make lawyers of a couple of his sons, if they could borrow some money. They hear that a banking company is about to be formed. One goes to the directors of the new bank, one of whom is his personal friend, and says, "well I want to take some stock in the bank, and as land is to form part of the capital, you can arrange the matter so as to make my farm part of the capital, and I shall get interest on £2000 worth of note issue, that being the value of my farm." The thing is done, and he gets £120 a year for his share of the profits of the bank. And this sum enables him to educate his two sons for a profession. His neighbor wants to borrow £2000, to enable him to build a grist mill. He goes to the bank and borrows their paper promises to the required amount. On this loan he has to pay an annual interest of £120. Before the bank was established he was in precisely the same position as his neighbour. His neighbour contributes no portion of the money capital of the bank, and he contributes none. Yet the first receives £120 a year of the profits, and the latter pays the bank £120 a year for £2000 of their promises, issued on the security of his neighbour's farm! It is absurd to say that both are benefitted. The one whose farm forms part of the capital of the bank, robs his neighbour as completely as if he took a portion of the produce of his labour from the field. Both have cultivated their farms, and received the produce of their labour. The bank man's farm did not yield the less on account of its being held as security by the bank. His real property has been just as productive, and no more so, than if the bank had never been brought into existence. The issue of the bank's paper promises has not caused a single extra blade of wheat to grow, yet the banks farmer has gained £120 a year by the transaction. Now as the banking operation produced nothing, from whom does he get this £120 a year? Unquestionably, it has been paid by the public, amongst whom the notes have circulated, and the borrowers who have paid interest thereon.

It is very true, that land does not in this direct manner form a part of the capital of our banks. But the portion of the assets of the banks, which does not consist of gold and silver, is not of a more tangible or convertible nature than land, and not half so substantial or valuable. What is it that really forms the security in the minds of the public for the company's debts, beyond the specie in their possession? The land and other property of the stockholders, which by the way, is only liable to the amount of their stock, and which they may put out of their hands the moment they apprehend serious difficulty! These observations are merely introductory; we shall pursue the subject.

EMIGRATION TO BRITISH NORTH AMERICA.—There have been just presented to the Houses of Parliament, by command of her Majesty certain papers relative to emigration to the British provinces in North America. They are in continuation of similar official documents laid before the Legislature in February and June, 1847, and extend over a period from the latter month to December.

The Governor General of Canada, in a despatch to Earl Grey, reported on the 29th of October, that an extensive tour through the province enabled him to bear testimony to its steady and satisfactory progress and substantial prosperity; but he added, that the disastrous consequences of the emigration of that year had been severely felt, and he urged on the British Government the necessity of making still further and greater advances to assist in meeting the emergency.

To this suggestion the noble secretary for the Colonies replied that he should reserve for future deliberation, what portion of the expense incurred ought to be borne by the Imperial Treasury, and that if upon a full consideration of all the circumstances of the case, it should appear that the grant already made for this purpose was insufficient, her Majesty's Government would be prepared to apply to Parliament for further assistance; nor did they doubt that Parliament would be ready to vote such an addition to the sum already granted, as might prove to be justly due to the province.

The great bulk of the emigration agents' letters, in the despatches, represent the emigrants, especially from Ireland, as arriving in a state of unparalleled destitution, starvation, and disease. During the quarter ending 30th June, 1847, it appears that 31 vessels arrived at New Brunswick, the number of emigrants male and female, being 4,293, no less than 437 of whom died on board, in quarantine, or at the lazaretto, after landing. There was a considerable increase of emigrants during the quarter ending September, 1847, the total number being 9,976, and the deaths amounting to 179.—*Lon. Globe, Jan. 14.*

## LITERATURE.

## HYMN FOR THE HARVEST HOME OF 1847.

BY THE AUTHOR OF "PROVERBIAL PHILOSOPHY."

O! NATION, Christian nation,  
Lift up the hymn of praise,  
The God of our Salvation  
Is love in all his ways:  
He blessed us, and feedeth  
Every creature of his hand,  
To succour him that needeth  
And to gladden all the land!

Rejoice, ye happy people,  
And peal the changing chime  
From every belfried steeple  
In symphony sublime;  
Let cottage, and let palace  
Be thankful and rejoice  
And woods, and hills and valleys,  
Re-echo the glad voice!

From glen, and plain, and city  
Let gracious incense rise,  
The Lord of life in pity  
Hath heard His creatures' cries;  
And where in fierce oppressing  
Stalked fever, fear, and dearth.  
He pours a triple blessing  
To fill and fatten earth!

Gaze round in deep emotion:  
The rich and ripened grain  
Is like a golden ocean  
Becalmed upon the plain:  
And we, who late were weepers  
Lest judgment should destroy,  
Now sing, because the reapers  
Are come again with joy!

O praise the hand that giveth  
—And giveth evermore,—  
To every soul that liveth  
Abundance flowing o'er!  
For every soul He filleth  
With manna from above,  
And over all distilleth  
The unction of His love.

Then gather, Christians, gather  
To praise with heart and voice  
The good Almighty Father,  
Who biddeth you rejoice:  
For He hath turn'd the sadness  
Of his children into mirth,  
And we will sing with gladness  
The harvest-home of earth!

## CLIMATE OF CANADA.

The subject treated of in the following article is one of great interest to all lovers of science, and indeed to all persons who expect to finish their days in these northern latitudes. That the climate of Canada has undergone considerable and permanent changes, is admitted by all who have lived here long enough to become acquainted with its past and present character. The nature and extent of those changes involve questions of deep and vital interest to the practical agriculturist. It is no vain or needless inquiry, therefore, to attempt by rational investigation to ascertain the cause.

We may observe, that the following is the production of a young friend who has just begun the practice of a profession which requires an acquaintance with the higher branches of mathematics. We asked him one day to write upon some question of science for our Journal. His reply was the same as we have heard a hundred times before, "O I can't write, I never wrote any thing for a publication in my life, and I'm afraid of you editors and critics." We persuaded him to try, and the following is the result. Our readers, we have no doubt will agree with us, that he has shown he can write. We hope to hear from him again. If only a few of our agricultural friends would try, we should see similar results in reference to subjects with which they are acquainted, and would soon be able to make our paper the medium of discussion, where some of the best minds in our country whose talents are at present "hid under a bushel" would find room for display, and thus an incalculable amount of useful informa-

tion might be diffused among the people, and an interest excited on those important subjects, that it will be impossible to create in any other way.

The remark in reference to the statement of Bousingault, is, we think, not warranted in its application to Canada. The clearing away of the forests in southern latitudes may diminish the quantity of rain, or render the atmosphere still more arid, while the same cause in our cold climate might lower the temperature just enough to change the snow into rain:—

[FOR THE AGRICULTURIST.]

The unusual openness and mildness of the season daily descanted on, stimulates us to the enquiry of the peculiar circumstances which produce a temperature in this Province, so different from what it was twenty or thirty years since.

The proximity of Comets to our Globe has been supposed to reflect a sensible degree of heat on its surface, as was the case in 1832. Ten one crossed the place where the earth was a month after, and which event was marked by very warm weather; but such visits are few and far between, and can have no power in producing a permanent change upon the seasons.

The temperature of a country is chiefly affected by the nature of the soil,—the prevailing winds,—the quantity of moisture,—the electrical state of the atmosphere,—the physical character of the adjacent countries and seas—and its elevation above the level of the ocean.

As an instance of a circumstance operating to produce a difference of temperature,—the Eastern counties of England (as some of your readers may have witnessed), suffer from the easterly winds passing over the still chilled and damp surface of Northern Germany, and blight the already advanced vegetation. On the contrary, in autumn the same winds pass over a sandy soil, which during the summer has acquired a considerable degree of heat, and the air thus brought over is warm enough to raise the temperature several degrees.

Baron Humboldt says, that forests exercise a very powerful influence on the physical economy of the earth, being both direct and indirect. The direct influence is the diminution of temperature:—1st. By screening the soil from the heat of the sun's rays. 2nd. By the powerful evaporation of moisture from the leaves—and 3rd. By the immense surface which those same leaves offer to the cooling process of radiation.

Now as large tracts of land have been cleared to the south and west, and the predominant wind in Canada being the S. W., it must in some measure tend to modify our climate: rendering the air drier and warmer in summer, as well as diminishing the temperature in winter. But M. Bousingault, in a memoir presented to the Academy of Sciences at Paris, thinks that the clearing away the forests has a tendency to diminish the quantity of rain, and enumerates several provinces south of Panama, where the soil is covered with forests—as having continual rains; whilst others where the forests have disappeared, rain may be said to be unknown. This is certainly in opposition to the prevailing idea, that there is more moisture in the atmosphere now than formerly. Nor must the greater annual quantity of rain falling, be looked upon as a cause of increase of temperature, but rather an effect: for the power of the atmosphere to hold water in solution, depends on its temperature;—an increase augmenting that power and a decrease diminishing it. If the atmosphere is more loaded with clouds and vapours than formerly, that of itself will have some effect: for both heat and cold are more intense when the sky is clear, than when it is overcast with clouds.

But I presume we must look for causes more remote, as the climate of England has undergone remarkable changes within the last two centuries, where no large tracts of land denuded of forests have conspired to raise the temperature: for upon looking at the chronological tables, we may see that frosts have there been of such intensity, as is entirely unparalleled in modern times. It may not be deemed irrelevant to recant a few of the most memorable instances. A. D., 1684, a great frost for thirteen weeks. A. D., 1716, a great frost, a fair on the Thames. A. D., 1739, a hard frost for nine weeks. A. D., 1762, a great fall of snow for eighteen days together. A. D., 1785, a great frost for sixteen weeks.

An opinion has prevailed, that at the expiration of a lunar cycle (a period of nineteen years, when the new and full moons fall on the same day of the month, as they did at the beginning of the period), that we have a recurrence of weather in the same order from the commencement—but this belief can receive but a feeble support; for although seasons distinguished by more or less, than the usual quantity of rain have been observed to return at certain intervals in England, frosts of any protracted duration and intensity have not been experienced there, within a far greater period than a lunar cycle.

To what great cause then are we to ascribe the amelioration of not only the temperature of this continent, but that of Europe also? There are a parity of results, without a similarity of causes:—therefore, we may infer that one prime mover induces both! Between the magnetism and temperature of the earth, there appears to be an intimate connection: and as the needle is presumed to adapt itself at right angles to a current of electricity passing round the earth, any displacement of the magnetic axis would be followed by a corresponding



deviation in temperature—and abundant evidence is not wanting to justify us in the belief that a gradual displacement of the axis of our globe has been, and still is in operation.

It was a religious practice to lay the foundations of our churches in strict accordance with the cardinal points—but there is now no longer a perfect coincidence in that respect, as they all deviate more or less from those points, proportionate to the date of the structure. Dials which have been found in the entombed cities of Herculaneum and Pompeii, will not now answer to the latitude of those places. The remains of gigantic animals exhumed from the shores of the Arctic Ocean—with the stately and luxuriant vegetation which once unquestionably displayed itself on the now cold and inhospitable region of Melville Island and Baffin's Bay, at once show the mutability of temperature and climate which takes place on the surface of our globe.

F. F. P.

### INVASION OF ENGLAND!

It is at present a question of considerable interest and discussion with the people of England, whether their military defences are in such a state as to make it quite certain that no attempt will be made by their "old and natural enemy," the French, to invade their country. Louis Philippe is getting old, and is now rather seriously ill. It is said that the recent death of his sister had a striking effect upon his health; and so well is the nature of his mind and constitution understood by the dealers in money and stocks, that the price of the latter fell immediately that her death became known. No one doubts that some great changes will take place in the government and policy of the French nation, whenever the present king shall cease to occupy the throne. The old Duke of Wellington is urging on the British Government the necessity of strengthening the national defences. Some writers regard the caution as only fit to be laughed at—as the foolish apprehensions of military dotage. Others seem disposed to treat the matter more seriously—to think it no impossible whim of their mercurial neighbors, now that they have conquered Algeria, and caged the redoubtable Abdel Kader, to steam across the channel some fine morning, and try their luck with the British lion. It is perhaps well enough to be prepared for such an event, but young though we be, we have no expectation of living to see it or to hear of it. We have met in the course of our reading, with the following highly-seasoned paragraph on the "other side of the subject." It is from a late work, entitled "The Land we live in," by Chas. Knight:

THE RAIL AS A MEANS OF DEFENCE.—The news of the abdication of James II. was three months reaching the Orkneys. How soon would the rail, the coach, and the steam-ship tell the bold descendants of the sea-king to gird on their swords, if a foreign foe should dare to plant his foot on British soil. Invasion! It is a joke. Invasion! Open the map of England, and show the spot from the North Foreland to the Land's End, where the army of 100,000 men could not be gathered in twenty-four hours. Look, especially, at the most accessible coast, where Cæsar landed his legions and Horsa his rabble. How many hours would it require to empty the arsenals of Woolwich upon Southampton, or Brighton, or Hastings, or Folkestone, with a coast line uninterruptedly communicating with London as a common centre? No, no. "The Land we live in," said,— "Come if you dare," in the days before steam had remodelled its communications. The first pulsation of the electro-telegraph that proclaimed an hostile fleet in the Channel, would have an answering movement from the Admiralty that would make the island throb to its remotest extremities. Invade a country that could collect the sturdy of its population upon any given point within eight-and-forty hours, and provide them with all the materials of war in half the same time! The thing is too ludicrous! The colliers of Northumberland could be whirled from the north to the south by the fuel that their sturdy hands have brought to the surface; and they alone would be a host to sweep the aggressor from our earth.

### THE BRIDGE AT THE FALLS OF NIAGARA.

I have been intensely interested today in listening to a description, from a well informed and competent source, of the great bridge over the gorge that separates the dominions of the Queen from those of the President. If anything could be wanting in the attraction of the country about Niagara to turn thither the tour of the multitudes in the pleasure season, this bridge will supply it. Its thousands of tons weight of the strongest iron cord that the ingenuity of the iron-master can devise, find a safe support in wrought iron anchors built in the solid rock, one hundred feet below the surface, so that before it could yield, the very rock-bound earth would forsake its tenacity. A large wooden frame-work is to be placed so that no undulating motion can be experienced. In full sight of the cataract, the surge of angry waters far beneath, the sullen storm-beaten rocks all around, the quick

locomotive will put forth all its quickness to rush beyond the peril of its journey. This glorious work is already begun, the money for its cost paid in and available, the excavations commenced, and the contractor is to pass on horseback by the middle of next June. Its firmness is to be such too, that with all the burden of a powerful locomotive and a long attendant train of cars, it is not to vibrate one inch in the centre. The railway is to occupy the centre, two carriage-ways on either side, and two footways. What a magnificent spectacle this road in full use will present! A road of this kind over the Menai Straits, in Wales, is famous for the daring display in its construction. That over the Niagara will soon be world-famed. It will be an iron link of civilisation between the ruling powers of the world, and will never be severed.

One of the first thoughts that presents itself in reference to the construction, is, as to how the wires are to be thrown across. The steamboat now used below the Falls is to take over two cables, to which strands of iron are affixed. These are to be drawn over till two ropes of iron are drawn over, on which a temporary pathway is to be placed; and when I enquire where workmen could be found that had nerve enough to work effectually under such circumstances—the answer, so characteristic of American strength of action, was—"Oh, there are always plenty of Yankees who have both the courage to work there, and the ingenuity to work well."

The great railway in Canada, which is to connect with this mighty work, presents some admirable features. Its grade is over twenty feet, and a very large proportion of the distance is on a straight line. On one line, perfectly straight, ninety miles are laid out. All the high-ways of the country are to pass either over or under the road, by depression or elevation, as to be entirely removed, so that there will neither be obstacle nor hindrance to a flight which will put more life into the provincial dominions of her Britannic Majesty than it has yet seen. England expends millions on sections of her great railway far less worthy of her notice and fostering care.

"The last link" is completed when this great bridge of the cataract shall have been completed. From Boston and from New York an unbroken line is presented, and the day is coming when some correspondent of yours will delineate the incidents of a thirty hours' journey from the metropolis to Detroit. Such are the movements and the progresses in support of which all may unite, and which mark our busy day.—*N. Y. Courier.*

### INCIDENTS OF EVERY-DAY LIFE IN INDIA.

My wife and I were sitting, after tea, playing at backgammon, and enjoying the cool breeze that came through the open venetians, when suddenly it began to rain. In an instant the room swarmed with insects of all sorts. There was a beautiful large green mantis; and as we were watching his almost human motions, a grasshopper and a large brown cricket flew against my face, while a great cockroach, full three inches long, came on my wife's neck, and began humming about her head and face, and dress; the flying ant, which emits a most nauseous effluvia; and the flying bug, black, and about the size of an English one, which, if you crush him, will make your fingers smell most dreadfully for many hours; with these our clothes were covered, and we were obliged to keep brushing them away from our faces, but with very gentle handling; and then come two or three hornets, which sent Mrs. Acland to bed to get under the musquito curtains, where none of these horrid creatures can get to her. I sat up trying to read, but buzz came a musquito on the side of my face, up went my hand a tremendous clap on the cheek to kill the tormentor, and buzz he went on again. Then I felt something big burying itself in my hair, and then come buzz on the other side, and then all round. Presently, with a loud hum, a great rhinoceros beetle dashed into my face. I now began to take some of the animals out of my hair; and the first that I touched was a flying bug; the stench was dreadful. I rushed out of the room, brushing the horrible creatures from my hair with both hands. I nearly fell over a toad, on which I trod, and reached my bed-room to find eighteen or twenty great toads, crouching in different parts of the room, and five large bats whirling round and round the bed. Having washed my hands in eau-de-Cologne, I quickly undressed and fell asleep. In the course of the night a troop of jackalls surrounded the house, and by their frightful yells soon drove away all sea of rest; and then about four o'clock, as we were just dozing off again, comes the roll of the drum and the loud voice of the trumpet, the tramp of the soldiers, the firing and all the bustle of the parade; and as soon as that is over comes the changing guard, and the "shoulder harrms" and the, "quick march," near our house, and so we got up. Then comes the bath, the greatest luxury of the day (the water just cooler than the air), into which I get with a book, lie there an hour reading, get up, and partly dress, and then admit my man to wash my feet in the cold water, and to shampoo me and brush my hair, whilst another brings me a cup of delicious coffee, or a glass of sherbet; and then breakfast, with an enormous fan swinging to and fro over our heads; and then the heat and the discomfort, and the languor till five o'clock, agreeably diversified only by a bottle of beer cooled with saltpetre and water; and then a drive, and tea, and musquitoes again, and so on.—*Popular Account of the Manners and Customs of India.*

## EDITOR'S TABLE.

## TO CORRESPONDENTS.

- N. M. H., Hamilton. Yours of the 23d received. The persons mentioned as not having got the paper, must blame you, not us.—Their names (except one,) were not on your list. We should like you to inform us, as soon as possible, where a letter will reach you. We have something important to say.
- G. W., Zone Mills. Your request attended to.
- S. B., Etobicoke. Subscription received.
- B. F., Niagara. Your name was never sent us by any agent. We have received a list from an agent who has been in your vicinity, but yours is not among them. We have sent the paper, but will you be good enough to let us know the name of the agent who took your subscription, if in your power to do so?
- M. W., Buffalo. Your kind offer is accepted. We believe there are four of your office, who, according to our agent's instructions, were to have paid a month since. We will give you their names soon.
- W. F., Smithville. If you consent to become our agent for your locality, you may retain a third. Mr. H. was out of his district, and therefore had no authority to make agreements with local agents. We have struck the disaffected from our list. In case of irregularity or difficulty of any kind, we shall be glad to hear from you. The money sent by Mr. G. was received.
- D. B. S., Picton. Cash received.
- G. T., Nelson. You get the present work for the year, for the subscription paid.

YOUNG LADIES' ACADEMY.—We beg to direct attention to the advertisement of J. Hurlburt, A. M., in our present number.

MASTERS.—Mr. G. Brown, P. M., at Owen's Sound, has thought proper to show us his knowledge of the law, as well as a little taste of his authority, by sending us a letter to the tune of 9d. postage, containing his instructions as to how we must do up papers sent to his office. The package to Owen's Sound contains upwards of a dozen papers, all of which are inclosed in one wrapper, with the name of each subscriber written on the margin of his paper with a red pencil. The P. Master opens the package before he can give out a single paper, and must therefore see every one inside and out, if he choose. But this sapient official quotes against this practice, the P. O. Law which requires papers to be put up in wrappers in such a manner, that he may withdraw them to see that no written correspondence, &c. is contained within; we have spoken to Mr. Berczy, who informs us, that when the package is addressed to the P. Office, our mode is perfectly correct, as common sense must tell every one. It would double the labour and expense of mailing, were it necessary to put a wrapper about each paper, which with an edition such as ours, would be no small matter. Mr. George Brown is the first to make this absurd objection, although the practice has been followed for years.

If any difficulty occurs at the Owen's Sound Office, our subscribers there will please let us know, and we will soon find a way to solve it.

MONEY TO TOWNSHIP AGRICULTURAL SOCIETIES.—A letter has been handed us by Mr. Edmundson, Secretary of the Provincial Agricultural Association, from the Secretary of the newly formed Dumfries Agricultural Society, requesting to be instructed as to the steps necessary to be taken by their Society, in order to procure a share of the Government grant. We believe Mr. Edmundson has replied in writing; but it may not be amiss to notice the subject in our Journal. The law under which such Societies are formed, and by the authority of which public money is granted, is very imperfect and vague. It is quite likely that before another year we shall have a new and more complete law on the subject. At present, when the Agricultural Societies of a District subscribe £25 and upwards, the President of the District Society is entitled to draw three times the amount raised, provided the whole sum drawn does not exceed £250. By the 2nd section, the grant "shall and may" be divided among the Township Societies in proportion to the money each of them "shall have subscribed."

To put itself in a position to claim its share, the Township Society's Treasurer must, on or before the first September, pay over the amount subscribed to the Treasurer of the District Society. This is required by the 6th section. Then comes the 8th section, which says, that "If the Treasurer of any Township Society shall, on or

before the first of July," pay the money to the District Treasurer, he shall receive the "same again" with the proportion of the Legislative grant when the latter shall be received; what the two different periods of payment are meant for, it is difficult to conceive. But as July is "before" September—if the Township Treasurer pays in his money before first July, he can demand his share, and the District Society cannot refuse it. But if he let that day slip, as the last of two clauses or sections which are inconsistent or contradictory in an Act of Parliament prevails, the District Treasurer may say he has not complied with the law, and refuse (as has been done) the Township Society its share.

IMPERIAL DICTIONARY.—Of the numerous Dictionaries that have been published since the days of Johnson, the Imperial Dictionary is incomparably the best, if we may judge of the whole by the first eight numbers which have reached this country. It is published by Blackie & Son, of Glasgow. This fact is sufficient to establish its superiority in paper, printing, and mechanical execution, over any thing that can be produced on this continent. As to the talent and ability of the Editor and the success of his efforts so far as they have gone, there is no lack of testimonials from the chief scholars, literary men and public Journals of Scotland. It appears to be the object of the compiler of this work to make it answer all the purposes for which a dictionary is needed. Webster's large dictionary has been admitted to be the best extant, even in England. The Imperial, contains all that is found in Webster, with several very important additions and improvements. It contains all words purely English, with the principal French and scientific terms. The latter feature makes the work invaluable. Another feature which is altogether peculiar to this dictionary, is the great variety of wood-cut illustrations which it contains of subjects that could not be accurately described by words. The work is issued in numbers at 2s. 6d. sterling each, to be completed in twenty-four numbers. Mr. Thomas McClear, Bookseller, Toronto, Agent.

## Legal Queries.

## INTERPRETATION OF THE COMMON SCHOOL ACT.

W. A. S. QUESTION.—"A parent sent three children to school for a few days, when they were taken sick, and went no more for the quarter. The teacher made out his bill for two-thirds of a quarter for each of the three, by virtue of this clause of the 27th sec. Common School Act: 'Provided that every person sending a child or children to any Common School, shall be rated for a period of not less than two-thirds of the current quarter.' The parent contends that it is the person who is to be rated at not less than two-thirds of a quarter for one child, and that it does not mean for each and every child; for if so, a parent could not make up the deficiency of one child, or get the worth of his money by sending another, as under the former Act."

The difficulty to which you refer, and upon which you ask our opinion, is one of easy solution. It is, however, easy to see, that a person capable of understanding tolerably plain English, might, with the whole clause of the Act before him, come to anything but a satisfactory conclusion. The duties of trustees are in the 6th clause declared to be "to prepare and determine a rate-bill quarterly, containing the name of every person liable to pay for the instruction of children sent by him to such schools, and the amount for which he is liable," and to "collect from every person named in such rate-bill the amount therein charged against him." Now, the Act nowhere defines who shall be "liable," nor the extent of liability, further than the suggestive or inferential definition of the above clause. The Trustees are therefore left to "determine" those points. The only thing required to bring a "person" within the scope of their authority is, that there shall be "children sent by him." Instead of contending that a person sending two or more children can, under any circumstances, claim to be rated for one only, it would be much easier to argue that the trustees have no authority to place the name of a person sending but one child, on the rate bill! The plural "children," and that only being used. But we must construe the language of an Act of Parliament with reference to the context.

The proviso you have quoted, qualifies the power previously given to trustees, not as to the person, number of children, or the like, but only as to the time for which persons shall be rated. We spoke to the Superintendent, as you seemed to desire, and found his opinion against the view taken by the parent. We may remark, that it is not the teacher who has the making out of the rate bill, therefore there was no occasion for dispute between "him and the parent."—He deals with the trustees, and they with the parents. The law evidently operates a hardship in such cases as yours, unless the trustees use their discretion (which we think they may) in making up the rate bill, so as to meet the case. The Superintendent mentions a remedy under a previous clause, but as we differ from him as to the construction of the Act, we will take up the question in our next, having no further room at present.

## THE LADIES.

## HOME.

Is there a place that can impart  
 Blest visions from the aching heart?  
 Is there a place whose image dear  
 Can soothe our grief, dispel our fear?  
 That place is home.

The exile in far distant climes,  
 Oft, oft remembers by-gone times,  
 And o'er whatever land he roves,  
 Remembers still the land he loves—  
 Remembers home.

Whatever hardships be our lot,  
 Still home's the treasure of the heart;  
 Whatever can our bosoms cheer,  
 Whatever we regard as dear,  
 Is found in home.

## THE SUMMER TEMPEST.

BY J. D. PRENTICE.

I was never a man of feeble courage. There are few scenes, either of human or elemental strife, upon which I have not looked with a brow of daring. I have stood in the front of the battle, when swords were gleaming and circling around me like fiery serpents of the air—I have set on the mountain pinnacle, when the whirlwind was rending its oaks from their rocky cliffs and scattering them piece-meal to the clouds. I have seen these things with a swelling soul, that knew not, that recked not danger—but there is something in the thunder's voice that makes me tremble like a child. I have tried to overcome this unmanly weakness—I have called pride to my aid—I have sought for moral courage in the lessons of philosophy—but it avails me nothing—at the first low moaning of the distant cloud, my heart shrinks, quavers, gasps, and dies within me.

My involuntary dread of thunder had its origin in an incident that occurred when I was a boy of ten years. I had a little cousin—a girl of the same age as myself, who had been the constant companion of my childhood. Strange, that after the lapse of so many years, that countenance should be so familiar to me. I can see the bright, young creature—her large eyes flashing like a beautiful gem, her free locks streaming as in joy upon the rising gale, and her cheek glowing, like a ruby through a wreath of transparent snow. Her voice had the melody and joyousness of a bird's, and when she bounded the wooded hill or the fresh green valley, shouting a glad answer to every voice of nature, and clasping her little hands in the very ecstacy of young existence, she looked as if breaking away like a freed nightingale from the earth, and going off where all things are beautiful and happy like her.

It was a morning in the middle of August. The little girl had been passing some days at my father's house, and she was now to return home. Her path lay across the fields, and I gladly became the companion of her walk. I never knew a summer morning more beautiful and still. Only one little cloud was visible, and that seemed as pure, and white, and peaceful, as if it had been the incense smoke of some burning censor of the skies. The leaves hung silent in the woods, the waters in the bay had forgotten their undulations, the flowers were bending their heads as if dreaming of the rainbow and dew, and the whole atmosphere was of such a soft and luxurious sweetness, that it seemed a cloud of roses, scattered down by the hands of Peri, from the far-off gardens of Paradise. The green earth and the blue sea lay abroad in their boundlessness, and the peaceful sky bent over and blest them. The little creature at my side was in a delirium of happiness, and her clear, sweet voice came ringing upon the air, as often as she heard the tones of a favorite bird, or found some strange or lovely flower in her frolic wanderings. The unbroken and almost supernatural tranquility of the day continued until nearly noon. Then for the first time the indications of an approaching tempest were manifest.

Over the summit of a mountain at the distance of about a mile, the folds of a dark cloud became suddenly visible, and, at the same instant, a hollow roar came down upon the winds, as if it had been the sound of waves in a rocky cavern. The cloud rolled out like a banner-fold upon the air, but still the atmosphere was as calm, and the leaves as motionless as before, and there was not even a quiver upon the sleeping waters, to tell of the coming hurricane.

To escape the tempest was impossible. As the only resort, we fled to an oak, that stood at the foot of a tall and rugged precipice.—Here we remained, and gazed almost breathlessly upon the clouds, marshaling themselves like bloody giants in the sky. The thunder was not frequent, but every burst was so fearful, that the young creature who stood by me shut her eyes convulsively, clung with desperate strength to my arm, and shrieked as if her heart would break. A few minutes and the storm was upon us. During the height of its fury, the little girl bled her finger towards the precipice that towered above

us. I looked up and an amethystine flame was quivering upon its grey peaks! and the next moment, the clouds opened, the rocks tottered to their foundations, a roar like the groan of a universe filled the air, and I felt myself blinded and thrown, I knew not whither. How long I remained insensible I cannot tell; but when consciousness returned, the violence of the tempest was abating, the roar of the winds dying in the tree tops, and the deep tones of the cloud coming in fainter murmurs from the Eastern hills.

I rose and looked tremblingly and almost deliriously around. She was there—the dear idol of my infant love, stretched out on the wet green earth. After a moment of irresolution, I went up and looked upon her. The handkerchief upon her neck was slightly rent, and a single dark spot upon her bosom told where the pathway of her death had been.—At first I clasped her to my breast with a cry of agony, and then laid her down and gazed upon her face, almost with a feeling of calmness. Her bright, dishevelled ringlets clustered sweetly around her brow, the look of terror had faded from her lips, and infant smiles were pictured beautifully there; the red rose-tinge upon her cheek was lovely as in life, and as I pressed it to my own, the fountain of tears was opened, and I wept as if my heart were waters. I have but a dim recollection of what followed—I only know that I remained weeping and motionless till the coming of twilight, and that I was then taken tenderly by the hand and led away where I saw the countenance of parents and sisters.

Many years have gone by on the wings of light and shadow, but the scenes I have portrayed still come over me, at times, with a terrible distinctness. The oak yet stands at the base of the precipice, but its limbs are black and dead, and the hollow trunk, looking upwards to the sky, as if "calling upon the clouds for drink," is an emblem of rapid and noiseless decay. A year ago I visited the spot, and the thoughts of by-gone years came mournfully back to me—thoughts of the little innocent being who fell by my side, like some beautiful tree of spring rent up by the whirlwind in the midst of its blossoming. But I remembered—and oh! there was joy in the memory!—that she had gone where no lightning's slumber in the folds of the rainbow cloud, and where the sunlight waters are broken only by the storm-breath of Omnipotence.

My readers will understand why I shrink in terror from the thunder. Even the consciousness of security is no relief to me—my fears have assumed the nature of an instinct, and seem indeed a part of my existence.

DR. CHAMBERS' OPINION OF MARRIAGE WITH A DECEASED WIFE'S SISTER.—In commenting on Leviticus, xviii. 11, 18, in his "Daily Scripture Reading," Dr. Chambers says:—"It is remarkable that while there is an express interdict on the marriage of a man with his brother's wife, there is no such prohibition against his marriage with his wife's sister. In verse 18, the prohibition is only against marrying a wife's sister during the life of the first wife, which of itself implies a liberty to marry the sister after her death, besides implying a connivance at polygamy."

Secrets are so seldom kept, that it may be with some reason doubted, whether the quality of retention be so generally bestowed; and whether a secret has not some subtle volatility by which it escapes imperceptibly, at the smallest vent; or some power of fermentation, by which it expands itself, so as to burst the heart that will not give it way. What is mine, even to my life, is her's I love; but the secret of my friend is not mine.

MINOR MORALS FOR MARRIED PEOPLE.—"The last word" is the most dangerous of infernal machines. Husband and wife should no more fight to get it than they would struggle for the possession of a lighted bombshell.

Keep an Epicurean in your dining room, to read while waiting for the completion of your wife's toilet.

Married people should study each other's weak points, as skaters look out for the weak parts of the ice, in order to keep off them.

Ladies who marry for love should remember that the union of angels with women has been forbidden since the flood.

MATRIMONIAL ADVERTISER.—A story was told me, with an assurance that it was literally true of a gentleman, who being in want of a wife, advertised for one, and at the place and time appointed, was met by a lady. Their stations in life entitled them to be so called, and the gentleman, as well as the lady, was in earnest. He, however, unluckily seemed to be of the same opinion as King Pedro was with regard to his wife, Queen Mary of Arragon, that she was not so handsome as she might be good, so the meeting ended in their mutual disappointment. Cælebs advertised a second time, appointing a different square for the place of meeting, and varying the words of the advertisement. He met the same lady—they recognised each other—could not choose but smile at the recognition, and, perhaps, neither of them could choose but sigh. You will anticipate the event. The persevering bachelor tried his lot a third time in the newspapers, and at the third place of appointment, he met the equally persevering spinster. At this meeting neither could help laughing. They began to converse in good humour, and the conversation became so agreeable on both sides, and the circumstances appeared so remarkable, that this third interview led to a marriage, which proved a happy one.—*The Doctor, by Southey.*

## SCIENCE AND MECHANICS.

In a late number of the *Agriculturist*, there appeared a short paper on case hardening, in which, however, the true theory of the process was by no means fully explained; as the tempering of various instruments is a matter of almost every day occurrence, it may perhaps be interesting to some of the readers of the Journal to obtain a definite idea, with regard to the cause of the different degrees of hardness in the various sorts of iron.

Metallic iron as obtained by the melting of the ores is never pure, but is always mixed with variable quantities of charcoal or carbon, but this substance is contained in the iron in two forms, either mechanically mixed, or in what the chemists call a "state of combination." The difference between these two states is, that in a mechanical mixture we can see the separate portions of iron and charcoal, while the chemical compound seems even upon the closest examination, to be a perfectly uniform mass.

When the iron is thus chemically combined with the charcoal, it produces what is called white cast iron, which consists of about 95 lbs. of iron to five of charcoal, when this latter substance is only mechanically diffused through the metal, it forms gray iron—the latter is always formed when the fused metal is allowed to cool slowly, the former is produced by rapid cooling, as for instance, by throwing the hot metal into water.

White cast iron is exceedingly hard and brittle, while the gray iron is soft and tough. If the former be fused and cooled slowly, it is converted into the latter and loses its hardness, the reason being apparently, that during the slow cooling the particles of charcoal have time to unite together and separate themselves from the iron, which they cannot do if the whole mass is suddenly brought to a low temperature. There can be little doubt that gray iron contains a small quantity of the hard white iron, but by far the greater portion has been decomposed or resolved into pure iron and charcoal.

Steel is nothing more than a compound of iron with charcoal, but the quantity of this substance does not amount to two per cent., while bar iron contains only one-half per cent. If bar iron has been slowly cooled, we may suppose it to be a mixture of pure iron with a very little gray iron, if cooled rapidly of pure iron with a little white iron.

If therefore, any instrument has been made of bar iron and has been cooled rapidly, it will be brittle from the formation of white iron, and in order to give it the toughness requisite for many purposes, we must heat it again and allow it to cool slowly.

Exactly the same is the case with steel, which as above mentioned, contains only about two per cent. of charcoal; during the various processes for forming any steel instruments, the metal of course cools slowly and is quite soft, it is then heated again and cooled rapidly by means of water, it then becomes hard and brittle, but by heating this again to a certain extent and cooling slowly, we can give it any degree of hardness we please. If we heat a piece of steel we shall find it will assume a pale yellow colour, if we then allow it to cool it will be fitted for the manufacture of lancets and razors; if we heat it still further, it becomes brown, and is then fitted for making chisels; applying the heat still further, it acquires purple spots when it is fit for axes, and on continuing the process it becomes light blue, blue and dark blue, when it is used respectively for swords, watch springs, awls and saws.

These different changes of colour take place at certain fixed temperatures, and as it has been found difficult to judge of the exact heat acquired by the metal, a much better and safer plan has been adopted, viz.: a bath of mercury is used, this can be heated exactly to any temperature we please, which we can observe by a thermometer, and on dipping a steel instrument into it, and then allowing it to cool slowly, we can always give to it the exact degree of temper that we desire.

H. C.

## ETHER SUPERSEDED.

This is pre-eminently an age of discovery. At least four or five have been made within the last two or three years, any one of which

would alone be sufficient to rescue the year of its birth from oblivion—to make it the commencement of an era. One of these, and by no means the least important is the discovery of sulphuric ether, by the inhalation of which an insensibility to pain is produced, so that teeth may be extracted, limbs amputated, and various horrible surgical operations performed without suffering, and almost without the knowledge of the patient. But there were some instances in which the ether was attended with danger, and others in which it produced a contrary effect to the one desired. Another, and far more effective anaesthetic (a word, signifying loss of the sense of feeling,) agent has lately been discovered. It is called chloroform. We observe that Dr. Holmes, of Montreal, has used it with entire success. It has also been used in this city (Toronto) with the expected results. We must state, however, that in one of our last English exchange papers we are told, that a student in the Dublin Hospital was thrown into convulsions by taking it. It would thus appear that there are certain constitutions or conditions of the constitution under which it would be dangerous to administer even this substance. The following is from an English paper:—

Its advantages over ether are so varied and palpable that the latter may be considered as already superseded. "It is a dense limpid colorless liquid, readily evaporating, and possessing an agreeable, fragrant, fruit-like odour, and a saccharine pleasant taste." As an inhaled and anaesthetic agent, it possesses over sulphuric ether the following advantages:—1st, A much less quantity will produce the same effect. 2nd, A more rapid, complete, and generally more persistent action, with less preliminary excitement and tendency to exhilaration and talking. 3rd, The inhalation is far more agreeable and pleasant than that of ether. 4th, As a smaller quantity is used, the application is less expensive, which becomes an important consideration if brought into general use. 5th, Its perfume is not unpleasant, but the reverse, and more evanescent. 6th and 7th, No particular instrument or inhaler is necessary; it is quite portable, and all that is required is to diffuse a little of the liquid upon a hollow-shaped sponge, or even the pocket handkerchief, and apply the same over the mouth and nostrils, so as to be fully inhaled. Professor Simpson has, since his discovery, applied it frequently to obstetric practice, and with entire success; but it has last week been applied for the first time by Professor Miller and Doctor Duncan to surgical operations.

The following case occurred on the 12th inst. to Mr Miller in private practice. The notes of it and the subsequent remark are in his own words:—

"A young lady wished to have a tumour (encysted) dissected out from beneath the angle of the jaw. The chloroform was used in small quantity, sprinkled upon a common operation sponge. In considerably less than a minute she was sound asleep, sitting in a chair with her eyes shut, and with her ordinary expression of countenance. The tumor was extirpated and a stitch inserted, without any pain having been either shown or felt. Her sensations throughout, as she subsequently stated, had been of the most pleasing nature; and her manageableness during the operation was as perfect as if she had been a wax doll or a clay figure. No sickness, vomiting, headache, salivation, uneasiness in the chest, in any of the cases. Once or twice a tickling cough took place in the first breathings."

Several other cases are given with similar results.

A NEW FOUR-HORSE POWER ENGINE IN A HAT-BOX.—Mr. Elijah Galloway has patented what has hitherto been esteemed more as a philosopher's stone of steam power than a practicable invention. It is said to be so wondrously portable as not to weigh more than two or three cwt. and not occupy more than half the space of an ordinary hat-box. A steam-pipe from the boiler brings the steam into a little receptacle; an eccentric crank is turned by the rotary motion within it; and here is all the machinery said to be necessary to propel the largest engines, whether mining, marine, or locomotive. The Admiralty are said to have ordered an estimate for supplying the Minx with a fifty-horse power one. They could not do better, we think, than name such a whirling machine the Minx itself, and provide it with the all sufficient accommodation of a band-box.—*Builder*.

COMPOSITION BUILDINGS.—A friend informs us, that being in Southport, Wisconsin, a few days since, he observed a church in progress of building by the following mode:—A composition of sixteen parts gravel from the lake shore, and one part lime—the latter being slacked upon the gravel and mixed directly with it. Two planks were placed edgewise eight or twelve inches apart, and the space between filled to the depth of eight inches. This was suffered to stand till the next day, when it was sufficiently hardened to raise the planks and repeat the process. The walls were thus raised eight inches per day, and were as solid as stone. He informs us that he saw a brewery in the same town, which has stood two years, and which is in no way changed from its original firmness.—*Practic Farmer*.

## THE TORONTO MARKETS.

Very slight changes have taken place in the markets of this city since our last issue—wheat of the very best sample commands only 3s. 10d. per bushel, and the average may be rated at 3s. 8d. Flour in bags brings pretty readily 20s. per barrel, and those who hold large lots of the best brands, for exportation, ask from 21s. 3d. to 22s. per barrel, and at that price are not anxious to make sales. A few large English agricultural produce dealers, have recently sent their agents to this country, with a view of purchasing for early spring exportation, but owing to the unsettled state of the trade between this colony and the United States, and the anticipated changes in our navigation laws, buyers for exportation are not disposed to buy freely, and it is probable this state of things will exist until the opening of the St. Lawrence.

Oats are becoming very scarce, and the prevailing opinion is, that the markets will be poorly supplied with that article for some time to come, and therefore much higher prices will be paid than quoted in this day's impression. Timothy and Clover Seeds are much enquired after, but the highest price yet paid is 5s. 7½d. for the former, and 25s. per bushel for the latter. Cheese of good quality brings readily from £2 3s. to £2 10s. per 100 lbs, and but very little is brought to market by our farmers.

## Provincial Parliament.

Feb. 25.—ELECTION OF SPEAKER.—The House met at half-past three o'clock, P. M., for choice of a Speaker.

Sir Allan McNab was proposed by Hon. W. Caley, and seconded by Colonel Prince.

House divided.—Yeas 19, Nays 54.

DIVISION.—YEAS, Badgley, Boulton (W. H.), Carrol, Cameron (J. H.), Cayley, Chrysler, Daly, McDonald (J. A.), Malloch, Meyers, McLean, Prince, Robinson, Seymour, Sherwood (G.), Sherwood (H.), Smith (H.), Stevenson, Webster.—19.

NAVS.—Armstrong, Aylwin, Baldwin, Baubien, Bell, Boulton (H. J.), Boutillier, Brookes, Burritt, Cauchon, Chabet, Chauveau, Christie, Davignon, Duchesnay, Dumas, Egan, Flint, Fortier, Fournier, Fourquin, Gagy, Guillet, Hail, Holmes, Jobin, Johnson, Lafontaine, Laterriere, Laurin, Lemieux, Leslie, Lyon, McDonald (J. S.), Marquis, McConnell, Macfarland, Merritt, Morrison, Nelson, Notman, Papineau, Price, Richards, Sauvageau, Scott, (J.), Scott, (W. H.), Smith, (Jas.), Smith, (Dr.), Tache, Thompson, Watts, Wettenhall.—54.

Hon. A. N. Morin was proposed by Hon. R. Baldwin, seconded by Hon. L. H. Lafontaine, and unanimously elected.

The House subsequently adjourned till 2 o'clock on Monday next.—Globe.

DEATH OF J. QUINCY ADAMS.—We deeply regret to announce the death of this most excellent man—the greatest Statesman of the neighboring Republic. His loss will be severely felt, and his death very deeply lamented.

EARTHQUAKE.—A considerable shock of an earthquake was felt in different parts of Nova Scotia, on Tuesday morning the 1st inst., a little before 8 o'clock. In some places the ice on the lakes was shivered into fragments, and many people were startled by a sudden roaring and disturbance of the earth.

DISSOLUTION OF A DISTRICT COUNCIL.—The District Council of the Dalhousie District has been dissolved by its own act—or rather a majority of the Council have resolved to petition the Governor General for a dissolution. "in order that the sentiments of their constituents may be considered on the Common School Act."

A General Manufacturing Law has been passed by the State of New York without the personal liability clause.

Buffalo, it appears by a census, contains 40,520 inhabitants—having gained nearly 10,000 during the last year.

A Canadian Society has been formed in Kingston.

PORT HOPE, Feb. 19.—Our farmers are taking advantage of the excellent state of the roads in bringing in their wheat. We understand that such is the quantity supplied to the buyers within the last few days, that nearly all the storage is fast becoming blocked up.—price is 3s. 9d. to 4s. 1d. per bushel.—Com. Advertiser.

PORT HOPE HARBOUR.—The committee appointed at a public meeting to memorialise the Provincial Government respecting the Port Hope Harbour, have performed their duty; already 1400 names are attached to it, and we understand it is being numerously signed in Hamilton, Toronto, Peterborough, and the intermediate country. The province requires a harbor of refuge, and all hands acknowledge that no spot can be found so suitable as Port Hope.—Ib.

The Hamilton Sentinel mentions the discovery of two persons dead in a house in that town, under such circumstances as to leave no doubt that intemperance was the cause of death.

There are at the present time several cases of small pox in this city. Families afflicted with this contagious disease, should carefully avoid intercourse with their neighbors until they are fully recovered. We would also respectfully advise our country friends to be a little cautious how they enter dwellings where there are persons afflicted with the small pox.—Hamilton Advertiser.

An indignation meeting, at the delay in rebuilding Brock's monument, was held in Queenston on the 29th ult.

Three thousand hogs have lately been bought in Michigan for the Canadian market.

Dr. McCaul has been elevated to the Presidency of King's College, vacated by the Lord Bishop of Toronto.

The colonists of Adelaide, South Australia, have transmitted through Governor Robe, £1000 subscribed for the relief of the distressed by famine in Great Britain and Ireland. A donation of wheat of similar value is shortly to follow.

We are sorry to hear, and we have reason to believe it a fact, that the practice of denouncing individuals from the altar has been commenced in the Roman Catholic Churches in Bytown, and that several injuries to the property of the individuals, denounced, have been attributed to it.—Gazette.

It has been stated before the House of Commons that, during the past years, 210,000 negroes had been shipped from the coast of Africa, of whom it was computed 178,000 had died on the passage to the slave market.

FAILURES.—There was 198 failures of mercantile firms in England between August 1st and October 11th, 1847, and the amount thrown into bankruptcy, was over \$100,000,000.

Fourteen newspapers are now published in the papal states.

From statistics just published by the Chief Police for Quebec, it appears that the total number of criminals during last year was 2871.—Of the offences, 1 was for manslaughter, 8 poisoning, 138 larceny, 2 forgery, 40 riot and assault, 487 assault and battery, 213 threats and insults, 120 breach of the peace, 2624 drunkenness, 133 vagrancy.

The speed of the British steamships averages nine miles an hour. The distance between Liverpool and Boston, by the great circle sailing, is 2,849 miles.

## ARRIVAL OF THE HIBERNIA.

The telegraph yesterday announced the arrival, at New York, of the steamship *Hibernia*, from Liverpool. The following are all the particulars yet reported:—

BUFFALO, 17th February, 1848.—The steamship *Hibernia* arrived at New York at 8½ o'clock last evening, having sailed from Liverpool on the 30th ultimo. By this arrival we are in possession of the following intelligence:—

Great distress prevailed among the poor in and about London. Multitudes were destitute of food.

A few more failures have taken place.

In Ireland the trials under the Riot Act were progressing; destitution, however, to an alarming extent prevailed in various parts and continued deaths from starvation were daily reported.

Scioy, Naples, Sardinia and other parts of southern Europe in open insurrection—bloodshed in several places in connection with troops.

The King of Denmark is dead.

The King of the Fiench had not wholly recovered his health, and an abdication was talked of, though there was nothing definite on the subject.

The health of the Queen of Spain is improving.

The influence of Prince Metternich of Austria, is said to be greatly on the wane.

Serious difficulty has arisen in the Electorate of Hesse-Cassel, the citizens refusing to take the oath of allegiance, imposed by the Elector.

There is a bridge to be suspended over the Rhine at Cologne.

The King of Bavaria has ordered the Jesuits, who have been expelled from Switzerland, to Liverpool.—British Colonist, Feb. 22.

## HOME MARKETS.

The following table gives the highest average prices at each of the three places:—

	Toronto, Feb. 29.	Hamilton Feb. 28.	Montreal Feb. 28.
Flour, per barrel .....	£1 0 0	£1 1 0	£1 2 6
Wheat, per bushel ...	0 3 10	0 3 9	0 5 0
Barley, per 48 lbs. ...	0 2 6	0 2 4	0 4 6
Rye, per 56 lbs. ....	0 3 0	0 3 0	0 3 9
Oats, per 34 lbs. ....	0 1 4	0 1 3	0 2 0
Peas, per 60 lbs. ....	0 2 0	0 2 0	0 4 6
Oatmeal, per barrel ...	1 0 0	1 0 0	1 10 0
Potatoes, per bushel...	0 3 6	0 3 9	0 3 0
Hay, per ton .....	2 6 0	1 15 0	2 10 0
Beef, per 100 lbs.....	1 0 0	0 17 0	2 0 0
Pork, per 100 lbs.....	0 18 9	0 17 6	1 10 0
Lard, per lb.....	0 0 5	0 0 5	0 0 7
Butter (fresh) per lb. .	0 0 9	0 0 9	0 1 0