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THE INSTRUCTOR, FOR NOVA SCOTIA, NEW BRUNSWICK, AND PRINCE EDWARD ISLAND.

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The Tidal Phenomena of the Bay of Fundy.

THE tides of this Bay have been long and generally noted for the extraordinary height to which they rise, as well as for the rapidity with which the waters ebb and flow. Their peculiar rise, seventy feet, may in a measure be attributed to the bell-mouthed shape of the Bay, and other local causes; the rush of the tidal waters of the Atlantic against the rocky walls of Nova Scotia, New Brunswick, and the State of Maine, brings the tides almost to a stand still, when it has to turn nearly at right angles, and enter the Bay of Fundy with a more than double velocity.

But what appears most strange is, that the tides are either on the rise or the land is settling; one of the two must have taken place long ago, and still seems to continue. Professor Dawson asserts in his Acadian Geology that a change has taken place;—that the thousands of acres of what is

now called marsh, situate on the various arms of the Bay of Fundy, was once covered with a growth of spruce, pine and other wood, that will not grow on lands overflowed by salt water; and Hugh Miller asserts the same phenomena to have taken place on the coast of the British Islands.—

The change in both countries appears to be about the same, twenty-five to thirty feet, only of a reverse order; in Britain it would appear that either the land had rose twenty-five or thirty feet, or the sea had settled that much; in America, or rather this section of it, the contrary appears to be the case. However, it may be possible that both operations, namely, the rising or the settling of the waters, or the rising or settling of the lands, may have been taking place at the same time. In corroboration of these statements we have frequently been informed by those who have been engaged in the

erection and repairs of dykes and abideaux during the last fifty years, that the tides rise much higher, both at the head of the Bay of Fundy and on the Straits of Northumberland, than they formerly did. The trunks of spruce and pine trees may be seen projecting over slopes of the banks of the rivers and shores of the head waters of the Bay of Fundy ; and many feet below high water mark ; and in the bottoms of deep ditches, dug on the marshes, various kinds of wood are frequently found, overlaid with a deposit of marine mud.

Though previous to the erection of dykes and abideaux the tidal waters of this Bay have swept over large tracts of country, still there were parts of these flat lands over which the tides did not flow, as is evident from the fact,—that within the last ten years Canals have been dug by which the tidal waters are conveyed to the most remote parts of the marshes ; and even many of the Lakes situate at the heads of these marshes have been drained and their beds filled with the mud which is held in solution by the waters of the Bay of Fundy ; and the whole converted into valuable hay-bearing lands.

The stopping of the tides by Dykes, etc., from flowing eighty square miles of country, may, by confining the waters of the Bay within narrower bounds, cause them to rise higher than they otherwise would do, which may be the cause to a limited extent, of the tidal waters penetrating beyond where they have formerly been. Still, this will not account for the general change

of height, which must have taken place, and may still be taking place, in either the water or the land, or both.

The same curious and somewhat interesting phenomena, is also visible on the Straits of Northumberland.—We have found several specimens of marine shells, sea-washed stones and sand, such as are found along the shores of the Straits, at a distance of two miles inland, and at a height of at least, thirty feet above the present high water marsh of the Straits ; indicating that a change of level must have taken place in the height of land with reference to the sea.

At New London, Prince Edward Island, a part of an animal, of the carnivorous class, was found upwards of twenty feet below the present surface of the ground. These things show that the surface of our earth has undergone wonderful changes ; and probably is still undergoing changes of an important nature, though imperceptible, in a great measure, to us.

A Lay Sermon for the Young.

Although not commissioned to enter the *sanctum sanctorum*, and there unfold the oracles of Divine truth, still we are half inclined to believe that a short sermon might not prove altogether unprofitable to our youthful readers.

We take the following motto :

“ My son, if thou wilt receive my words, and hide my commandments with thee ;

“ So that thou incline thine ear unto wisdom, and apply thine heart to understanding ;

“ If thou seekest her as silver, and searchest for her as for hid treasures ;

"Then shalt thou understand the fear of the Lord, and find the knowledge of God."

—[Proverbs.

Such is a part of the advice given by Solomon to his son Robboam ; it is a beautiful commentary on the obligations devolving both upon parents and their offspring.

He who said, "Train up a child in the way he should go, and when he becomes old he will not depart from it," points in these words to the duty of both teachers and taught.

"My son, incline thine ear unto wisdom ; apply thy heart to understanding ; search after knowledge as for hid treasures." There is a lofty worth in the acquisition of useful knowledge ; whether such knowledge pertains to the bespangled firmament, with its mighty machinery, each part of which is kept in its proper sphere by the laws of gravitation and attraction, by which planet is tied to planet, star to star, and these to the sun, and the whole to the Godhead ; or if, in our search for knowledge, we examine the foot prints of the Creator, as presented by the crust of the earth ; the diversified wonders everywhere visible on its surface, and entombed in its charnel house ; every point presents a field for the expansion of mind, and the elevation of soul ; but after all, "these are but a part of his ways."

"My son," as if the wise man had said, after having examined these wonders, which is right so to do ; and after having unfolded things that had for time past apparently lay veiled in mystery ; and after having, in a word,

applied so far as applicable to man's wants, the resources of the world ; still, after all, it is asked, "where shall wisdom be found ? and where is the place of understanding ?"

The following pathetic words contain the answer :—"Behold, the fear of the Lord, that is wisdom ; and to depart from evil is understanding."—Here is knowledge that will withstand "the wreck of worlds and the crash of matter."

Solomon, tells his son to "take fast hold of instruction ; let her not go ; keep her ; for she is thy life." "Keep my commandments and laws as the apple of thine eye ; bind them upon thy fingers, write them upon the table of thine heart ;" let chastity, industry, honesty and temperance characterize thy life.

"My son," as if he had said, do these things in your youth—the accepted time, while the judgment, memory understanding, and perception, "those daughters of music," are in lively tune ; and before old age, with its infirmities, has brought the daughters of music low ; when the silver cord is about to be loosened, and the golden bowl broken, and the spirit return unto God who gave it.

The Secret of England's Greatness.

It was a noble and beautiful answer of our Queen, says the "British Workman," that she gave to an African Prince, who sent an embassy, with costly presents, and asked her in return to tell him the secret of England's greatness, and England's glory ; and our beloved Queen sent him, not the number of her fleet, not the number of her armies, not the amount of her

boundless merchandize, not the details of her inexhaustible wealth. She did not, like Hezekiah, in an evil hour, show the ambassador her diamonds, and her rich ornaments, but handing him a beautifully bound copy of the Bible, she said, "Tell the Prince that this is the secret of England's greatness."

Teachers and Nurses in the Queen's Household.

One of the speakers at a mission meeting in Leicester, England, gave some information concerning the teachers and nurses to whom is entrusted the training of the children of the Royal Family. The monthly nurse in the Queen's household, he stated, was a member of Dr. Steane's (Baptist) Church, at Chamberwell.—The Princess Royal, now the Princess Frederick William, was awakened through reading a sermon of Adolphe Monod, and became thoroughly religious. When the last child was born, a Wesleyan was selected for nurse.—The teacher of the Prince of Wales, Mr. Gibbs, was a Nonconformist. Previous to appointment, he was sent for twice, and for two hours was subjected to a severe questioning by the Prince Consort and Her Majesty, to test his knowledge. All the heads of the departments about Her Majesty were pious people. Every child that was born in the Royal Family was born amid many prayers. The pious members of the household assembled themselves together, and continued praying for the Queen until the child was born, when they gave God thanks. He then thanked God for such a Queen and such a Court, and that under her God was prospering Britain as He had never prospered it before.

The Way the Money Goes.

The principal part of the money is drained out of the country into the States, for things which we might easily do without, or, if wanted, man-

ufacture ourselves; such, for example, as wooden nutmegs, wooden hams, leather-tired carriage wheels, shoes with the soles glued on, fruit trees which sometimes turns out to be forest trees, clocks at thirty dollars which sell in the States at four dollars, stoves at thirty dollars which last about three years, lightening rods, besides novels and quack medicines by the cart load; and to crown the whole, phrenological lecturers pay us a visit once in a while to tell us where our brains are situated, believing at the same time we have but little, and what we have, is composed of a curious property, called *gullability*. Here is the way the money goes, and our sense with it.

We have no doubt but what a good business might be done in these colonies, by collecting old clocks, stoves, medicine bottles, etc., etc., for exportation;—perhaps our Yankee cousins would give us half price for them; they are no good to us, though not much damaged.

PLEURO NEUMONIA, or cattle disease, is making great ravages among the cattle, and even sheep have been attacked in the New England States. The whole of North America is now directing its energies towards the best means of staying its progress.

In those districts affected by it, the best veterinary skill have been called into play in order to stay its progress, but without much effect. The best remedy, so far, appears to be *prevention*;—keep the affected cattle from coming in contact with the unaffected; for if they come in contact death is

the result. This disease, which is said by some to have originated in Holland, by others, at the Cape of Good Hope, is there called murrain or lung disease, and was introduced into Massachusetts by importing cattle from Holland.

A writer in the "Boston Journal" recommends inoculation as follows :

Kill a diseased beast not too far gone, and take as much of the lung as you require for the number of cattle you intend to operate upon; throw them down one by one, or otherwise make them fast, cut the hair short off about nine inches from the tip of the tail, make an incision through the skin an inch long, insert a bit of the lung the size of a bean, or rather larger, bandage it properly, and in three days the virus ought to take, and within the week the bandage should be taken off, when the wound appears swollen.—Many of the cattle lose their tails by inoculation, and some even die when proper attention has not been given, but so far as I have had experience, few cattle have died of this sickness after being inoculated.

Of this disease the "Scientific American" says :—

This terrible disease (which—under the name of pluro-pneumonia—broke out, a short time since, in Massachusetts, as has been previously noticed in our columns) seems to be extending its ravages, but we hope it will soon be restrained and disappear. It has visited several sections of the New England States, and has recently appeared in a locality in New Jersey, a few miles from this city. Great excitement and consternation has taken possession of the farmers in various uninfected districts. Town meetings have been held, and committees appointed, for the purpose of excluding all strange cattle, and to demand the slaughter of all those that may be af-

fectcd, whenever the first symptoms are shown as has been done by State authority in Massachusetts. It is not much to the credit of modern veterinary science in New England, that the slaughtering of infected cattle has been carried out as the only means of preventing the spread of this disease. We are of opinion that by carefully separating the infected from the healthy cattle in the same locality, and treating them upon the same principles as human beings are dealt with in cases of sickness, that the distemper would be just as effectually controlled as by the old barbarous mode of slaying the diseased. It would be a great calamity were this cattle distemper to spread throughout our country generally, but we don't believe it will. As it was produced in winter and spring by poor food and close ill-ventilated stables, it will disappear, in all likelihood, with the free air and abundant pasturage of summer.

DR. DODD proposes the following remedies :—

Take 15 grs. of calomel and 15 grs. of opium mixed in one quart of oatmeal gruel, with $\frac{1}{2}$ of a pound of fresh butter—that is, butter that has not been salted. The mixture to be given in one dose. One hour after administering the dose bleed freely.

To recruit the animal, give from the contents of the churn, just before the butter comes, about two quarts at a dose. Alternate this on the next day with oatmeal gruel, in the same quantity. Give as little water as possible. Treatment to be continued three weeks.

ANOTHER.—It is a certain cure if properly adopted when the disease first manifests itself. Give four grains of arsenic three or four times a day, and cover the animal with a blanket dipped in hot water; cover also with other cloths, and keep in a state of perspiration 12 or 24 hours. This has been successfully adopted by many farmers and owners of cattle.

Minerals in British America.

Every year places on record some new discovery of mineral wealth.

CANADA, in addition to the more common minerals, iron, coal, lime, gypsum, etc., has recently discovered rich and extensive beds of copper and silver ores.

NEW BRUNSWICK, besides her numerous and extensive coal beds, some of which stands unequalled, in bituminous matter, on the American Continent; iron ore of the best quality, Manganese, lime-stone, gypsum, free-stone of every variety; has recently added to the catalogue an extensive body, consisting of three qualities, white, blue-veined, and mottled marble, equal to the best Italian.—And the other day we met with a gentleman, the representative of a company in Glasgow, who had made a tour through a portion of the Province in search of useful minerals: we were shown some rich specimens of copper ore, found in New Brunswick.

NOVA SCOTIA contains all the variety of minerals found in New Brunswick; but with much more voluminous coal beds, of the best quality for the general purposes of commerce; her iron ore is also rich and abundant; and to crown the whole, gold quartz have been discovered. Thousands talk of "prospecting," with a view, of course, of "making a pile;" we hope they will. It is impossible to say, in this our infant and undeveloped state, what mineral wealth lies within our borders;—let each of us, as we wander among the hills and vales of our country, examine their composition;

for it may be that we frequently pass over auriferous districts, that only requires to be examined in order to the discovery of precious metals.

THE CROPS in the Lower Provinces are considered, on the whole, promising; a larger one has been put in than usual. The hay will be a good crop, but in consequence of the recent rains it will be late. Though the Potatoes suffered after the spring drouth, from the heavy cold rains that followed, still they present the appearance of being a good crop, and if not affected by the disease will be abundant. All the cereal crops look well. In some localities grubs and flies have injured vegetables and fruit trees; but as a whole, there is the appearance of a fine crop.

The crops in Canada and the States are considered, in a general way, good.

PEELING POTATOES.—All the starch which affords the nutriment in potatoes, is confined very near the surface; the heart contains but little nutriment, therefore, "pare thin the potato skin."

The County of King's.

This County, one of the most intelligent and wealthy Counties in New Brunswick, has failed to sustain a local newspaper.

The Committee having the management of the "Sussex Times," for want of sufficient support, have been obliged to discontinue its publication.

There is nothing better calculated to lead to a development of the wealth

of a country, and the elevation of the moral and intellectual character of the people, than the circulation of useful information;—and therefore we think it a public loss when papers that promise to be useful have to be discontinued, merely for the want of a little of what the County of King's has got abundance of, namely—*Cash*.

The following extract from the "Sussex Times" is true to the letter :

It was intended as a noble effort of the County of Kings;—one of the oldest Counties in New Brunswick; most favourably situated for commerce and agriculture—possessing very considerable inland fisheries in the St. John and Kennebecasis Rivers—with extensive lumbering facilities—intersected by the noble Saint John, with its steamers and smaller craft constantly plying on its bosom in summer, and forming in winter a great highway for the transportation of passengers, marketing of produce, and forwarding supplies to the lumberman; a County embracing the beautiful Bay of Belle-Isle, with its fisheries and traffic—the charming Kennebecasis, with its large and numerous tributaries, penetrating some eighty miles into its interior; with its Railway communication of nearly sixty miles, passing through the County—its hills and valley covered with flocks and herds—the leading agricultural County of New Brunswick—the County selected by the Provincial Board of Agriculture in which to hold its first Exhibition, in 1861—a County numbering its 22,000 or more inhabitants;—we repeat, it was an effort made by a County possessing all these facilities and advantages, and many more, to establish a local newspaper—AND IT HAS FAILED!

What we Breathe.

"We would as naturally revolt at inhaling impure air as at drinking unclean water, if the former element were as observable to the senses as the latter. But although air cannot be viewed with the faculty of vision, modern science has thrown a flood of light upon the subject, for our guidance in its use. Carefully collected facts prove that more sickness results from breathing impure air than is generally supposed; and science explains the cause of this. A committee appointed by the legislature of New York, to enquire into the sanitary condition of this city, has recently elicited evidence from the most respectable physicians in respect to the evils arising from the absence of such rational sanitary regulations as should arrest the attention of our people.

A single fact in reference to the cities of London and New York will form a basis for careful thought on this subject. The population of the former city must be very nearly 2,500,000, while that of the latter cannot be over 800,000. In 1857 the number of deaths in London was 56,785; in New York, 23,196. The number of deaths in London would have been 72,487 if the ratio had equaled the number in New York. No city in the world is supplied with better water, and a more natural drainage than New York; while in London the water supplied to the inhabitants from the New River is poor, and that famous Thames—foul even in the days of Sir John Falstaff—is now at low tide little else than a pot of stench. Nature has probably done more for New York, in a sanitary point of view, than for almost any other populous city, and it is strange that the proportion of deaths should be so largely in excess of those in the great English metropolis with its apparent natural disadvantages. It is notorious that the streets of London are kept much cleaner than those of our own large cities; and the denizens of th.

former are not compelled to breathe the foul exhalations that rise from the decaying vegetable and animal matter so common in the lower streets of this city. Our authorities are to blame for this state of things; they seem to be afraid to enforce the law against those dirty people who are constantly violating its provisions with impunity.

The sanitary committee to which we refer has obtained much testimony upon a vitally important subject--ventilation. It is somewhat hackneyed, it is true; but in spite of this, we are exhibiting to the world a most pitiful spectacle of blindness and indifference to its importance, in the construction of our public and private buildings, counting-houses, workshops, railroad cars, and steamboats. We have it from undoubted authority that, in the construction of one of the most splendid church-edifices in the Fifth-avenue of this city, so little attention was paid to ventilation that, when its doors were closed, the building was hermetically sealed.

A great quantity of fresh air is continually demanded to maintain life in a healthy condition; thus, for instance, a man of large lungs inhales about 25 cubic inches at each respiration, and breathes eleven times every minute, thus requiring $9\frac{1}{2}$ cubic feet every hour. People can live in an atmosphere considerably vitiated without being aware of the fact, so far as their sensations are concerned; and here lies the danger. When we enter a warm close room on a cold day, the atmosphere is at first repulsive and oppressive, but these sensations gradually wear off, and, in a short time, we breathe freely, and feel unconcerned about the quality of the air. Science reveals the fact that the system sinks in action to meet the conditions of a vitiated atmosphere, but it does this at the expense of having the functions of nutrition and secretion gradually depressed; and when this is continued

for a considerable period, disease follows as a natural result. In Russia, where the houses are kept close and hot during winter, lingering fevers are common; and in our own country, during the same period of the year, scarlet and typhus fevers are frequent, but the great evil is pulmonary disease.

The air which we breathe is composed of 21 parts of oxygen and 79 of nitrogen, with a trace of carbonic acid; the nitrogen being merely a diluent, while the oxygen alone enters chemically into the system. The lungs require pure air, or their delicate tissue will suffer injury. In mechanical construction they are divided into 600,000,000 minute cells, some of which are only the 1,200th part of an inch in diameter. The capillary blood vessels run between the air cells, thus exposing them to the air which is inhaled on two sides, like steam to cold water in some steam condensers. The air which is respired is kept for a brief space in the lungs; then the oxygen passes through the thin membrane into the blood, as through a sieve, and the carbonic acid gas given out from the blood in exchange. This action should convince every person that an impure atmosphere drawn into the lungs must be injurious. The carbonic acid gas given out from the lungs vitiates the atmosphere, and when on equal proportions to the oxygen, it arrests life. The ancients were unacquainted with the chemistry of respiration; they supposed that the air cooled the interior of the body when drawn into the lungs. The function of respiration is a discovery of but recent date; and as we are so dependent upon what we breathe for the preservation of health and life, it is a subject of vast importance to all. As winter is approaching, when it is so common to exclude the cold atmosphere from houses, and to keep apartments close and suffocating, we exhort our people to look well to this question, and to provide such measures as

will always ensure them a pure and unvitiated element of respiration."—
[Scientific American.]

AGRICULTURAL.

To the Editor of the Instructor.

SIR:—Nothing will perhaps render your publication more generally useful than the insertion of such information as may tend to advance the agricultural science among your readers.—One mode of effecting this object will be the abstracting or abridging some of the most approved works on this subject, and amongst these a small pamphlet published some years since by Judge Peters, of Prince Edward Island, will be found to convey many practical hints well worth the attention of the New Brunswick and Nova Scotia farmers. As a preliminary to as brief an epitome of this work as may be consistent with utility, I will copy the concluding paragraphs of his preface:—

"In freely condemning general faults, I feel sure no offence will be given to the many skilful farmers scattered over the Island, whose practice forms an exception to the bad system I, in common with others, condemn. Although I cannot write for the benefit of such men, I may solicit their assistance. Their example has already done much; let their influence be used to encourage agricultural Societies, farmers clubs, and meetings for the discussion of agricultural topics; let them add precept to example; and they will become their country's greatest benefactors.

But let none think they know enough, 'The art of farming is progressive; it can exercise the most intelligent mind; one successful experiment leads to another; the most experienced may discover something new, and the most skilful may improve.

The volume which tells what science has done for the farmer will repay perusal; and by watching her rapid march he may avail himself of new discoveries to lighten his toils, increase his profits, and improve his mind."

Hearily commending these remarks to the consideration of your agricultural readers, and trusting that they will be induced to act on the hints therein pointed out by the learned Judge,

I remain Sir,
yours, &c., NEMO.

Soils.

Among the many departments composing an agricultural education, or in other words, a farmer's profession, a knowledge of the classification of soils is very important.

In selecting a farm the first thing to be done is, to investigate the various soils of which it is composed. The soils of a country form the base work of its agricultural operations; and success will depend in no small degree upon the skill with which our agricultural population avails themselves of the capabilities and adaptations of the various soils forming the surface of the country. Every farmer, in order to make proper advances in his vocation, should be familiar with their several peculiarities, and the various methods employed of improving them, so that he may know to what kind of crops each soil is best adapted.

PROFESSOR JOHNSTON lays it down as a principle, that "the agricultural capabilities of a country depend essentially upon its geological structure."

After removing the loose covering of the earth, the underlying soils will

found to partake of the chemical character and composition of the rocks on which they rest,—if sand-stone, the soil is sandy,—if lime-stone, it is more or less calcareous,—if a clay-stone, it is more or less stiff clay,—and if these substances are all found intermingled with each other, that is, sand-stone, lime-stone, and clay-stone, the soil will be found to be composed of a similar mixture. Soils, therefore, generally speaking, have been formed by the crumbling of the solid rock; and no doubt there was a time in the world's history when these rocks were naked and without any covering of loose materials.

1. The soils of the red sand-stones are easily and cheaply worked, and form some of the richest and most productive arable lands,—as those of Prince Edward Island, parts of Nova Scotia and New Brunswick.

2. The soils of the coal measures—grey sand-stones, generally form second rate soils, which require much labour and skill in order to a profitable cultivation. However, from the great variety of soils found within this formation in these provinces—meadows, flat lands, and other a luvial deposits, composed of the remains of crumble rocks and decayed vegetation, good crops are obtained in many parts of the grey sand-stone districts.

3. The soils formed by the rocks of the silurean systems, cambrian, mica slate, gneiss, and trap systems, are not generally favourable to agricultural operations; though in some places, in consequence of the presence of lime and magnesia in some of these rocks, good soils are produced.

4. Good soils are often found where two different kinds of rocks meet,—as where a lime-stone and a clay mingle their mutual ruins for the formation of a common soil, or when trap soils, as in some countries, composed of large quantities of lime and magnesia—fertilizing properties, are mixed with other rocks.

5. In many places in those provinces good soils are met with which are composed of transported materials, as sea alluvium, as the marshes around the Bay of Fundy; or river deposits such as the flat lands present, of most all the rivers in the provinces.

It is supposed that the primitive formation of the earth's surface was rocks; and that the first classes of animated existence as well as vegetable, must have been of a low order.—But as rocks crumbled and decayed, and mixed with animal and vegetable life, soils became more rich; hence the present state of the soils of the surface of the earth.

All soils adapted to agricultural purposes are composed of two classes of substances—*organic* and *inorganic*.

The organic part of the soil is called vegetable mould; and every soil, to be productive, must contain about eight per cent. of organic matter. In addition to supplying plants with a proportion of their necessary food, organic matter promotes fertility, rendering sandy land more tenacious, and clayey soils more friable.

The inorganic parts are derived from the decay of animal and vegetable matter.

The process of crumbling of rocks and decomposition of vegetable life is still going on. No observer of the wonderful operations daily going on in nature's grand laboratory, can have failed to notice the changes every where visible. Some rocks crumble very slowly, such as granite, slates, etc.; others waste more rapidly, as the red and grey sand-stones, etc.; and each rock gives its own peculiar

character, both as to color and other properties, to the soil which it forms.

Generally speaking there are two classes of soils—heavy and light ; in the former, clay predominates ; and in the latter, sand or gravel.

CLAY SOILS, though much more difficult to cultivate, possess more enduring fertility than sandy soils.—Clay soils are generally cold and wet, and very soft when wet ; and hard when dry ; and retains for a long time the various manures applied to them ; but require much skill in their management.

Argillaceous or clayey soils, of which there are large tracts in the Lower Provinces, are best adapted to oats, turnips, and the various grasses. The action of frost on this class of soils, having an elevating and pulverising effect, is very beneficial—equal to once ploughing. However, in some cases the frost operates very injuriously on grass lands by disengaging the roots from the soil beneath.

SILECIOUS or light soils, on the other hand, are easily worked—dry, friable, and hungry ; and being of a porous nature, water and manure applied to them escapes readily, and renders them liable to drouth and exhaustion.

The principal part of the land along the Eastern coast of Nova Scotia and New Brunswick, and along the banks of many of the rivers emptying into the Straits of Northumberland, are of this class of soils ; besides numerous large tracts in other sections of the Provinces. However, when such soils are put in a proper state of cultiva-

tion, and when not affected by drouth, they produce good crops of wheat, barley, and potatoes.

In the selection of a farm, it is not best to select lands possessing too large a per centage—say seventy—of either sand or clay. However, the relative position of lands with reference to hills, has an influence on soils ; for example, light soils are most fertile when flat, and situated lower than the surrounding country ; and clayey soils are frequently found more productive when situated on the sides of hills.

Deep soils retain moisture much longer than shallow soils, and afford room for the roots of plants,—therefore they are preferable. If land is too wet, underdraining will remedy the evil. In soils where the surface is clay and the subsoil sand, a good soil may easily be produced ; but if sand underlies sand, and clay underlies clay, without any mixture of vegetable soil, it is unfavourable for agricultural operations.

The improvement of soils is affected either by chemical or mechanical operations. By chemical, various kinds of manures are applied ; and by mechanical, ploughing, subsoil ploughing, draining, &c., are understood. So that under these two departments, which are in a great measure blended, the whole science of agriculture hinges. There are many soils, in their natural state, very unproductive ; but when properly managed are found to be excellent. For instance, take a clayey soil which rests on a subsoil of the same nature, and under drain

it; which by degrees will drain off the excess of water retained in the soil, and open it to the action of the air, which in its passage through it imparts heat and such fertilizing gasses as it may contain; even open drains or ditches are useful.

The mixture of sand, lime, gypsum, ashes, and vegetable manures, etc., through stiff clay will break its tenacity, and induce chemical combinations and add fertility to the soil. In cold countries like British North America, where the frost enters deep into the soil, fall ploughing has a tendency to destroy the cohesive qualities of tenacious soils; and if the sub-soil is composed of sand, and a portion of it turned up and mixed with the upper soil, the effect will prove very beneficial.

SANDY SOILS, on the other hand, require quite an opposite treatment from that of clayey soils. To plough clayey soils when wet is injurious; but to plough sandy soils when wet is generally beneficial. A coat of clay, such as is often obtained from the bottom of cellars and wells, spread upon sandy soils, especially in the autumn, so that the frost may act upon it and pulverize it, tends to give fresh life to the soil; and often is found to be the means of restoring worn out soils.—Ashes, lime, gypsum, etc., have been often applied to sandy soils with good results; but not so much so as when applied to clayey soils. Rolling is also beneficial to light silicious soils.

There is a third class of soils—vegetable—very common in these Provinces. Many of these soils consist of from one foot to ten of decayed vegetation; some are composed of the sediment deposited on the flat lands by freshets—hence decayed vegetation

and earthly matter become mixed, and form some of the best soils of the country; others are situate between hills, and are also composed of vegetable matter and the debris of high lands, thus rendering many of the alluvial lands the best oat and hay producing soils in America.

In the manufacturing of soils, so to speak, nature has done for us what we in many cases might do for ourselves; namely, mixing one soil with another, and thereby enhancing their fertility. There is no doubt but very beneficial results would follow the removal and mixture of one soil with another. We have often heard it said that if two soils of an opposite nature be mixed together, though both poor soils, will make one good one. The truth of this we do not certify; but we do know that the mixture of different soils has often been found of great benefit; and if more attention was paid to this subject it would be of great advantage to the country. Our rivers, swamps, bogs, marshes, and other low lands contain vast stores of good vegetable soil, that only requires to be mingled with that of the high lands to make productive soils, and enhance our stock of agricultural produce.

Directions to Butter Makers.

As butter is one of the principal articles of produce in New Brunswick and Nova Scotia, any means that can be adopted in order "to improve the quality and, of course, enhance the price," is of "much importance" to the farmers of these Provinces.

The following "Butter Circular," for Canada, has this object in view:—

"The undersigned has for many years issued occasionally, and latterly annually, a Circular respecting the Butter Trade of Canada—the object being to improve the quality, and, of course, enhance the price of Canadian Butter; and it still appears necessary to continue the practice, in order that attention may be persistently drawn to

a subject of so much importance. The remarks will be arranged under the following heads:—

THE DAIRY.—In the Dairy thorough cleanliness is of the very utmost importance, and, therefore, care should be taken that all the utensils are kept dry and sweet; the milk-room well ventilated, of a proper temperature, free from dampness, and as remote as may be from stables, dung-hills, or anything offensive. The dairy should be paved with flag-stones and well ventilated, but kept rather dark, to exclude heat and insects.

MAKING.—Fine Butter cannot be made from cream too closely skimmed, (that is, standing too long on the milk for the sake of extra quantity,) or cream that, by keeping, has become sour or rancid; and, consequently, frequent churnings are essential, if not indispensable.

The heat of the cream in churning should on no account be over 65 degrees, and it is necessary for every farmer to have a thermometer, to serve as a guide in this respect. In no case should the process of churning last less than forty minutes, and often an hour, in order to have good Butter.

WASHING.—Butter ought to have every particle of butter-milk removed out of it, in order to preserve its flavor and keep it from becoming rancid. It should, therefore, be washed in clear spring water until the water comes off perfectly clear.

SALTING.—The very purest and best salt ought to be used and well worked in—not scattered in handfulls through the keg. For immediate consumption—say within two or three months from the time it is ready for market—two and a half per cent is quite sufficient; and if to every pound of salt one ounce of white sugar be added, it is a great improvement to the flavor, while it adds to the keeping quality. On no account use saltpetre in packing.

PACKING.—The greatest care is necessary in this department. The

package should be made of seasoned oak, white ash or birch, free of sap, and as air-tight as possible. Pack as closely as possible, and have the layers all of a color.

When there is not enough on hand to fill the keg, instead of putting a layer of salt on top, run on some strong pickle sufficient to cover the top.

All kegs should have the dry weight branded by the cooper on the bilge of the stave, together with his name or initials.

LOSS IN WEIGHT.—Some packers put in too much salt, which gradually melts and runs off if the keg is not perfectly tight, or if it is, ought to be poured off before weighing. In this way we have known a lot lose from two to three pounds a keg, by standing a month.

SOAKAGE.—Kegs increase in weight by the absorption of the brine into the pores of the wood. To compensate for this, two pounds per keg of soakage is allowed, which is not too much, even though the keg may have been partially wet when branded by the cooper.

In packing butter, as in everything else, honesty is the best policy, and every packer should just do as he would be done by were he a purchaser of Butter.

JOHN DOUGALL,
Commission Merchant.

MISCELLANEOUS.

Education of Girls.

The subject of physical education is beginning to attract attention. The following remarks are from the Boston "Courier," written by the editor after having attended a school festival in Faneuil Hall: "But there is one thing we noticed which did throw a little shadow over our thoughts. We stood on the platform, very near the boys and girls, as they passed by to receive a bouquet at the hands of the Mayor. We could not help observing that not one girl in ten had the air and

look of good health. There were many lovely countenances—lovely with an expression of intellect and goodness—but they were like fair flowers resting upon a fragile stalk. Narrow chests, round shoulders, meagre forms, pallid cheeks, were far too common. There was a general want in their movements of the buoyant vivacity of youth and childhood. The heat of the day and nervous exhaustion of the occasion were to be taken into the account, and due allowance should be made for them. But this was not the first time that we were forced to the conclusion that here in Boston, in the education of girls, the body is lamentably neglected. And it is a very great and serious neglect, the consequences of which will not end with the sufferers themselves. Of what use is it to learn all sorts of things during the first sixteen years of life, and to stuff the brain with all kinds of knowledge, if the price be a feeble and diseased body? A finely endowed mind shut up in a sickly body is like a bright light in a broken lantern, liable to be blown out by a puff of wind or extinguished by a dash of rain.

"If the destiny of woman were to be put under a glass and looked at, like a flower, it would be of little consequence; but woman must take her part in performing the duties and sustaining the burdens of life. These young medal scholars, in due time, will marry men whose lot it is to earn their bread by some kind of toil, in which their wives must aid them. To this service they will bring an intelligent capacity and a conscientious purpose; but how far will these go without health and the cheerful spirits which health gives? A sickly wife is no helpmate, but a hindermate. If we neglect the body, the body will have its revenge. And are we not doing this? Are we not throwing our whole educational force upon the brain? Is not a healthy city born and bred woman getting to be as rare as a black

swan? And is it not time to reform this altogether? Is it not time to think something of the casket as well as the jewel—something of the lantern as well as the light?"

Maxims.

From the Journal of a Canadian Farmer.

"Never put off till to-morrow what can as well be done to-day." Our short working seasons and variable climate render this absolutely necessary.

"Never occupy more land than you can cultivate thoroughly." One acre well tilled is more profitable than two acres slovenly managed.

"Never contract debts, with the expectation of paying for them with crops not yet grown." There are so many liabilities to failure, that we seldom realize what we anticipate.

"Never keep more stock than you can winter well; nor less than will consume all the fodder you can raise." To sell hay or straw is unwise and unprofitable.

"Never expose stock of any kind to the inclemency of a Canadian winter." They require at least one-third more food, and are poorer in the spring; besides, it is cruel and shiftless.

"Never neglect getting up a year's supply of wood in the leisure of winter." It is unprofitable to cut wood in summer, when wages are double, and every hour is required on the farm.

"Never spend your labor and waste your seed, in trying to raise grain in 'drowsical' land." It is better to spend the price of the seed, and the labor of plowing and harrowing, in drains at the first; then your capital is properly invested, and you will be likely to get a handsome dividend.

"Never plant an orchard with the expectation of its thriving, unless you first prepare the land well, then plant well, stake well, fence well, and cultivate well—hoed crops are the best." "What is worth doing at all, is worth

doing well," must always be borne in mind in the raising of fruit trees to anything like perfection.

"Never let your tools and implements be exposed to the decaying influences of the sun, rain and frost except when in use." "A place for everything, and everything in its place," will pay at least twenty-five per cent. per annum, in this respect.

"Never depend upon a neighbour's grindstone to sharpen your tools on." It is a waste of time; and time is a farmer's capital, when rightly employed. This might also apply to borrowing in general.

"Never trust boys to plow, unless you are frequently in the field." A man's wages may soon be lost in careless plowing.

"Never trust children to milk the cows, unless some competent person follows after to secure the most valuable part of the milk." A cow is soon spoiled by bad milking.

"Never use the contemptible saying, 'time enough yet,'" but always endeavor to do everything in season.—"Take time by the forelock." LEAD the work, rather than be DRIVEN by it.

The Education most needed.

The idea too commonly prevails that a mere knowledge of books is the beginning and end of education. The sons and daughters, especially of the rich, grow up with this notion in their heads, in idleness, as it were, with little idea of the responsibilities that await them. Their nature revolts at the mention of "labor," not dreaming that their parents before them obtained the wealth they are so proud of by industry and economy.—How many young men, college bred though they may be, are prepared to manage the estates which their fathers possess, and which it may have required a lifetime to acquire?

How many young women, though they have acquired all the knowledge

and graces of the best schools, know how to do what their mothers have done before them, and which the daughters may be compelled to do at some period of their lives? The children of the poor have to labour or starve, and as far as that goes they are educated to be practical. The education that scoffs at labor, and encourages idleness, is the worst enemy for a girl, man, or woman. Instead of ennobling, it degrades; it opens up the road to ruin. The education which directs us to do what we are fitted to do—that respects labor—that inculcates industry, honesty, and fair dealing, and that strips us of selfishness, is the education we do need, and that which must become the prevailing system of the country before we can be a people either happy or prosperous.—[N. Y. Express.

"Millions of money for an inch of time," cried Elizabeth,—the gifted, but vain and ambitious Queen of England, upon her dying bed. Unhappy woman! reclining upon a royal couch—with ten thousand dresses in her wardrobe,—a kingdom upon which the "sun never sets," at her feet,—all now are valueless, and she shrieks in anguish, and shrieks in vain, for a single "inch of time." She had enjoyed three score and ten years.—Like too many among us, she had so devoted them to wealth, to pleasure, to pride and ambition, that her whole preparation for eternity was crowded into her final moments; and hence she, who had wasted more than half a century, would now barter millions for an "inch of time."—[American Tract Society.

NEWSPAPERS.—A man, says Doctor Franklin, eats up a pound of sugar, and the pleasure he has enjoyed is ended, but the information he gets from a newspaper is treasured up in the mind to be used whenever occasion or inclination calls for it. A

newspaper is not the wisdom of a man, or two men; it is the wisdom of the age—of past ages, too. A family without a newspaper is always half an age behind the times in general information; besides, they never think much, nor find much to think about. And there are the little ones growing up in ignorance, without a tale for reading. Besides all these evils there's the wife, who, when her work was done, has to sit down with her hands in her lap, and nothing to amuse her mind from the toils and cares of the domestic circle. Who would be without a newspaper?

A good Anecdote of Professor Agassiz is told in a new volume in Press. The Professor had declined to deliver a lecture before some lyceum, or public society, on account of the inroads which previous lectures given by him had made upon his studies and habits of thought. The gentleman who had been deputed to invite him, continued to press the invitation, assuring him that the society was ready to pay him liberally for his services.—“That is no inducement to me,” replied Agassiz: “I cannot afford to waste my time in making money.”

YOUNG LADIES should be taught to play upon the washtub and the churn as well as the piano and the guitar, to darn stockings, and make lambs and lions sleep together in the millenium of their worsted work; to sew a patch upon a garment and paint pictures; to make a loaf of bread and mould figures in wax; in a word, the practical and the fanciful should be so judiciously blended in their education, that they will be good housekeepers and agreeable companions. A young woman should not be a drudge in the kitchen, nor a doll in the parlor, but a sister, sweetheart, friend and companion, with a cultivated mind, a ready hand and a pure life. She should scorn the society of the vulgar of

either sex, and be a ministering angel in the house.

New Map of Prince Edward Island.

H. J. Cundell, Esq., will please accept our thanks for the copy of his recent Map of this I-land. It is decidedly the best got up Map we have met with, and a credit to its author and the Island.

The apportionment of Prince Edward Island into Counties, Parishes and Lots, and each in a regular form, exhibits system; in this respect the Island is far in advance of the circumjacent Colonies, where little or no system prevails in the location of the country. This Map exhibits the Island as one completely located country; showing the depth of water along the seaboard and up the rivers; also the principal roads of the Island, along with the shire, and other leading towns.

Our Island friends do things more economically than we do on this side of the water. This Map is the result of private enterprize; is on a large scale, and sold at the low price of ten shillings, and therefore within the reach of the people and schools. The New Brunswick Map cost the Province thirty-two hundred pounds, and each copy costs thirty shillings, and therefore beyond the reach of the mass of the people. We are informed that the Board of Education of Prince Edward Island have introduced the Island Map into their schools. This is right; it is the practice in the United States and other growing countries, to teach their children the geography and other peculiarities of their country.