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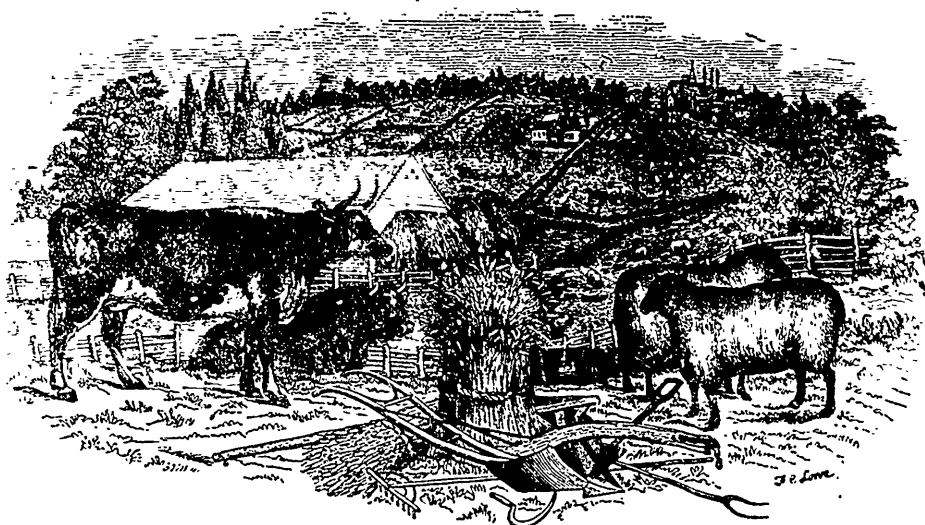
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THE
CANADIAN AGRICULTURIST;

A MONTHLY JOURNAL

OF

Agriculture, Horticulture, Mechanics and General Science, Domestic Economy, &c.



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

GEORGE BUCKLAND,
WILLIAM McDOUGALL,

EDITORS AND
PROPRIETORS.

VOL. I.

TORONTO:
PRINTED BY ROWSELL & THOMPSON.

1849
112

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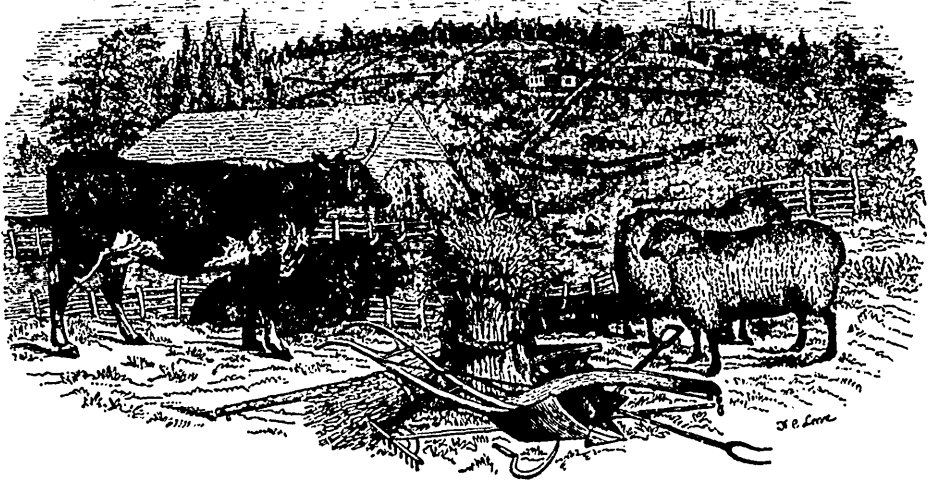
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CANADIAN AGRICULTURIST.



"The profit of the earth is for all; the King himself is served by the field."—ECCLES. 5. 1x.

GEORGE BUCKLAND, }
WILLIAM McDUGALL, }

{ EDITORS AND
{ PROPRIETORS.

VOL. I.

TORONTO, JANUARY 1, 1849.

No. 1.

☞ This number of the *Agriculturist*, and numbers 2 and 3, will be sent to all subscribers, who have paid for the year 1848, without further charge. The proprietors adopt this course, to make up the deficiency in the volume for the year just ended. The remaining 9 numbers of the volume for 1849 can be had for 3s. 9d., if paid before the 1st March next. Subscribers, who wish to discontinue, need not, therefore, return the paper, as it will not be sent beyond the third number, unless re-ordered and paid for. Three and nine pence being an inconvenient sum to remit by mail, those who intend to continue their patronage may leave the amount with their Post-Master, taking a receipt, who will, no doubt, undertake to remit to us, as soon as he gets a sum which he can enclose in a letter. Post-masters will get a copy of the *Agriculturist gratis*, as some compensation for their trouble; and we trust they all, without exception, will take an interest in promoting the success of our publication.

AGENTS.—We are not aware that we shall employ any travelling agents, at all events not more than two, this year. Any person, however, may act as a local agent. We hope that all those who have heretofore acted as such, will continue their good offices, and that many others will give us their influence and assistance in the same way. Any person who will become a local agent may entitle himself to a copy by sending four subscriptions. Those sending twelve and upwards will be supplied at 3s. 9d. per copy.

PROSPECTUS OF THE CANADIAN AGRICULTURIST, FOR 1849.

ON the first of January, 1849, No. 1 of *The Canadian Agriculturist*, is published in a new and improved form. It consists of thirty-two pages royal octavo, printed on fine paper, in a superior style, with illustrations, and issued monthly.

Principal Editor, MR. GEORGE BUCKLAND, Secretary of the Provincial Agricultural Association, Member of the Royal Agricultural Society of England, and Author of the Society's Prize Essay on the "Farming of the County of Kent," &c. &c.; assisted by MR. W. McDUGALL.

The Canadian Agriculturist will embrace the following departments:—

Agriculture:

Consisting of original and selected articles, correspondence, &c.; a monthly digest of British and American Agricultural Literature and Intelligence, Markets, &c. Promises of assistance in this department have been received from distinguished Agriculturists in the British Islands and the United States.

Mechanics and General Science:

Embracing original and selected articles on the principles and application of mechanical science generally; more particularly to agricultural implements, illustrated when necessary by appropriate engravings. Natural History and General Science will receive some share of attention, more particularly with a view of awakening a spirit of rational enquiry in the minds

of the young, with special reference to the actual wants of the Farmer, Gardener, and Mechanic.

Horticulture :

In this department, the Editors will receive assistance from experienced gardeners and nurserymen; and will endeavour to make it particularly useful to all who take an interest in the management of the garden or orchard.

Domestic Economy :

This department, specially devoted to the Ladies, will include many interesting and useful topics of essential importance in the management of a family, and to the attractions and comforts of a well regulated home.

In a word, the Editors will strive to present to the Canadian public a work of substantial usefulness, possessing on the whole, a permanent utility; and, by studiously avoiding all topics and reflections of a mere party character, they hope to receive the cordial good wishes and support of all who have at heart the welfare and advancement of their country. The proprietors have determined to spare no reasonable pains to make *The Canadian Agriculturist* in appearance, and in real usefulness, superior to any work of the kind now or heretofore published in Canada. The first three numbers will be sent to all paid subscribers to the volume for 1848, in order to make up for the deficiency in that volume, caused by circumstances with which subscribers have been made acquainted. The remainder of the next volume will be sent to the above subscribers upon their remitting to this office 3s. 9d., between this and the first of March. 1849.

TERMS :

Single subscriptions, *One Dollar*, in all cases to be paid *in advance*. Agricultural Societies and Clubs, taking twelve copies and upwards, will be charged 3s. 9d. per copy.

All communications must be *post paid*, or they will not be taken from the Post Office.

ADVERTISEMENTS,

Suitable to the character of the work, will, to a limited extent, be inserted at 4d. per line. As the circulation is at present over 5,000, and likely to increase, those who wish to advertise *extensively*, will at once see that this is an eligible medium.

SHOE AND LEATHER STORE.

DANIEL FARAGHAR begs to inform his friends and customers, that he has opened a *Shoe and Leather Store*, at No. 22½, Yonge Street, Toronto, where he will be prepared to furnish all kinds of work in his line at the most reasonable prices. Having a Tannery of his own in active operation, he can supply the Trade and others with as good an article of Leather, and at rates as low as can be obtained elsewhere.

DANIEL FARAGHAR.

Jan., 1849.

1tf

SEVERN'S BOTTLED ALE.

THE Subscriber, having resumed his former business in a convenient locality, with a large stock on hand, of a superior quality, and in prime condition, would hope to secure a continuance of the patronage and support hitherto conferred upon him.

J. D. BARNES,

6, Wellington Buildings,

Adjoining Mr. Sterling's, King-st.

Toronto, January, 1849.

1

CASH PAID FOR WOOL.

G. MONRO, King Street East, Toronto, still continues to pay the highest price for Fleece and Pulled Wool.

Toronto, January, 1849.

1-6m

FRAER'S PATENT CHURNS.

THE Subscriber has received an assortment, from John Gamble, of Dundas, the manufacturer, of the above Churns, of which a full supply will be kept constantly on hand, at his old stand on King Street, a few doors East of the Market.

G. MONRO.

Toronto, January, 1849.

1-am

DEVOLVING WOODEN AND COIL-TOOTH HORSE RAKES.—The Subscriber has received a large assortment of Horse Rakes, which will be sold at his Establishment, either for Cash or approved Notes.

G. MONRO.

Toronto, January, 1849.

1

AMERICAN SCYTHES, FORKS AND HOES.—A very large assortment of the above articles for sale, wholesale and retail, by the Subscriber.

G. MONRO.

January, 1849.

1-2m.

HUSSEY'S REAPING & MOWING MACHINES.—The Subscriber has made arrangements with the Patentee, by which the above articles, of a superior quality, may be supplied to the Canadian Farmer.

G. MONRO.

January, 1849.

1-2m

THE TORONTO

Carriage and Light Waggon Manufactory,

130, KING STREET WEST,

(Established—1832.)

OWEN, MILLER & MILLS,

FROM LONDON.

EVERY description of Carriage, Light Waggon; and Sleigh, kept on hand for sale, and built to order, of any pattern.

Painting, Trimming and Repairing, done in the best manner, on reasonable terms, and with the utmost despatch.

FOR SALE—Lace, Patent and Plain Axletrees, Springs, Lamps, Bands, Patent Leather, and other Carriage Trimmings.

January 1, 1849.

1

NEW CARRIAGE FACTORY.

WILLIAMS & HOLMES,

HAVE REMOVED their *City Carriage Repository*, to 142, YONGE STREET, where they have started a Manufactory in all its branches. Parties wishing to purchase for Private or Public Business, are requested to give them a call before purchasing elsewhere, as their facilities are such as to enable them to manufacture cheaper than any other Establishment in Toronto.

Toronto, January 1, 1849.

1-4f.

N.B.—The public are particularly invited to an inspection of their Lumber and other Building Materials, as none but the very best will be used.

THE

CANADIAN AGRICULTURIST.

Vol. I.

TORONTO, JANUARY 1, 1849.

No. 1.

TO OUR READERS.

In commencing a new, and, we trust, an improved Series of the *Agriculturist*, a few words explanatory of the principal objects of the work will be deemed as desirable by our subscribers as ourselves.

The designation, "*Agriculturist*," sufficiently denotes the general character which the work is meant to sustain. Agriculture, both scientific and practical, will occupy at least a moiety of its pages. Its conductors will endeavour to place before their readers whatever discoveries or improvements may be made, either in Europe or America, in relation to this confessedly most important and useful of the arts. As the great bulk of our farmers are either directly from the British Islands, or the descendants of those who were, they will no doubt regard with peculiar interest a monthly digest of Agricultural information from our Father-land, obtained from authentic sources—public journals, reports and private correspondence. Nor shall we remain unmindful of the progress our American neighbours are making in this and kindred arts; but shall cull from their various periodicals, whatever promises to interest and instruct our readers. Beside, we expect to receive occasionally from that and other quarters, original communications from the pens of distinguished agriculturists.

The word "*Canadian*"—thus giving to our work the name "*Canadian Agriculturist*"—at once expresses our desire that the work should assume a distinct and *national* character. We shall, therefore, not only treat of the general principles of agriculture, which are equally applicable to all countries and climates, and place before our readers discoveries and improved methods of practice, come from whom and where they may; but we shall aim especially to do everything in our power for the agricultural advancement of our own country.—Canada and Canadian interests, so far as they are comprised within the legitimate and professed objects of our paper, shall have our first consideration. In aiming to do this, we earnestly invite and reckon on the co-operation and communications of our far-

mers, and all others who feel an interest in promoting the agricultural and general prosperity of our naturally favored land. We feel quite confident that this country possesses the requisite elements of national greatness, and that one of the principal means, if not *the means*, for accomplishing that patriotic object, is the development of her immense agricultural resources. Unless we mistake entirely the signs and temper of the times, Canada is assuming a new and improved position; the present depression will prove but temporary, and a bright and encouraging future awaits the skilful and persevering industry of our population.

Feeling as we do an interest in the well being and prosperity of every portion of our wide-spread Empire:—in the diffusion of useful knowledge and the inestimable blessings of civil and religious liberty, guaranteed by British Institutions;—we cannot but regard with the strongest feelings of interest and attachment that particular portion of the Earth's surface on which we have resolved as the land of our adoption. From the peculiar position of the Mother Country—possessing at the same instant a redundancy both of capital and labour, Emigration it would seem must continue to proceed in an increasing ratio. Canada contains an ample field for the profitable employment of both: and we shall consider it our duty to lend our humble aid to so desirable and important an object. The condition and capabilities of this country—particularly Western Canada—are, we know, but very imperfectly understood at Home; whilst the most active means have been and are still employed by interested and influential parties for setting forth the advantages real and supposed, of the southern and more distant colonies. As our periodical will have a circulation in the Mother Country, we shall always be glad to answer any enquiries that may be sent us from thence, free of expense; and we invite our Canadian correspondents to furnish us with authenticated facts and suggestions in reference to this important subject.

In the mechanical department we shall study to make our readers acquainted with such new inven-

tions of improved machinery as appear to possess practical merits, and adapted to the wants and means of the farmers of this country. We hope to receive encouragement enough to enable us to illustrate when necessary both this and other portions of the work, by suitable Engravings. This department will not be exclusively confined to agricultural implements and machines, but will embrace more or less of mechanics in general, adapted to the comprehension and wants of our practical artisans. We shall look with a friendly eye on our infant manufactures, the progress of which we shall always feel happy to promote and chronicle.

We have resolved on devoting a limited space to *Horticulture*, a sister art, depending with agriculture on common principles. In all our well settled districts, particularly in the vicinities of rising towns, the subject of gardening in its various departments should receive increased attention. Whilst fruits and vegetables minister largely to man's physical necessities and comfort; shrubs and flowers ornament his dwelling, and tend to refine and elevate his taste. Although in a new country the necessaries and substantial must of course be first sought and secured; yet there can be no sufficient reason why in the progress of things, the beautiful and ornamental should be entirely neglected. The externals or appendages of a home, have much more to do with the education of its inmates—particularly of the young—than is commonly imagined. The Almighty in his wisdom and goodness, has created a beautiful as well as useful world. Man by his intelligence and industry avails himself of the latter to supply his animal wants; but too frequently remains insensible to the former. The cultivation of flowers is particularly suited to the female sex, being alike promotive of the health of the body and the refinement and purity of the mind. Even on subjects of the gravest importance, we are taught by the highest authority, to look upon flowers as affording an illustration of a paternal and universal Providence. So true it is that nature, when we study her aright, ministers abundantly both to the wants of the body, and the yet higher and more enduring wants of the mind.

We also hope to devote a page or two to general science; more particularly to such portions of Natural History as have an immediate connection with rural affairs and the pursuits of the horticulturist. Contributions of this nature will always be thankfully received. Our object is not so much to give lengthened and systematic papers on any one branch of physical science, as short and simple illustrations of the more common natural phenomena of every day life. We think this will be an acceptable mode to a large portion of our readers, and be the means of

inducing a spirit of rational inquiry, and of strengthening the valuable habits of patient investigation and correct observation. It may also do something toward lessening the force of those influences which are unfavorable to self-improvement, and check the tendency to indifference and low habits. The sincere and intelligent lover of nature can never, we think, be essentially vicious or degraded. The habit of his mind has an ennobling as well as a practically useful tendency. In tracing therefore the sequences of nature, we shall not consider ourselves precluded from using on proper occasions the appropriate reverential expression. We hope in some degree to be able to rouse the minds of our country youth to a perception of the interesting sources of knowledge by which they are constantly surrounded; to point out to them the means whereby they may find

“ Tongues in trees, books in the running brooks,
Sermons in stones, and good in every thing.”

Our arrangements will also include information on those subjects which are usually understood as embraced by the comprehensive term,—*Domestic Economy*. We hope thus to be able to interest our fair readers, the mothers and daughters of our country, whose influence is indispensable in giving to society a high and correct tone of feeling. Facts and suggestions in reference to *Home Education*;—the physical, mental and moral training of children, and in short whatever can impart comfort and rational interest to the family circle, and make the fire-side attractive, will receive a share of attention.

It is almost unnecessary to add, that we shall scrupulously study to keep our pages clear from party politics and polemical theology. As we shall write for the people of Canada,—for the common good of our common country, we can know of no such distinctions as colour, party, race or creed.—Our readers must judge of the sincerity of these professions by the character of our deeds.

STATE OF AGRICULTURE IN IRELAND.

The Royal Agricultural Improvement Society of Ireland has commenced the publication of a quarterly journal, including reports, essays, and transactions. The first number is a highly interesting and creditable production. We hope to receive this publication regularly, after the opening of navigation in spring, together with the journals of the English and Scotch Societies, which are too bulky to be sent through the Post Office; and we shall not fail to lay before our readers a condensed account of such portions of their contents as appear suitable to this country. The Irish journal contains in its opening

paper a very interesting account of the agricultural and industrial resources of the county of *Fermanagh*, which consists of 475,195 acres, 46,755 being under water. Population, in 1841, was 154,419 souls. The surface generally is undulating on the northern boundary—approaching the mountainous; subsoil porous—frequently requiring deep draining, which is but little attended to. Better cultivation, enlarging the fields, and straightening the fences, a larger culture of wheat and grain crops, and more attention to the breeding and management of live stock, with the preservation and proper application of manure, appear to be the principal desiderata to the advancement of the agricultural interest of this county, as well as the country generally. Public attention, however, is being directed to these matters in good earnest; so that a well-grounded hope may now be entertained for the amelioration of that unhappy but generous and warm-hearted people. The following extract from the Editor's preface is as correct as it is cheering:—

“Too true it is, the country has been, and still is, deeply afflicted; but in her fertile soil and genial climate; in her unappropriated water-power—more than equal in amount to the whole mill-power of England—in her mineral wealth, hitherto almost unsurpassed; in her fisheries, when by safety-harbours and curing-stations, they shall have been rendered available; and in the industry of her enduring children, when duly fostered; she possesses resources which, called into action, cannot fail to raise her from her present prostrate condition, and secure for her a degree of prosperity and happiness, to which she has unhappily been too long a stranger.”

ON THE DOMESTICATED ANIMALS OF THE FARM.

NO. I.

We propose devoting a series of papers to a popular and practical description of the various breeds of the domesticated animals. Our object will be to compress as much interesting and useful matter as possible within our necessarily restricted limits. Although the subject of improving the live stock of Canada has for some time occupied the attention of the more enterprising, and the result is our possession of some really fine specimens of the improved breeds; including horses, cattle, sheep and swine: yet it must be acknowledged that our farmers generally are much behind in these very important matters, and as a consequence, the real progress of the country in the acquisition of wealth becomes seriously impeded. If the farmers of Canada would turn their attention in right earnest to the improvement and better management of stock, instead of our being large and constant importers of tallow, hides, &c., this country would soon be in a condi-

tion to export these articles extensively; and they would always command a remunerating price in the British markets.

Before we proceed to a description of the different species and varieties of live stock belonging to the farm, it will be an advantage, in order to treat the subject somewhat systematically, to take a general view of the animal kingdom. In doing this we shall make frequent use of Professor Low's admirable introduction to his valuable work on "*The Domesticated Animals*;" to which, as well as other undoubted authorities, we shall frequently refer throughout this series of papers. Our object is not so much originality as practical utility; and while we hope to instruct our readers generally, by awakening a spirit of curiosity, and strengthening the habit of correct observation, we shall endeavor to keep in constant view the condition and practical wants of this country.

Life as it exists in connection with organic structure, admits of two grand divisions,—animal and vegetable. The distinction between a stone, a tree and a horse is obvious at once, even to a child.—The stone is a mass of mere inert matter, possessing no organs, therefore requiring no food; and it increases in size simply by the external deposition of fresh matter under the influence of mechanical or chemical forces. In short the stone is entirely destitute of the wonderful and mysterious principle denominated *life*; by the possession of which the plant and animal are mainly distinguished from the mineral. The tree is a living organised body, dependent on the soil and atmosphere for nutrition, fixed to one spot of earth, and unendowed with the faculty of sensation. The horse is a living organized body, but differs from the tree by possessing sensation and the power of locomotion. The scientific distinction between the highest forms of vegetable and the lowest of animal life, may not in some instances be very obvious; yet upon the whole the differences are so great and palpable between the two kingdoms, that we are in little danger of confounding them. In both, amidst the countless species, there appears a plan of progression from simpler to higher forms. As we ascend the scale to beings of higher organic structure, we meet with a more complicated organization; and with higher and increasing wants there are invariably found ample means arranged for their supply.

Confining our observations to the animal kingdom, the number of species it contains must be astonishingly great. Some thousands have been already described by scientific observers, while an extensive field for exploration yet remains. The microscope, with its modern improvements, has opened up a completely new world of animated

beings: both earth, air, and sea have been shewn to sustain myriads of sentient, although to the naked eye invisible existences; and every leaf and drop of water nourishes a numerous empire instinct with life and enjoyment.

In order to arrange or classify the multitudes of animated beings already known to naturalists, they are first separated into groups: each group having a number of individuals possessing in their main features a common character. These groups, or kingdoms, are again divided into classes and orders, which likewise are further reduced into genera and species. When we come to treat of the different breeds of the domesticated animals, we shall have reached the lowest division, or varieties; that is animals agreeing in specific character, and differing only in such minor points as observation and experiment have shewn to be produced by climate, food, and general treatment. These are considerations of the first importance to the practical breeder and farmer. Cuvier, the illustrious French anatomist, formed a system of classification several years ago, which has been, with some slight modifications, very generally adopted. The whole animal kingdom is arranged under four grand divisions. (1) *The Radiata*; (2) *The Articulata*; (3) *The Mollusca*; (4) *The Vertebrata*. We will briefly illustrate this arrangement by some familiar examples.

The *Radiata*, or radiated animals, are so denominated from their general appearance; their organs proceeding from a centre like rays of light. They are the lowest in the scale of animal organization, having a nervous system of the most rudimentary kind; in cases where it has been observed, it was found to consist only of a few simple fibres.—Many species of this large group are invisible to the naked eye; but by the aid of the microscope they are found to inhabit the waters in countless myriads. They appear admirably provided with organs adapted to their various modes of existence: and in such whose habits have been observed, the strong prey upon the weak. Some of the species, as the sponge and coral, seem fixed, like a plant, to a particular spot; while others, as the Medusæ, float upon the waters of the ocean, occasionally tinging the colour of its surface over hundreds of miles. The well known star-fish, so frequently seen on the sea coast, after the receding of the tide, affords a familiar example of a higher species of this division of animated nature.

The *Articulata*, or jointed animals, includes many numerous groups of various sizes and appearance, from the hosts of invisible animalcula inhabiting the waters, to the vast tribes of insects with which both earth and air everywhere abound. In this division are also included the *Crustacea*, or such as possess

a horny covering to protect the softer parts of their bodies, held together by joints, so as to allow free motion to the animal. Examples may be seen in the crab and lobster.

The *Mollusca* have soft bodies and the power of secreting a calcareous substance, which by hardening into a shell, forms an admirable protection. Of this endlessly diversified group the oyster and mussel afford familiar instances. While ascending higher in the scale, the cuttle fish may be mentioned, which is endowed with the singular function of emitting a dark thickish fluid for, it would appear, the double purpose of seizing its prey or escaping from its enemy.

We next come to a still higher division of the animal kingdom, the *Vertebrata*, including animals possessing a spine, and a more extensively developed nervous system, by which a more intimate connection is formed with the external world. In the higher forms of life belonging to this division, the nervous system expands into a true brain extending from the head through the vertebræ, which constitute the back-bone. The *Vertebrata* are usually arranged by naturalists under four divisions.—(1) *Pisces*, or fishes; (2) *Reptilia*, or reptiles; (3) *Aves*, or birds; (4) *Mammalia*, or animals which suckle their young. The whole of these animals have an organization admirably adapted to their various wants, and the external condition in which they are placed.

Fishes are cold-blooded animals, whose temperature is varied but little above that of the element in which they live. Their bones are soft and cartilaginous; they possess the singular property of altering their specific gravity by means of an air bladder which they can either contract or expand, and thus are enabled to rise or sink at pleasure. Fish are exceedingly voracious: a constant warfare is going on in the waters, the strong devouring the weak.—This principle of nature, when rightly understood in the spirit of an enlarged philosophy, presents no difficulty in regard to our conception of creative goodness. The whole system of nature is one of mutual dependence and nicely adjusted balancings; the result being upon the whole most obviously favorable to the enjoyment of sentient beings.

The group of *Reptiles* contains creatures of a great diversity of form and modes of life. Some in their first stage living in water, breathe like fish by gills; but on becoming inhabitants of the land, lungs are developed;—while a few retain both, thus becoming adapted to either land or water, and hence designated amphibious. As common examples of the class *Reptilia*, may be mentioned the frog, toad, lizard, crocodile, and all the varieties of the serpent tribe, some of which secrete a virulent poison which

they are enabled to eject by a simple apparatus.—The whole of this class of creatures are cold-blooded, and possess a languid circulation.

The class *Mammalia* comprises a large number of animals of very diverse forms and habits, mostly inhabiting the land, but some live wholly in water; while others seem adapted to both conditions indifferently. As they all bring forth their young alive, they are designated viviparous: and from having the function of secreting milk for their young, arises their distinctive appellation. This extensive class has been divided by naturalists into several groups, or orders, which our limits will only allow us barely to enumerate.

(1) The *Cetacea*, or whale tribes: although inhabitants of the water, yet they breathe by lungs, and bring forth alive and suckle their young. The whale, therefore, does not properly belong to the class of fish. It is a warm-blooded animal, sometimes of stupendous size, inhabiting the colder seas, being cased in a thick covering of fat called blubber, which besides yielding a large quantity of valuable oil after the animal is dead, is of the greatest use to it while living, enabling it to retain the necessary degree of animal heat in the coldest medium in which it can be placed.

(2) *Ruminantia*, or such animals as return to the mouth the coarsely bruised food that has passed into the stomach, to be again subjected to mastication; a process usually called *chewing the cud*.—Animals of this order subsist solely on vegetable food, admit generally of domestication, and are of the greatest utility to man. The camel is admirably adapted for traversing arid sands, hence it has been designated “the ship of the desert;”—while the goat, the sheep, and the ox have accompanied man from the earliest periods of civilization, forming one of the chief sources of his wealth, and furnishing him with food and clothing. “The very species have been subjected to our will; they till the ground for our support, and bear our burdens; they yield us milk, and hair, and wool; and finally, they render up their bodies for our food, and their skins for our covering.”

(3) *Pachydermata*, or thick-skinned animals, comprehends many of the largest, and some of the most useful races. Among the former may be mentioned the elephant, the rhinoceros, and the hippopotamus, (river-horse); while the latter contains the horse, the ass, and the hog, which have existed in a state of domestication from the very earliest records of our race.

(4) *Edermata*, or animals devoid of cutting teeth. In this division may be instanced the sloth, armadillo, and the ant-eater; likewise that most singular

animal of New Holland, the duck-bill, which was for a long time regarded as a bird.

(5) *Rodentia*, or gnawing animals, some of which are exceedingly troublesome and injurious, and incapable of domestication, as the rat and mouse.—Others are naturally timid and shun the presence of man, as the hare and squirrel; while several exhibit extraordinary instinct in constructing their dwellings, as for instance the beaver: and many remain in a state of torpidity, as the dormouse, during winter.

(6) The *Marsupialia*, or marsupial animals, characterised by having a pouch attached to their abdomen, in which the young find both food and protection. This is a very singular class of animals, abounding in New Holland: the kangaroo and opossum being characteristic specimens.

(7) The *Carnivora*, or flesh-eating animals, hence commonly denominated beasts of prey. This order is exceedingly numerous; including seals and walruses, which are as destructive in the ocean as others are on land. The dog tribe, comprehending wolves, jackals, and foxes; also bears, racoons, weasels, and the sanguinary family of cats: the lion, tiger, leopard, &c. are all included in the order carnivora.

(8) *Insectivora*, animals that live principally on insects. Familiar examples may be seen in the shrew, the hedge-hog, and the mole. Animals of this order frequently burrow under ground, and are no doubt of great use in the general economy of nature. The soft harmless little mole is too often treated in the spirit of a relentless and indiscriminating destruction; while amidst the many useful services which it renders, we know of only a single injury—and that accidental—which it does the farmer, that of occasionally stopping by its burrows, under-ground drains.

(9) *Cheiroptera*, including that most singular tribe of animals the bats, which of all the mammalia, have alone the power of flight. They subsist chiefly on insects, caught during the night; some however, partake of fruits, and a few are said to have the propensity of sucking the blood of larger animals during sleep. In warm climates bats attain to a large size. By a peculiar conformation of their limbs they are able not only to fly like a bird, but can attach themselves to trees and the rafters of old buildings; and in cold climates they usually hibernate in some warm protected place during the rigours of winter.

(10) *Quadrupana*, or four-handed animals, including among others, the numerous varieties of apes, monkeys, and baboons. These animals are frequently found in large communities in the luxuriant forests of the tropics, and of all creatures approach nearest to the form of man.

(11.) *Bimana*, or two-handed, "comprehending (as Professor Low observes) a solitary genus, *man*, classed with the mammalia, by the relations of form and animal attributes, but raised far above them all by powers of mind which fit him to perform the functions for which he is destined. He alone is endowed with force of reason to know that the marvellous system of which he forms a part has been ordained by a Superior Power, and to believe that, when the frail fabric by which he is permitted to communicate with the external world shall have been resolved into its elements, the consciousness will be preserved to him of his former being."

We must reserve for our next paper some observations in reference to the much disputed question as to the origin of species in the animal kingdom, and the principal agents that concur in the production of varieties.

ON THE APPLICATION OF SCIENCE TO AGRICULTURE.

No. 1.

INTRODUCTORY REMARKS.

No circumstance indicates more decisively the progress of the physical sciences, than the aid which several of them have of late years proffered towards the improvement of agriculture. There can be no doubt in the minds of those capable of forming a correct opinion on the subject, that such help is not only attainable, but that the present condition of agriculture generally, and the state of several of the nations of the world particularly, urgently require it. Science can exert herself in no way more beneficial to the interests of society, than in aiding the productive powers of the soil. Let us see in what way this can be effected.

In the first place, it may be well to observe, that agriculture, even in its simplest conditions, is, in regard to its *rationale*, a very abstruse and complicated thing. The full explanation of its various phenomena, is far beyond the reach of the physical sciences in their present condition. Advances, it is true, are constantly being made; new facts are elicited; difficulties are explained, and improved modes of culture pointed out; and the period no doubt will come, when in the progress of discovery the important art of agriculture will occupy a distinguished place among the experimental sciences. It has been well observed by one of the greatest philosophers of the present age—Sir John Herschel—that "between the physical sciences and the arts of life there subsists a constant mutual interchange of good offices, and no considerable progress can be made in the one, without of necessity giving rise to

corresponding steps in the other. On the one hand, every art is in some measure, and may be entirely, dependent on those very powers and qualities of the material world, which it is the object of physical inquiry to investigate and explain."

We have said that agriculture is a complex subject, involving many considerations of deep scientific interest. It embraces questions relating directly to geology, chemistry, and to animal and vegetable anatomy and physiology. Take for example the soil. Whence is it derived? What occasions its numerous varieties? What are the constituents of which it consists? These are questions that must frequently occur to the mind of every intelligent and inquiring farmer; and they are questions most certainly to which geology and chemistry only can return a correct answer. It has been found by observation, that the crust of the earth consists of a series of rock formations, overlying each other, and differing in their mineralogical and chemical characters. The mineral constituents of soils have been derived from the disintegration of the rocks on which they rest—a process that is constantly going on by means of natural agents, both mechanical and chemical, aided in some degree by cultivation. There are instances of ancient drifts, where the materials of soils now existing were brought from great distances, but these are only slight exceptions to the general principle just stated. A correct geological map of a country or a portion of it, in which the various rock formations on which the soil rests are represented by the different colouring of the surface, is to the scientific farmer not only interesting, but may to some extent be made practically useful in relation to draining and general farm management. Then again as to the constituents of soils, including both organic and inorganic, it has been determined that the great diversity existing as relating either to mere mechanical condition, or power of fertility, depends upon the proportionate combination of those ingredients. Here chemistry comes to our aid by teaching us how to analyse soils, and thus determine both the nature and amount of the different substances of which they consist.

Further, the farmer, by mechanical operations, so disintegrates and pulverises the soil as to bring it into a suitable condition for the growth of plants, which serve as food to animals. What an astonishing series of changes is here presented. The living plant springing from a little inert seed that was deposited in the dead earth, and furnishing subsistence to the sentient and moving animal! These truly wonderful phenomena tax the highest present attainments of the chemist and physiologist for even a partial and imperfect explanation. But the farmer learns from these facts, that the plant can no more

than the animal live and thrive without food. Hence he applies manures on such soils as have been more or less exhausted by previous crops. He thus learns a fundamental principle in agriculture—too generally violated in practice—that in order to maintain the fertility of the soil, those very ingredients, in some form or other, must be returned to it, which plants, by working them up into their own substance, have taken away. The whole theory and practice of correct artificial manuring, must therefore be based upon the fundamental laws of chemistry and vegetable physiology. The intelligent husbandman is only the servant of nature; by careful study and observation, he interprets her will, and regulates his practice in agreement with her wise and immutable laws.

The products of agriculture are in all cases *organic* substances—that is, they are either plants or animals; the raising and proper management of which constitutes the practice of husbandry. Here it will be perceived at once how important and numerous are the relations between animal and vegetable physiology and the art of culture. Not a step can the farmer take in preparing his soil for a crop, in selecting the most suitable varieties of plants for the peculiar physical conditions of that soil, or in adopting fresh methods for improving the breed and better management of his stock, without involving many considerations, facts and laws strictly scientific. The amount of this most valuable kind of knowledge which the observant farmer acquires from experience alone, is frequently very considerable.

Again, what are called the imponderable agents—heat, light and electricity—exert a potent influence over all the vital processes both of plants and animals. Thus there are points in the farmer's art that come immediately in contact with the most recondite of the experimental sciences. Of the nature of these agents, we know indeed but little or nothing; and their modes of operation, in many instances, are but imperfectly if at all understood. But by combining science with practice, the experience of the past justifies a reasonable hope for the future, that a progressively increasing light will be shed upon any natural phenomena, which now appear inexplicable.

The complex science of *meteorology* has most intimate connexion with all the pursuits of the farmer, and it is well deserving of his attentive study, though man cannot controul the weather, yet a reasonable foresight and caution—which systematic observation imparts—will enable him to modify his operations to varying circumstances. All the elements which constitute what is usually called *climate*, ought to be carefully observed by every intelligent cultivator of the soil. Heat, moisture, variation above the sea level, the contiguity of

mountains, and plains, forests or oceans—these, as well as mere latitude, are important conditions, giving an endless variety both to animal and vegetable forms, and constituting, with other laws, the elements of a universal system of agriculture.

The reducing of the soil to a proper condition for the growth of plants, by means of implements and machines, brings at once the art of the cultivator into immediate contact with the principles of *mechanics*, the science which determines the laws of matter and motion. Every practical farmer must be aware how important it is that the machines which he uses should be constructed upon the most correct principles, in reference to the utmost practicable diminution of the motive power that impels them, as well as the thorough efficiency of the work to be performed. Hence it becomes desirable—we might indeed say necessary—that both machinists and farmers should understand the main principles at least, of mechanical science; otherwise, the one will most probably fail in constructing the machine on the best principles, and the other will be incompetent to direct properly its practical operation. Since deep and thorough cultivation, particularly on soils reduced by frequent cropping, is now becoming universally acknowledged to be necessary to secure profitable crops; and in a country like Canada, where manual labour is always disproportionate to the price of produce, the subject of agricultural mechanics, or the improvement of our labour-saving machines, is to our farmers one of vital and pressing importance, and intimately connected with the welfare and prosperity of the country.

We have thus briefly pointed out some of the connections between agriculture and physical science. Our object has been to establish the *fact* of the connection, rather than to give lengthened illustrations in proof of it. It may be objected that even the most elementary knowledge of the sciences bearing on agriculture, is an acquisition beyond the reach of our farmers generally. This may have been the case in the past, but already an altered and improved public opinion in relation to this subject is beginning to be heard in most of the countries of the civilized world. In our Normal School, in this city, for the training of schoolmasters for Canada, the claims of agriculture have not been overlooked; and the time we believe is not far distant when this effort for connecting instruction in our industrial pursuits with a system of popular education, will be understood and appreciated by the country.—Our future progress and well being must in a great measure depend on the intelligence of the people.

Let no one however, suppose, whatever may be his age, opportunities or condition, that he is shut out from intellectual improvement. The acquisi-

tion of useful knowledge lies open more or less to all, and far more equally than is commonly imagined. We beg our agricultural youth in the country to consider this, and would recommend to the earnest attention of all our readers the following quotation from *Herschel's Discourse on the study of Natural Philosophy*:—"There is scarcely any well-informed person, who, if he has but the will, has not the power to add something essential to the general stock of knowledge, if he will only observe regularly and methodically some particular class of facts which may most invite his attention, or which his situation may best enable him to study with effect. To instance one subject which *can* only be effectually improved by the united observations of great numbers widely dispersed:—Meteorology, one of the most complicated but important branches of science, is at the same time one in which any person who will attend to plain rules, and bestow the necessary degree of attention, may do effectual service. In forming inductions it will most commonly happen that we are led to our conclusions by the special force of some two or three strongly impressive facts, rather than by affording the whole mass of cases a regular consideration; and hence the need of cautious verification. Indeed, so strong is this propensity of the human mind, that there is hardly a more common thing than to find persons ready to assign a cause for everything they see, and in so doing, to join things the most incongruous, by analogies the most fanciful. This being the case, it is evidently of great importance that these first ready impulses of the mind should be made on the contemplation of the cases most likely to lead to good inductions. The misfortune, however, is, in natural philosophy, that the choice does not rest with us. We must take the instances as nature presents them. Even if we are furnished with a list of them in tabular order, we must understand and compare them with each other, before we can tell which *are* the instances thus deservedly entitled to the highest admiration. And after all—after much labour in vain, and groping in the dark, accident or casual observation will present a case which strikes us at once with a full insight into the subject, before we can even have time to determine to what class its *prerogative* belongs."

In our next we will consider whether, and to what extent, a knowledge of the sciences by the farmer, is essential to the practical improvement of his art

HORSE-RADISH may be kept during winter, by grating it while green, and corking it up in bottles filled with strong vinegar, set in a cool place.

THE PLEASURES AND HAPPINESS OF A FARMER'S LIFE.

There is so much truth in the following extract from a report of the Hon. John I. Slingerland, as published in a recent number of the *Michigan Farmer*, that we are desirous of calling the attention of our readers to the important sentiments it contains. The cultivation of the earth has been too long regarded by the multitude as a mere drudgery—as just so much physical labour, to be mechanically applied, instead of, as it really is, the most natural and useful employment both for the body and the mind. No pursuits connected with the common affairs of life are half so well calculated to develop the various powers of man—physical, mental and moral—as those of agriculture, *when rationally pursued*. Away from the smoke and jostling competition of crowded cities, and the haunts of degrading vice and dissipation, the intelligent and inquiring farmer performs his daily toil, which is of the most healthful kind, in the cool and bracing air of heaven, surrounded by the instruction and elevating teachings of nature's beautiful and wonderful works. We believe there is no pursuit so friendly as his both to health of body and purity of soul; and should he feel conscious of not possessing that desire for knowledge and moral improvement essential to the character of every good and upright citizen, he may safely conclude that the fault is in *himself*, and not in his calling. We think our author has expressed himself unguardedly or ambiguously in saying that agriculture is not to be regarded as a source of wealth, for in fact it is the source and foundation of all material wealth, and the precursor of all the arts of civilized life. The writer most probably meant that agriculture but seldom allows *individuals* to acquire a large fortune, which is strictly correct. If the profits of the farmer are small, as compared to those of the successful trader, like the seasons which govern his operations, they are upon the whole regular and certain. The advantages and blessings he enjoys, which are so beautifully set forth in the extract below in reference to American farmers, may, we feel assured, by using the proper means, be equally realised by ourselves. All our country asks—all indeed that she requires for her continued prosperity and happiness, is, under the blessing of Providence, the dutiful allegiance of her sons.

"Agriculture cannot be looked to as a source of wealth; but money is far from being one of the greatest blessings in life. Its profits, under the most favourable circumstances, must be small, and can only be secured by hard labour, persevering industry, and extreme frugality. Yet the situation of every sober and diligent farmer in our country,

may always be one of substantial independence. A comfortable dwelling, a sufficiency of wholesome food and clothing, the means of raising a family, the opportunity of procuring the best education for his children, the power of gradually improving his property and condition, and of accumulating some humble resources against the time of old age and sickness; and above all the quiet and comforts, and endearments of home, and the perfect enjoyment of his religious rights and privileges, are blessings as much within the reach of the industrious and honest farmer, as of the richest man in the world, and are sufficient to satisfy any but an inordinate avarice and ambition.

The farmer's gains are honest gains. What he gets is not at the expense of suffering, or loss to others, but as the lawful fruits of his own industry and toil. He above all others, should be a religious man: for the fruits which he gathers seem to be poured at once into his lap from the Divine bounty; and the various domestic animals which depend on his care, and are to be daily fed from his hand, remind him that he is in the care of a merciful and kind Providence.

Every operation of husbandry, with all its beautiful and miraculous results, admonishes the thoughtful mind of that unseen but omnipresent and beneficent agency on which all creatures subsist, and which is every where diffusing life, and happiness and good. The flowers of the field, in their splendor and beauty, the birds of the air, are fed by a paternal kindness; the invigorating sun-shine and the fertilizing rain, the fields glistening with the enriching dew, or yellow with the ripened harvest, and the gattle upon a thousand hills, all speak to the husbandman of God, in tones which cannot be misunderstood. Let his heart and life pour forth a grateful response. In the exercise of an honest industry, who can feel a juster claim to the peaceful enjoyment of its bountiful returns? The possession of these gifts of the divine goodness should remind him of his duty to those whom it gives him the power and privilege to succor and relieve.

When the peace and contentment and comfort which reign in his habitation, are thus enjoyed, his heart should go out in charity to his fellow-men.

Have we not cause of congratulation in the improved moral and social condition around us?—all classes of our fellow-citizens actively and successfully employed; the necessaries and comforts of life at command in abundance; prices of labour such that no man in health need be in want, each of the various branches of industry in the community receiving its due encouragement under the fostering protection of our Government, and in a multitude of ways mutually aiding each other. The farmer feeds the manufacturer, the manufacturer clothes the farmer, the merchant transports their commodities from one to the other, and the surplus, if any, where it is most needed. In the body politic, as in the natural body, no one part can say to the other, I have no need of thee, but the united and harmonious co-operation of all, is essential to entire success.

Whatever may have heretofore been thought, it is now admitted by all, whose opinions are of any value, that the vocation of the farmer is as honourable and respectable as any other in the community. Our most distinguished and valued citizens have been farmers, and esteemed it their highest honour

to be considered such. Instance, the farmer of Mount Vernon, the farmer of North Bend, and may I not add, the farmer of Ashland, of which any nation might be proud.

To be an honest, worthy and intelligent farmer, is the highest grade of nobility ever to be desired in this land of equal rights. When other titles shall tower above this, then will our liberties be in danger.

In the times that 'tried men's souls,' to whom did we look, but to the substantial yeomanry of the country for succour and support? Our main reliance for the protection of our rights, under the providence of God, will ever be on the independent tenants of the soil.

The home of the farmer is on the soil he tills; there he desires to live: there he expects to die; there he hopes will abide his descendants for many generations. How direct, then, his interest in the welfare of his country!—how ardent his hopes that she may continue to prosper!

And let us never forget that after all our strivings there is One that giveth the rain and the sun-shine, the seed time and the harvest, and that we are bound to ask him, and to thank him for all his blessings."

MR. COLEMAN'S NEW WORK.

This celebrated American Agriculturist, who has been for several years in Great Britain and other countries of Europe, with a view of making himself practically acquainted with their different systems of agriculture, has just published another interesting and instructive Report on "*The Agriculture and Rural Economy of France, Belgium, Holland, and Switzerland.*" We select the following as containing considerations of grave import, which may be made to have a useful reference to America as well as Europe:

"The present excited state of the civilized world ought more than ever to call the attention of philanthropic individuals and of governments to the immense importance of agriculture. I have been in France during the exciting scenes of a political revolution, in which I have seen very many thousands of workmen without the means of support from their labour, and large bodies of them actually dependent upon public charity for their daily bread. It is not the dangers to public liberty and order, growing out of such large unemployed and destitute multitudes, which so much disturb me, as the actual suffering to which they are exposed, and the melancholy future that lies before them. In London I have encountered, with an extreme depression of heart, thousands of squalid, ragged, miserable poor, without resource but from crime or charity. A distinguished manufacturer in one of the most industrious counties in England, states that there are at least 500,000 operatives without employment, and many on the borders of starvation: tradesmen and professional men will tell you that every trade and profession is overstocked: and one is daily saluted with the melancholy, not to say presumptuous, exclamation, that there are too many people. This reminds one of the sad shipwreck of

the French frigate, the *Alceste*, when many of the wretched survivors, who were floating upon a raft composed of fragments of the ship, deemed it necessary to their own safety to drive a large portion of their suffering companions into the sea—a sad and horrible alternative!

“It would be more than absurd in me to attempt to prescribe a remedy for evils upon which so many sagacious heads and philanthropic hearts have concentrated without success their powerful energies. But I will point out what I deem the true cause of this great evil, and leave to wiser minds to suggest a cure. * * * The great cause of the evils complained of is, that the cultivation of the earth is deserted; and that such innumerable multitudes pour into cities and towns, and filling every profession and every mechanical art and trade, destroy each other by a competition in articles of which the demand is necessarily limited. There may be too many physicians, too many lawyers, and too many ministers, for them all to get a sufficient and an honest living: and too many hatters, and too many printers, and too many shop-keepers; for, besides that these persons furnish more of a particular article or service than the community require, their work is in general only formal; they *only* manufacture, they do not produce; they do not, like the grower of bread and of clothing, create that which may be said to have a substantial and permanent value. For when was the time when there was too great an abundance of the materials—I mean particularly those which can be kept from year to year—for food and clothing, for human subsistence and comfort. As long as this state of things continues, there must be misery in the community; as the population increases this misery must increase.

“In cities, money becomes the standard of prosperity. Wages are paid in money; money is the instrument of subsistence, of gain, and of pleasure. Avarice, under these circumstances, becomes stimulated to excess, and often leads to crime. Men’s happiness becomes dependent upon that which has no intrinsic, but only an arbitrary value—a value which is always capricious and continually changing. If men could be induced to cultivate the earth, and trained to the simple habits of laborious and rural life, be satisfied with what that affords them; if they would measure their prosperity and wealth, not by so many shining pieces of gold and silver, which they have hoarded in their closets, but by the produce of their labour in bread and clothing, and the various and innumerable simple luxuries of life, with which a kind Providence so often blesses the labours even of the most humble, how changed would be their condition! If they could be as well satisfied to breathe the fresh air of their native mountains and forests as the corrupt and pestilential atmosphere of crowded streets and confined dwellings, from which both sun and light are shut out; as well content to enjoy the simple and healthful sports of the country as the exciting and exhausting pleasures of city life; if their taste could be better satisfied to contemplate the verdant fields, waving with crops or enamelled with flowers, than carpeted and gilded halls; if they could be taught to prefer skies painted with clouds of brilliant hues, and studded with stars whose lustre never grows dim, to palaces blazing with artificial lustres and

adorned with the far inferior magnificence of man’s genius and taste; if, indeed, by any possible means, you could induce men and women, and, above all, the young, to love the country; if, in a word, you could keep them in the country by an attachment to its simple labours and recreations, and prevent their crowding cities to repletion, and thus destroying by competition the ordinary professions and trades which prevail there, where so many vigorous young men and so many fair and blooming maidens rush in, like flies in a summer evening into a blazing taper, to find too often the grave of their health, hopes, happiness, and virtue, what an immense gain would be achieved for morals and for humanity!”

ON FEEDING POULTRY, AND THE CHEMICAL COMPOSITION OF EGGS.

At the recent Meeting of the British Association for the advancement of science, held at Newport, *Captain Ibbetson* read a paper, he had translated from the French, by Dr. Sacc, on the chemical and physiological effects of feeding fowls, and on the changes and chemical composition of eggs during incubation.

“The first part of this paper gave an account of the results of feeding a bantam cock and hen on barley alone. At the end of a week it was found that the cock had gained 18 grammes (a gramme is 15½ grains English), and the hen had lost 21 grammes, but had laid in the meantime an egg weighing 22 grammes. In addition to the barley, a certain quantity of carbonate of lime had been consumed. The egg on being examined was found to contain—

Albumen - - - - -	19.49
Oil - - - - -	27.84
Water - - - - -	52.67
	100.00
In hens ordinarily fed, the egg contained—	
Albumen - - - - -	17
Oil - - - - -	29
Water - - - - -	54
	100

Thus showing that the barley-fed hen laid eggs with a larger quantity of solid organic matter than ordinarily fed hens. It was found that hens during incubation lose weight. A hen before incubation weighed 672.155 grammes; after 483.202 grammes. During incubation eggs lose weight in the following proportion: 1st week, 5 per cent.; 2nd week, 9 per cent.; 3rd week, 3 per cent.; losing altogether 17 per cent. of their weight. The shell of the egg was found to weigh 18 per cent. of the egg, and to be composed principally of carbonate of lime.—The shell is not formed unless the animal has access to carbonate of lime in some form or other. The carbonate of lime is deposited on the egg from without, and is carried to the egg in a state of solution in carbonic acid. Phosphate of lime and traces of iron were found in the albumen and the yolk of the egg, and also soda. The function of the albumen or white of the egg appears to be first

to furnish the young bird with phosphate of lime for its bones, and other earthy and alkaline salts; and secondly, to supply water, the material for the muscles, and to hold in solution the carbonic acid breathed by the young bird before it is hatched.—A communication is constantly kept up between the atmosphere and the chick by the shell, which is the organ of the gaseous, pulmonary, and cutaneous excretions. The yolk of the egg is principally composed of oily matter which appears to be taken into the system of the young chick, and is used in respiration for the purpose of maintaining animal heat. Thus it is found, that in the contents of the new-laid egg there are the same principles surrounding the young chick, as there are in the vegetable kingdom for the supply of the whole animal kingdom. We have, first, protein for nutrition; secondly, oil for combustion; and thirdly, various salts for combining with the agents of nutrition.”

To the Editors of the Canadian Agriculturist.

THE ADVANTAGES OF SHEEP FARMING AS AN AUXILIARY TO THE SUCCESSFUL CULTIVATION OF WHEAT IN CANADA.

In developing the resources of new countries, it may generally be observed that in the wisdom of the arrangements of Divine Providence, indications are given by which peculiar fitness for specific purposes may be inferred, and often clearly pointed out as indigenous to, or peculiarly suited for particular classes in the animal or vegetable department, thus supplying an index for directing the agricultural student in exploring the grand field of nature.—This is well exemplified in the abundant and cheap supply of the several varieties of gypsum in Western Canada, some of which have an extraordinary fertilizing effect on Canadian soil, insuring in ordinary seasons the most luxuriant crops of every variety of clover, which constitutes the best sheep feed, whether as hay or pasture. This fact alone, if duly improved, will confer advantages which cannot fail to make Canada one of the most fertile Provinces on earth.

To bring under review the different descriptions of soil on which gypsum exerts the most powerful agency would form a subject of interesting enquiry, and some facts are intended to be communicated when the Report of the Royal Agricultural Society of England is received, of the result of one ton of the grey cretaceous gypsum sent by myself from Paris, Western Canada, during the Presidency of Lord Portman.

With regard to the general quality of the soil in extensive sections in Canada, it may be stated that if Liebig himself had prescribed its composition or compounded a soil in the laboratory, it could not have been better suited for the production of the finest wheats, but the experience of many years on the Wiltshire Downs and in Canada, enables me to state, that the quantity as well as quality of the wheat now produced in Canada, may be very much improved by an extended system of sheep farming. It has been erroneously stated by some theorists, that the climate of Canada is unsuited to the successful labours of the flock-master; but the fact is,

that after taking every thing into the account, Canada has decidedly the balance of advantages: the English flock-master will indeed scarcely believe that for an outlay of about twelve dollars we can in one day so effectually manure with gypsum fifty acres of grass land, as to ensure an average crop of about seventy-five tons of hay, composed of a choice admixture of white and red clover, timothy, &c., which would delight his heart to call his own at any price. We have too in Canada an exemption from the frequent recurrence of some fatal diseases common in England: on reference to my shepherd's books I find the average mortality about three per cent. less here.

The advantages of sheep to the wheat crop are two-fold, viz: manure, and mechanical action by treading; first, as manure: It is well known that the manure of sheep contains a large portion of ammonia; this will be noticed by any one on entering a large sheep-fold in the morning: and this simple fact, in connexion with the affinity in gypsum for ammonia, will explain the extraordinary crops which have been grown on lands on which gypsum had been spread and subsequently folded or depastured with sheep. Another means of fertility will be found to result from the quantity of grease or yolk imparted from the wool, and especially in the summer season, most conspicuous when the sheep are in good condition. The benefit to the wheat crop by treading the fallows with sheep both before and after wheat sowing, is well understood by those who have adopted it, and is invariably practised in the best wheat districts in the south of England; it is doubtless a preventative (in many cases) against freezing out, and also against rust, calamities resulting from, or very much increased by, the uncompressed state of any soil containing a large portion of vegetable matter.

As some of the best wheat lands in every country are intersected by, or rest upon strata of clay or impervious loam, hill-side land, &c., it remains to mention one other agricultural process, absolutely necessary to success in such situations, but which, as yet, is but little understood in Canada—this is effective drainage: without giving credit to all that has been stated in the speeches of the Rev. Mr. Fluxtable, at Tamworth and elsewhere, of the wonderful crops grown by him after draining, I have myself grown on land recently drained, forty bushels of wheat per acre, which lands were previously valued at only 5s. per acre, in consequence of excess of water. As the experience necessarily acquired in this department in the discharge of official duties has been somewhat extensive, it is my intention, with a view of promoting the public good, and employment of manual labor, to furnish gratuitously, practical information, by diagram or otherwise; this of course must be free of expense.

In conclusion, I have to congratulate the class to which I belong, on our prospects of shortly obtaining that even-handed justice which we have so long been endeavoring to obtain, in having the same privilege in the markets of our United States' neighbors, as their people have long enjoyed in Canada, and in removing the existing restrictions on the transmission of our produce to the European markets, which have amounted to a heavy tax on us for the advantage of another class, certainly not better men or more deserving than ourselves.

As the exertions of our friend, the Hon. Hamilton Merritt, have been unwearied in endeavoring to promote the great object alluded to, I take this opportunity to suggest, that on the favorable termination of the proposed arrangements, some suitable testimonial be presented to him expressive of our approbation and esteem.

HENRY MOYLE.

*Sheep-walk, near Branford,
Nov. 19, 1848.*

STATE OF THE BRITISH GRAIN MARKETS,
CROPS, WEATHER, &c.

From all that we can learn from public and private sources of information, we are led to conclude that the crops generally throughout the British Islands are below an average. This is the case with wheat, particularly in the south and west of England, where the harvest was seriously injured by wet weather. In Scotland and the north of England, the weather was more propitious, and the failure of the potatoes not so great. In many parts of Ireland, the grain crops were very deficient, and the potato-blight has been general, destroying probably a full moiety of the crop. Notwithstanding these deficiencies, the markets have had a downward tendency, chiefly in consequence of large importations from the continent of Europe: and the latest information gives little hope of a reaction. The corn duties will entirely cease in March, so that any material improvement in prices in spring seems exceedingly doubtful. Hops have proved a large crop, but in consequence of the wetness of the season and high winds, the quality is much complained of. The duty has been announced at £212,416, but little short of 1847. Prices are ruinously low—from 40s. to 60s. per cwt.—and much distress prevails throughout the hop-districts. Great efforts are being made for the repeal of the duty, which amounts to about 20s. per cwt. The heavy rains appear to have continued through the autumnal months, causing destructive inundations in many parts. An agricultural correspondent, writing under date October 27, says that “up to this day, scarcely a farmer in the weald of Kent and Sussex has commenced wheat-sowing; nor is there any prospect of doing so for some time, in consequence of the extreme wet state of the soil, occasioned by the unprecedented heavy rains. The state and prospects of the farmers in this part of the kingdom are most gloomy.”—The following observations of an experienced farmer, apply to the county of Sussex, and generally to the south of England:

“We have been farmers for forty years, and with the exception of the year 1816 we never remember so ungenial a one for the operations of agriculture as the present. March and April were continually wet, so that on many farms scarcely a blade was

seen before May. Those who attempted to work the land before did more harm than good, and made the tilth still more unkindly. Dry weather then set in all at once. From the previous incessant rains we felt the sudden change the more, and the wheat as well as the barley did not get on favourably. On the grass land, where fed bare, the change was felt more, and cattle and sheep did very badly. June again was wet, and from that time till September, in this county, we were scarcely forty-eight hours without rain. A very small proportion of the wheat was carried before September, and much of this in bad order. What has been threshed has been found to yield very badly, is much grown, and almost unsaleable. Every one keeps off as long as possible in consequence. We have spoken of our crop of barley. As to oats, they—particularly white oats—are found very light, many not weighing more than 28lbs. per bushel. Peas, in some instances, yield and were harvested pretty well, particularly those sown early. Of beans we do not grow many, and cannot speak with any certainty, but they are not a good crop. Tares were a complete failure. Rape, for feeding in the autumn for sheep, of which a great deal is sown on the Downs, has been abundant, but the sheep have not done well on it, owing to continual wet. The lambs have done worse than we ever recollect. The clovers and grass have been too succulent, and have made them purge violently, in many cases attended with considerable loss. Fortunately, we have hitherto escaped the small pox in our flocks, but the lameness and sore mouths introduced by foreign sheep and cattle have become prevalent. Indeed we much doubt if we shall ever see the disease eradicated. We have found much benefit from driving our sheep every morning through a pound, in which we put some quick lime. From being under cover, it sustained its efficacy for a long time.

AVERAGE CROPS IN NEW SOUTH WALES.—The following is stated by a writer in Simmond's “Colonial Magazine,” to be the average quantity per acre of agricultural crops, as calculated upon a period of ten years. Wheat, 14 bushels; maize, 17½ bushels; millet, 4½ bushels; oats, 13½ bushels; rye, 13½ bushels; barley, 15½ bushels; potatoes, 2½ tons; tobacco, 7 cwt.; and hay, 1½ ton. The average of maize in such a climate as New Holland, is considerably less than we should have expected. Colonial farming, however, is generally performed in so imperfect and slovenly a manner, as necessarily to keep the average amount of produce extremely low. This is the case in British America, as well as in Australia.

FARM-YARD DUNG.—Dr. Coventry, the professor of Agriculture at Cambridge, estimates the quantities of dung to be made from the consumption of crops in the following manner:—

	Tons.
An acre of turnips or cabbages - - - -	6
An acre of clover or grass the first year -	6
Ditto, if mown the second year - - - -	5½
Ditto, if pastured the second and third year -	5
An acre of Pulse, part of the seed being used	
at home - - - - -	5½
Ditto of pulse crop when the seed is sold -	5
Ditto of white corn - - - - -	4

PROVINCIAL ASSOCIATION.

We beg to state for the information of the Directors of the Provincial Association, that the Annual Meeting of Directors will take place at the Court House, Toronto, on the *third* Wednesday in February next, at 10 o'clock, A. M. We are requested to announce that important business will be transacted, and it is therefore desirable that a full attendance of Directors should be had. The affairs of this important Institution are in some confusion from neglect and inattention, and we earnestly hope that before another Exhibition a better system of management will be introduced.

HOME DISTRICT AGRICULTURAL SOCIETY.

The Annual Meeting for the election of Officers, &c., will be held at Toronto on the second Wednesday in February next.

REMARKS ON THE SEASON,

EMBRACING METEOROLOGICAL OBSERVATIONS MADE IN ENGLAND AND THE UNITED STATES.

From the Genesee Farmer.

The fruits of the labour of the husbandman are immediately dependent on the favourableness of the season. With seasonable rains, and otherwise suitable temperature of climate, the industrious and careful farmer is sure to reap a plentiful harvest. From the fact that climate exerts a greater influence upon plants than the mechanical labours of the cultivator, it becomes a subject of the deepest interest connected with agricultural and horticultural pursuits. The parts of this subject which particularly interest and concern the tillers of the earth, are those relating to the quantity of rain, the number of days on which it falls, and the temperature of the atmosphere during the period of the growth and maturity of the plants. Mr. Lawes, an able contributor to the agricultural journals of England, gives the results of his observations on these points for three years. These are subjoined. The period embraced in the table begins with April and ends with October. He considers the climate so far as it affects the growth of grass in April and May; the wheat climate commences with May, and ends with August; the turnip season to begin with June, and end with October.

	1844	1845	1846
No. of days' rain fell during April and May, (grass season)	14	36	28
No. do. from May 1st to end of August, 17 weeks, (grass season)	43	71	45
No. from June to end of October, 21 weeks, (turnip season)	67	74	65
Inches of rain during April and May, (grass season)	0.59	3.87	5.19
Do. from May 1st to the end of August, 17 weeks, (grass season)	5.17	9.34	8.41
Do. from June to end of October, 21 weeks, (turnip season)	10.37	9.62	13.95
Mean temperature during April and May, (grass season)	52.6	48.9	50.5
Do. from May 1st to end of August, 17 weeks, (grass season)	60.3	58.2	63.1
Do. from June to end of October, 21 weeks, (turnip season)	59.3	57.8	62.2
Temperature above or below average from } Above. Below. Ab'v.			
May to end of August, (grass season) }	0.9	2.1	3.2

He remarks that the two spring months of 1844 were

unusually dry, the quantity of rain and the number of days on which it fell being small. The summer was warm, and the quantity of rain moderate. The climate being unadapted to an increased accumulative and circulating condition of the plants, the favorable growth of the spring plants was prevented; but a warm dry summer favoured the depositing and elaborative condition, and hence a good quality of grain.

In 1845, the great number of rainy days and the low temperature were highly favourable to the circulatory condition of the plants, and therefore green crops of all descriptions and straw were unusually abundant, and the grain of a bad quality.

In 1846 the spring favoured the circulatory condition, and the crops of grass and clover were luxuriant. In the month of June, when the grain was forming, the temperature was $6\frac{1}{2}$ above the average, and there were only two days on which rain fell; the quality of grain produced was very fine.

On the contrary, the crops of turnips were inferior, owing to there being 31 successive days without rain, twice during the season. From May 21st to June 21st, no rain fell, and from August 22d to September 21st, rain fell on three days only—the quantity being less than one-tenth of an inch.

In another table Mr. L. gives the effect of climate on the quantity and quality of produce of the unmanured plots of the experimental wheat field, carried through three years as before; also the average results of variously manured plots.

	1844	1845	1846
Corn (i. e. wheat) per acre in bushels,	16	23	17
Straw per acre, in lbs.,	1120	2712	1513
Weight of wheat per bushel in lbs.,	58½	56½	68½
Per centage of wheat to straw, (straw 1000,)	821	534	757
MEAN OF ALL THE PLOTS			
Weight of wheat per bushel in lbs.,	60½	56½	63
Per centage of wheat to straw, (straw 1000,)	868	499	765

In his remarks on this table he says, that, the effect of climate, as indicated by the other table, is in accordance with the general character of the season. The lowest weight of the bushel, and the greatest amount of straw, were obtained in that season which had the greatest number of rainy days and the lowest temperature; the least amount of straw with the driest season, and the first quality of grain in the warmest summer.

Will not some of the farmers who read this paper try similar experiments, and publish the results in the Genesee Farmer? All the apparatus necessary to try the experiment is a thermometer, a rain-gauge, and a machine for weighing.

I here add the results of my observations for the corresponding seasons given in Mr. Lawes' table:

	1844	1845	1846
No of days' rain fell during April and May, (grass season)	27	20	21
Do from May 1st to end of August,	63	45	42
Do from June 1st to end of October,	65	65	54
Inches of rain during April and May	4.90	5.14	3.52
Do. from May 1st to end of August,	12.41	12.65	13.64
Do. from June 1st to end of October,	13.92	17.16	20.83
Mean temperature during April and May,	55.6	50.1	53.6
Do. from May 1st to end of August,	66.2	64.3	66.1
Do. from June 1st to end of October,	61.2	62.1	63.4

I have presented this table to show by direct comparison the difference in climate between this place and England.

Our grass season and the grass season in England very nearly correspond; not so, however, with the grain season. Wheat matures and is harvested from six weeks to two months earlier here than in our fatherland.

The season, just closed, was unusually favourable for the interests of the farmer—not very rainy, and not very dry—not very cold and not very warm—but was furnished with just about that quantity of moisture and degree of temperature which best promote the growth

and maturity of vegetation. Consequently the labours and cares of the husbandman were crowned with a beautiful harvest, both the earlier and later. September was cool and rainy, October was exceedingly fine—the splendour and beauty of the hues of the decaying leaves of the trees unsurpassed; and the month of November thus far has been exceedingly unpleasant—snow and rain, or rain or snow, almost every day.

J. WETHERELL.

Rochester, Nov. 13, 1848.

ON THE MEANS OF DESTROYING SNAILS.—I determined to undertake the analysis of the small grey snail (*Limax agrestis*), so frequently found in gardens and in the fields, and which has this year done so much damage to all kinds of cultivation, hoping that such an investigation might lead to the discovery of a means of preventing the too great increase of these creatures. My attention was especially directed to the glutinous matter which they continually secrete, and which serves to attach their bodies to the surface over which they pass. I endeavored to find out in what way lime which has long been recommended to cultivators as a means of destroying snails, acted upon them; and I have ascertained that lime-water diluted with three times its bulk of water, was sufficient for their destruction. Water, scarcely rendered alkaline by the addition of potash, killed them still more quickly, causing a large quantity of slime to be thrown out. Solutions of the metallic salts, when added to this slimy matter, produce an abundant coagulated mass; that which is produced by the action of nitrate of copper dissolves in an excess of potash, and produces a violet-coloured liquor. Of all the poisons which I have tried on the snails, there is none which has appeared to exert so deleterious an influence as the alkalis. If a drop of caustic ammonia, or of caustic potash, be added to a quart of rain-water, an alkaline solution will be formed of such little strength that it scarcely affects delicate test-paper, and causes no impression on the organs of taste; if however we place some snails in this solution they soon die, whilst other snails placed in rain-water alone, escape out of the vessel in which they are placed. It would appear difficult to find more energetic poisons for snails than those I have indicated; I therefore think that a weak solution of caustic potash or soda, or, what would be still more economical, the refuse lyes which have served for the washing of linen, diluted with water to which a small quantity of quick-lime has been added, will enable us to attain the object we have in view more readily and certainly than by the use of lime alone in the state of powder, as this is speedily converted into a carbonate of lime by the action of the air, and thus loses its poisonous influence on the snails.—*M. Braconnot, in The Florist.*

AGRICULTURAL COLLEGE, CIRENCESTER.—We are glad to hear that the Agricultural College at Cirencester is in a very prosperous condition, and that the power of nominating students, which is vested in the shareholders, is soon likely to be a valuable privilege. The opportunity which it affords of acquiring sound agricultural and scientific education, under Mr. Wilson, its able principal, and the other highly qualified professors, on a farm now getting into a high state of cultivation, is perhaps superior to any other of the kind in this country; and its bearing upon a young man's prospects in life for obtaining a livelihood in connection with the management and cultivation of land, have just received satisfactory exemplification. During the past week we hear that two students, who since they left the college had prepared themselves by further practice, have obtained valuable appointments.—*Agricultural Gazette.*

MR. COLEMAN IN ENGLAND.

The Saffron Walden Agricultural Society held its annual meeting for show of stock and competition in ploughing, yesterday week. Lord Braybrooke presided; Lord Sondes, Lord Walsingham, Mr. Oct. Duncombe, M.P., and Major Beresford, M.P., were among the numerous gentry that attended. The usual routine of agricultural speeches was relieved by the presence of Mr. Coleman, an American, who has been some years in England and the countries of Western Europe, on an agricultural tour—commissioned by certain public bodies to collect European knowledge on agricultural subjects, for American use. Mr. Coleman made a speech full of hearty national sympathy with this country, and of instructive matter to his audience, whom he warmed to enthusiasm by the animation of his oratory. Some of his facts on the agriculture of the Flemings, the only people who excel the English in any department of that pursuit, were remarkable. For example, in commenting upon the Flemish maxim, "Without forage, no cattle; without cattle, no manure; without manure, no crop," he gave this statement—

"The Flemish farmer keeps twice as many cattle as the English. A valuer was sent to value the manure upon some land about to be sold; and he estimated the manure per acre at—how much do you think? Was it at £10? Thirty shillings, one gentleman told him, was the usual price—at £15—at £20—will any one bid more—it's going; no, at £45 per acre. And the party who had manure in this way was a shrewd man, who would not have put it on if he could not have seen his way to a fair return for it. Manure is, in fact, the life-blood—it is the foundation of agriculture. We hear of agricultural schools, and the researches of learned chemists, which are to turn everything into gold. Why, chemistry has long been well understood, at least to this extent, that we have not to learn the value of manure; and I say, let the chemist go on—he will tell you what he has found when he discovers it: and in the mean time do you go on saving all the manure you can, and bestowing it with the most liberal hand."

Diverging from the more immediate topic, Mr. Coleman touched on education; and thence on the institutions of his own country and of this:—

"You call us a Democracy. We are not a Democracy—we are a Republic. We are governed by refinements, the tendencies of which are to place us under the wisest and the best men of the country, if these were carried out. What country do we come from? From England; and you are a Republic. A limited Monarchy is a Republic; and you have the principle of Democracy infused into it. The opinion of some is, that there is no liberty unless every man has his will; but if every man had his will, there would be no liberty at all. There cannot be any liberty enjoyed but under the strongest government—the stronger the government, the more the liberty; but I do not say a despotic government."

He ended with hopes for increasing harmony between his native country and "the old fatherland"—

"I can only pray that the sympathies that bind together these two nations of the earth in peace and civilization, the mother and daughter, the parent and child, may grow stronger and stronger. That which was considered the means of separation has become a bond of union; and may this union continue! If I could find a man on either side of the water who could speak with indifference and complacency of a war between the two countries, I would hang him—I would hang him, for high treason to humanity, on the first tree I found. I am too much oppressed with all I have seen in England to express my wishes as I could desire; but I earnestly pray for the continued prosperity, for the wealth, happiness and glory of that magnificent, that great and glorious land in which you live."—*L. Spec.*

AGRICULTURAL DINNERS.—THE BROMYARD AGRICULTURAL SOCIETY held their annual dinner on Thursday week. The meeting was rendered somewhat remarkable by the presence of the three county members at the dinner, when a discussion was raised by Mr. GEORGE CORNEWALL LEWIS, M. P., Under Secretary of State, on the probable effect of the free importation of foreign corn into this country under the new regulation, which will come into operation at the end of February next. Mr. Lewis, in responding to the toast of the "County Members," said that without undertaking to be a political prophet, he would undertake to express an opinion that the persons who predicted that English corn, when the import duty should be altogether removed next spring, would undergo a great depression in price, made a great mistake. Perhaps they would allow him shortly to state what he considered were two material circumstances which were generally overlooked in discussing this important question. Those persons who entertained these predictions overlooked two things, the quantity of the supply and the cost of the carriage in transit. If he made out these points, he thought they would agree with him that they were two very important considerations to be overlooked. And, first, with regard to the quantity of supply. Suppose the duty was at this moment what it was at the time when the introduction of foreign corn was prohibited as long as the average price of English corn was under 80s. per qr. Suppose the price was 70s. per qr. in England, and at Hamburgh 50s. per qr., then the class of people to whom he had already alluded imagined, that if the prohibitory duty were removed, the selling price of the Hamburgh corn in England would be 50s. per qr. This was the supposition on the note. On the other hand, people in large manufacturing towns exclaimed, "See how the farmers are starving us by keeping up the price of corn." Now, this at first seemed a plausible argument; but he would venture to say that the farmer who thought he should lose by selling his wheat at 50s. per qr., and the manufacturer also, were both mistaken. The price of corn at Hamburgh was determined by the demands of the comparatively small town of Hamburgh; but let them remove the restrictions on the importation of corn into England, and they would find that the small portion of corn at that place would be as nothing compared with the demands of this country. Let the import duty in this country be removed, and at once the price of corn at Hamburgh would go up; the people of Hamburgh would have to pay more for their corn than before, and we should have to pay but little less. They must bear in mind the immense demand in this country for corn. Instead of our prices approaching their standard, theirs would progress towards ours, and a medium price would be established between the two. So much for one part of the question. Another party urged that as the price of wheat in Russia and Spain was as low as 15s. per quarter, when the duty was removed, we should be inundated with wheat from those countries, and farmers would be ruined. On the other hand, the manufacturers cried out that by the removal of these duties they would be enabled to live in abundance and prosperity; their manufactures would flourish, and the prosperity of the country would reach a high point. Here again was a mistake. It was perfectly true that if they took some particular points, the price of some limited quantity of wheat on the spot in certain parts of Spain and Russia might perhaps be 15s. per quarter. Indeed in some parts of India (Hindostan), wheat could be grown at about 10s. per quarter. But would any gentleman like to undertake, as a speculation, to import that wheat into London? If he thought he could afford to sell it at 50s. per quarter, he would find that he was under a mistake. We in England did not know what a country like

India, without roads or canals, was. There everything had to be conveyed across the country upon the backs of horses, so that the cost of produce was doubled by twenty miles of transport. Such was also the case in some parts of Spain and Russia. In certain parts of Spain, for instance, wine was so abundant that in some years it was poured out of the old casks, in order to introduce the new. That simply arose from the enormous cost of carriage, and the want of wood for making casks. Gibraltar and Cadiz, too, were supplied with American wheat at a price below what it could be supplied from the interior of their own country, for want of the means of transport. Therefore it was nothing to tell them that wheat was to be purchased at 15s. per quarter in Spain or on the steppes of Russia. The question was, what could that wheat be sold at when imported into London. These, he thought, were two of the most material elements in the probable price of corn in this country, with reference to next summer, after the intended changes in the laws of importation shall have taken place.

HESSIAN FLY.—This destroying insect is becoming more and more plenty over the whole wheat district, subject to slight variations through the effect exercised over them by the severe and open winters and frosts. That they are extremely local, and when once colonized do not emigrate far, when they can find the proper pabulum for subsistence near home, we have been a long time satisfied. A respectable and extensive farmer in Pennsylvania, states that he has for ten years past, almost entirely prevented their depredations, by burning over the stubble directly after cutting his wheat, and before they had changed from the *larvæ* to the winged state; while fields in his immediate neighbourhood were destroyed.

This view of the subject is remarkably confirmed, by a case related to us a few days since by one of our best wheat farmers in this section. His crop was so entirely destroyed that it did not pay for harvesting, and the land being in fine tilth, he resolved to follow it again with wheat, and consequently turned it over pretty soon after. About the first of September he commenced cross plowing, and when about half the field was finished, the other half looked in such good order that he omitted plowing it, and sowed his wheat. The next summer the grain was so destroyed on the part twice plowed that he did not harvest it, while the other was a full average crop.

The *rationale* is plain; the insect when in the worm state, was plowed under with the stubble, and on that part twice plowed was brought up again, hatched out, and attached their eggs to the young wheat—while in that part but once plowed they were buried beyond their power of getting to the surface, and were destroyed.

These facts are worth looking at, and support each other remarkably.—*Genesee Farmer*.

CHEAP REMEDY FOR TURNIP FLY.—As soon as it is seen that the fly is at work, procure some soot and sow it broadcast, or sprinkle it over the young plant, when the fly will vanish as if by magic, and will not come near the plant again, so long as the soot retains its pungency; but should rain fall before the plant has outgrown the fly's influence, then when it becomes fair repeat the dose of soot. I can assure you from satisfactory experience, that it is a most effectual cure for the fly, and a fructifier of the soil, as my present crop of Swedes (Skirving's Purple top) bears witness, some of them being now, 28th Sept., upwards of two feet in circumference. Some of my neighbours had to sow their turnips twice and even three times.—*Ulswater*.

Horticulture.

MONTREAL HORTICULTURAL SOCIETY.

We have been favored with the first Annual Report of the *Montreal Horticultural Society* for the past year, together with a copy of the Proceedings connected with its formation in 1847. The Society, considering its recent establishment, appears to be well supported, and promises to run a successful career of usefulness. Its first year's income appears to have been nearly £100; and during that period there had been four public exhibitions, which were of a highly creditable character, and numerously attended. At the Annual Meeting in September, not less than 1500 different articles were presented for competition. The show of apples and plums, in particular, is stated to have been splendid; comprising several new sorts of peculiar richness and flavor. "The result," says the Report, "of these exhibitions has been to shew the capabilities of Montreal Island for the cultivation of fruits, as well as other products; to create a generous emulation among the members, to promote and foster a taste for horticultural pursuits, and to awaken an interest on the part of the public in the operations of the Society." It is intimated that arrangements may probably be made with the University of McGill College, under which a portion of the grounds belonging to that Institution might be obtained for the purposes of the Society. By the bye, could not something of this sort be done here with our own University in Toronto? It is high time that the *Queen City of the West* manifested more interest in gardening pursuits, and that a *Horticultural Society* be established forthwith. We shall be happy to render such a project our humble aid. The following extract from the Report will be perused with interest by our readers; and in our next we hope to make room for some portions of the chaste and elegant address of the Society's President,—the Honorable Judge Day:

"The importance of Horticulture cannot be too highly estimated. Whether regarded as a means of affording employment to those possessed of leisure, or as a source of recreation to those oppressed with the cares of business, or the duties of a profession, it is equally attractive and interesting. To the man of science and taste, it opens a wide field for investigation and study; to the high and the low, to the rich and the poor, it presents a fountain of the purest and most innocent pleasure, of which all may partake with equal enjoyment. There can be no doubt that attention to Horticulture strengthens the attractions of home, and contributes not a little to those interesting associations of childhood which, in after life, afford the most pleasing recollections, and which, not effaced by time or distance, are often

awakened by the sight of a familiar landscape, flower, or tree. As a means of developing the better part of our nature, and of promoting those refined tastes and feelings, which lead men to seek pleasure in that which is pure and good, the pursuit of Horticulture stands unrivalled. Regarded in a practical point of view, its importance is still greater, since it promotes the comforts and provides the necessities of life: at the same time, adding to the delicacies and luxuries of the table. Such advantages surely present sufficient justification for any amount of effort in their attainment; and if, in any degree, these happy influences have been exerted by the formation of this Society, it will be an ample reward to those whose zealous endeavors have been devoted to its welfare.

Your Board are happy to observe, that a general interest in Horticultural pursuits, hitherto unknown, seems to be recently awakened. They regard the large importation of plants and fruit trees, the erection of numerous extensive vineries and green houses, the increased taste for Horticulture, and attention to gardening, as evidences of this improvement. They hail this as the dawn of a brighter day, when our beautiful Island may be in reality entitled to the appellation it often receives, of the *Garden of Canada*."

QUALITY OF APPLES,

AS DECIDED AT THE BUFFALO POMOLOGICAL CONVENTION.

From the Genesee Farmer.

The St. Lawrence Apple.—Several gentlemen from Canada, Western New York, and elsewhere, regarded this fruit as being nearly first-rate, and some even quite first-rate, in quality. The tree is a vigorous grower and a good bearer, and the fruit always large, fair and fine. Mr. Thomas of Macedon objected to it on account of its coarseness, and said he regarded it as not more than second or third-rate. After considerable discussion it was voted, though not unanimously, to be first-rate.

Pomme Royal or *Dyer*.—Mr. Elliot said this apple was cultivated in Ohio, in some collections, as *Cole's Spice* and *Golden Spice*. Mr. Thomas said it was cultivated in Western New York, in some collections, as *Hollow Crown*.—Unanimously passed as first-rate.

Early Joe.—All who knew this fruit concurred in its being one of the very best apples of its season, but that it should be eaten soon after being picked from the tree. [We have had this fruit in fine condition 6 weeks after being gathered.]

Early Strawberry.—First-rate for its season.

Sweet Bough.—First-rate for its season.

Sine qua non.—First-rate for its season.

Minister.—A famous New England Apple. Passed as second-rate.

Summer Rose.—Unanimously passed as first-rate.—Mr. Elliot of Ohio remarked that if he should cultivate but one early apple it would be this.

Summer Queen.—A sweet variety was presented under this name, but was decided to be the *Augustine*.—The true variety, being that described by Downing, passed as first-rate for cooking, and second for the table.

Augustine.—Third-rate.

Dutchess of Oldenburg.—First-rate for cooking, and second for the table.

Waggoner Apple.—A new variety from Chas. Lee, Penn Yan, passed by, being unknown to most members of the Convention. J. J. Thomas considered it as

comparing favorably with the *Spitzenburg* and superior to the *Melon*: defective only in being a little too compact, but first-rate. P. Barry considered it as nearly if not quite first-rate.

Fameuse or *Pomme de Neige*.—Considered by many as first-rate, especially in the more northern localities.

Red Astracan.—Passed as first-rate for cooking and second for the table. This is a beautiful and very popular summer fruit, always commanding a high price in market. Mr. Thomas remarked that it was regarded as good for market on account of its beautiful skin, but beyond the skin it had little merit. He says, however, in the Cultivator of last month, that "it ought to have been stated to the Convention, that this variety, though not a good table fruit, possesses great excellence as a very early cooking apple, being far superior, in this respect, to the *Yellow Harvest*."

Rhode Island Greening.—Passed as a first-rate standard fruit, both for table and cooking. Mr. Allen, of Mo., said there it was an autumn fruit, and grew much larger than here.

Newtown Pippin, (Yellow).—This apple elicited much discussion—western cultivators generally agreeing that, with them it was not worthy of cultivation. Laid on the table

Newton Pippin (Green).—Gentlemen from Western New York, Canada, Ohio, and Illinois, stated that their experience with this apple was unsatisfactory.—Mr. Dougall and Mr. Reagle of Canada, stated that they had succeeded in raising a good crop by the application of manure and ashes. All agreed that it required good soil and good culture. Mr. Thomas remarked that even with Mr. Pell, under his high culture a large portion of the crop was knarly and unmarketable. Mr. Prince thought that in a good soil, and with manuring and good culture, it would be good every where.

Roxbury Russet.—Passed as first-rate.

English Russet.—Half a bushel of this variety, of last year's growth, was presented by D. N. Robinson of Buffalo, quite fresh and sound. Members of the Convention agreed that this was a valuable variety, being a great keeper, and the tree a fine grower and bearer. Much discussion was elicited regarding the name. Mr. Prince contended that it was not the apple described by Downing as the *English Russet*—that *English Russet* was too vague a name and meant nothing, as there are many *English Russets*. Mr. Chas. Downing and Mr. Thomas agreed that it was the apple described by Downing as *English Russet*—same as *Poughkeepsic Russet*. The Convention voted that it was a first-rate keeper, and second-rate in quality, and that it should be called the "*Poughkeepsic Russet*."

Lowell Apple.—(Cultivated in Ohio and other places as the *Queen Anne*, *Pound Royal*, and *Tallow Apple*, or *Tallow Pippin*; in Western New York as *Risley Apple*, *Greasy Apple*, &c.) It was considered by all to be a valuable variety, on account of the vigorous growth and productiveness of the trees, and large size and fairness of the fruit. Passed as first-rate.

Westfield Seek-no-further.—Passed as first-rate.

Ribston Pippin.—Objections were raised against this variety on account of its dropping its fruit in September, in many localities. It was said to do well in Canada, Maine, and other localities. Passed as third-rate in this State, and second in northern sections.

Northern Spy.—This apple was discussed at great length. It was admitted by all to be one of the best of apples, but required more careful culture than some other varieties, to produce it in the highest perfection. Mr. Bissell stated that there were trees in Rochester that had not been manured in fifteen years nor pruned for several years; yet the fruit, except in the shade, was fine and high-flavored. Passed as first-rate with

proper pruning. [We objected to this qualification as being entirely superfluous. Common sense teaches that every variety is the better for "proper pruning." If there be any propriety in affixing it to all. This must be clear enough. No apple whatever, nor indeed any other fruit, can be produced in perfection without pruning or with improper pruning.]

Yandevore.—Passed as first-rate.

Yellow Belleflower.—Mr. Colt of Ohio, said this was the most popular apple in the Cincinnati market. Mr. Elliot did not agree with Mr. Colt in this. P. Barry remarked that in Western New York it was a popular and excellent variety. Mr. Prince said there were several apples cultivated under this name, and suggested that it be passed by.

Twenty Ounce Apple. First in size, beauty and productiveness, but second in quality.

Twenty ounce Pippin.—Third rate.

Gravenstein.—First-rate in its season.

Fall Pippin.—First-rate.

Autumn or Late Strawberry.—First-rate.

Red and Green Sweeting.—Unworthy of cultivation, although some valued it for baking.

Sugar.—First-rate in all respects.

Belmont.—First-rate, though said by Mr. Elliot to be rejected in Southern Ohio.

Hawthorndean.—Voted unworthy of cultivation.

Mother Apple.—First-rate. Has the highest character wherever known.

Baldwin.—Mr. Elliot and others said it was subject to the bitter rot, and valueless in Ohio. Voted first-rate in Massachusetts and New York, but unsuccessful in Ohio.

Jonathan.—First-rate.

Porter.—First-rate.

Rambo.—First-rate wherever cultivated.

Bourassa.—Passed by.

Hubbardson Nonsuch.—First-rate.

Pomme gris.—First-rate in the north and in Canada.

Gloria Mundi.—Unworthy of cultivation.

Bullock's Pippin (Coxe), or *American Golden Russet*, (owning). Worthy of general cultivation.

Jersey Sweeting.—First-rate; worthy of general cultivation.

Cornish Gillsflower.—Unworthy of general cultivation.

American Summer Pearmain.—First-rate in all respects.

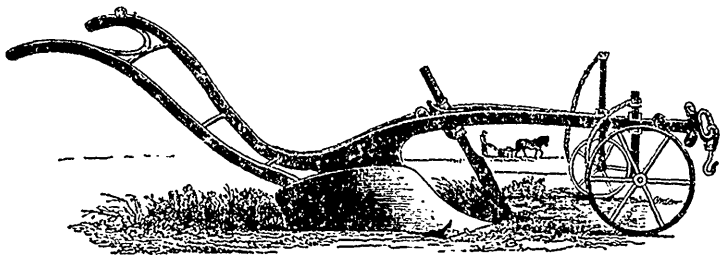
King of Pippins.—Second-rate.

Summer Hugloe.—Different from *Hugloe crab*, with which some have confounded it. Considered by many as first-rate.

FLAX STEEPED IN WATER AS A MANURE FOR FLOWERS.—A correspondent in the *Gardener's Chronicle* asserts, that he has used water in which flax had been steeped as a manure for flowers with great success. Dahlias thus watered kept ahead of all others not so treated, and their bloom was very rich and superior.—It is said that this manure is adapted to roses and flowers generally. It is worthy the attention of market gardeners and florists, and that it will destroy that animal-troublesome pest, the green fly.—*Gardener's Chron.*

THE CULTIVATION OF RASPBERRIES.—The shoots or canes grow up in one summer, produce fruit in the next, and then die to the ground, a succession having in the meantime sprung up. The pruning consists in cutting away all the dead wood, that which has borne first, and in shortening that which is alive, thinning the canes so as to leave three, four, five, or six inches from a plant, according to its strength. This operation may be effected as soon as the leaves have fallen, or, better, as soon as the crop has been gathered, which gives the young canes a better chance of becoming better ripened.—*ib.*

Mechanics and General Science.



THE PLOUGH.

"The Ploughman o'er the yielding land,
With eye intent, and steady hand,
Defines the intended path; and cheers
And guides his steeds, or patient steers,
With voice across the indented plain,
And shaking of the slackened rein."

Mant's British Months.

Of the numerous implements of modern husbandry, the PLOUGH occupies the foremost rank. It is the most ancient as well as the most useful. The farmer could no more do without it than the mason without his trowel, the backwoodsman without his axe, or the lawyer without his books, and, we may add, without *clients*. The history of this implement, from the earliest ages to the present time, with the improvements in its form and structure, would give us a very perfect view of the condition of Agriculture, and the progress of improvement in that important art, since it was first practised by man. We find mention of the plough in the earliest of all written authorities, and, considering its value and importance, we can hardly imagine an extensive cultivation of the earth to have been effected at any period or in any country without its aid.

The form of the plough before and for a long time after the commencement of the Christian era, cannot be very exactly defined, as it is but imperfectly represented by the rude pictures and hieroglyphic drawings which have come down to us. From the language of the Old Testament Scriptures, we infer that the plough in use when they were written had a coulter and share answering to the same parts in the plough of the present day—(1 Samuel xiii. 20). Wheels, also, were attached to the implement at a very early day, as appears from ancient drawings of the Greek plough. The plough used by the Romans, and described by Virgil in his *Georgics* (drawings of which have also been preserved), is a very rude and imperfect implement. Indeed, it is as unlike the modern improved plough as can well be conceived. Turning the soil seems not to have been the object of the early cultivators,

or, if it was, their instruments were ill adapted to accomplish it. Until about the sixteenth or seventeenth century, the *mould-board*, properly speaking, does not seem to have been known. The ground was merely stirred previous to the discovery of the mould-board. Ploughing, among the Greeks and Romans, and indeed among all European nations prior to the period mentioned, generally consisted in running furrows parallel and near to each other, into which the seed was cast, and, by a second operation of the same implement, ploughed in. In some instances a wooden harrow was used. Where the soil was light and friable, and so well cultivated as to be free from grass and weeds, such a system might produce good crops; but in the case of stiff, tenacious clays, stoney land, or an old tough lea, we should have poor hopes of the harvest. We are told that in many parts of France, the old Roman plough is still in use, under the name of *Araire Romain*.

Although the Dutch and Flemish made considerable improvement in its construction, during the sixteenth and seventeenth centuries, it was full a century later before the plough received anything like that scientific form and perfect adaptation to the end required, which it now possesses. The English, and more particularly the Scotch, have the merit of its latest and greatest improvements. It is curious and interesting to trace the progress of plough-making in England. The implements of its early cultivators were as rude and imperfect as those of any country. It could hardly be otherwise, for by a law of the ancient Britons no man was allowed to hold or guide a plough till he was able to make one! The driver was required by the same law to make the traces, and these were to be formed of withes of twisted willow. This law has, of course, long since become obsolete, but many terms still in use among ploughmen and teamsters were derived from the customs of that period. *Withen-trees* are called *witlen-trees* or *whipple-trees*, &c. Our Saxon

ancestors, as we are informed, adopted the barbarous practice that prevailed at one period in Ireland, viz., that of fastening their horses to the plough by their *tails*! This absurd and cruel custom prevailed so extensively in the latter country, that an act of parliament was passed in 1634, to put a stop to it. The 11 & 12 Car. II., ch. 15, entitled, "An Act against Ploughing by the Tayle, and Pulling the Wool off Living Sheep," declares, "that in many places in this Kingdome there hath been a long time used a barbarous custome, of ploughing, harrowing, drawing and working, with horses, mares, geldings, garrons and colts by the taile, whereby (besides the cruelty used to the beasts,) the breed of horses is much impaired. And also, divers have and yet do use the like barbarous custome of pulling off the wool yearly from living sheep, instead of clipping or shearing of them." It is then enacted, that such practices shall be illegal, and punishable with fine and imprisonment. We have seen the statement of a recent agricultural writer, whose name we do not recollect, that he had himself witnessed this wretched practice, and that it obtained in some parts of Ireland, notwithstanding the statutory prohibition, till within a few years.

Jethro Tull, the father of horse-hoe husbandry, and one of the earliest English writers upon practical agriculture, made considerable improvement in the plough, as well as in various other agricultural implements. He lived about a century and a half ago. After making some researches into the history of the plough, he came to the conclusion that it was "found out by accident and that the first tillers, or ploughers of the ground were *hogs*!"—However the question of priority in ploughing, as between the *quadruped* and *biped* may be determined,—the one a natural, and the other an artificial workman, we cannot admit that there is any necessity for supposing the discovery of the plough to have been accidental. We might as well suppose that the spade was discovered by accident. When Adam was turned out of the Garden of Eden, and found himself obliged to till the ground, he probably began by digging; and the sharpened piece of wood, which mere instinct must have taught him to prepare and use in the operation, was, no doubt, the true original of the modern spade. The crooked piece of wood, which we find represented in old drawings as the plough of the early Romans, stands in the same relation to the perfect implement in use among us. The improvements in the plough have been gradually made, though within the last hundred years it has advanced further towards perfection than in all the previous period, up to the time when the hog's snout resembled it in form and equalled it in efficiency. The first im-

provement of much note in England "was," says the author of *British Husbandry*, "that of a light swing plough, invented upwards of a century ago in Yorkshire, whence it obtained the name of the *Rotherham* plough, and was very generally employed throughout that county and many parts of England." It was much lighter and more neatly constructed, and turned a cleaner furrow and with less resistance than any previous plough. This was "the only one worked with a pair of horses abreast, until the year 1764, when Mr. James Small, a Scotch mechanic and farmer, in Berwickshire, improved upon it by inventing the iron mould-board," and eventually "the whole machine has been formed of metal. He thus, although no mathematician, made such progress in perfecting the construction upon sound mechanical principles, that his swing ploughs are now universally employed with a pair of horses, and whip reins without a driver, and, on an average of soils, plough an acre a day with ease." Small's plough has been much improved by others, especially by Mr. Wilkie. "There are now," says Johnson (*Farmer's Encyclopædia*, 901), "a great variety of excellent forms, the best of which, for general purposes, is in Britain what is called the Scotch plough, and in Scotland the improved Scotch plough." We shall refer more particularly to the several kinds, and to the principles on which the best are constructed, in our next number. In the third number we shall probably conclude our remarks on this subject, by an exposition of the principles of *ploughing*, and the true object of ploughing matches, with reference particularly to the points involved in the challenge by our American neighbours of the State of New York, and the discussion relative thereto, which is already before our readers.

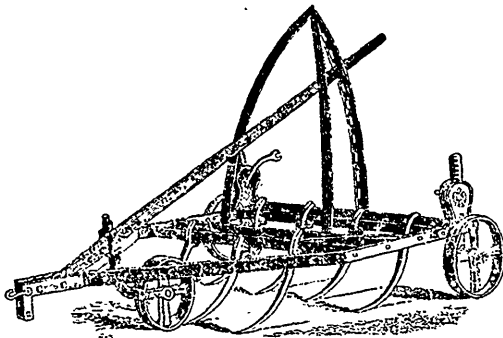
The cut at the head of this article requires a remark or two before we conclude. This cut is a correct representation of the patent prize plough of Ransome & May, the celebrated implement makers of Ipswich, England. It is constructed with all the latest improvements, and is said to be unequalled for the excellence, and ease to man and beast, with which it performs its work. It is adapted to the cultivation of the ordinary English soil, and may be used with wheels, as seen in the cut, or without them, as a common swing plough. It is made wholly of iron, except the ends of the stils or handles. We have presented a cut of this plough to our readers chiefly to exhibit an important improvement in the construction of the beam, which we think might be adopted with great advantage in the iron plough of this country. The iron beam was objected to in England, according to Mr. Youatt, because it twigged, or vibrated, and occasionally

bent: and being difficult of repair, wood was preferred. We have observed the same evil in the imported iron ploughs, when working among the roots in Canada. This defect, Mr. Ransome has obviated, by the application of what is mechanically called the "Truss principle." The beam is split vertically, or composed of two pieces of iron rivetted together in such a manner as to brace each other, and prevent lateral vibration. The Journal of the Royal Agricultural Society of England contains the following among other observations highly laudatory of Messrs. Ransome's ploughs:—

"The beams of these ploughs are constructed on the Truss principle, which, though novel in its application to the plough, has long been appreciated by mechanics, as possessing the greatest stiffness, combined with lightness. It is this consideration which has induced those makers to abandon the use of wood, hitherto used by them for this part of the

plough, in preference to a beam of solid metal. The structure of their improved iron beam is such as to destroy lateral vibration, particularly at its root or juncture with the body of the plough. It admits also of a neat and powerful fixing, as well as ready adjustment of the coulter.

"Tremor in mechanism is well known to consume power uselessly: and, in the case of the plough, vibration in the beam, though it be insensible to the eye, renders the guidance of the implement more difficult, and its work less exact. The circumstance of increased stiffness attending mere weight of matter, may have been one cause why the heavier ploughs have not unfrequently been found to require less force of draught than lighter ones, for an equal weight of soil moved; but stiffness is not incompatible with lightness, and the diminution in the weight of an implement, when perfection is otherwise secured, must be attended with economy of power, or, what is the same thing with a diminution of resistance, whence truer work results."



FINLAYSON'S PATENT SELF-CLEANING HARROW.

We present our readers with a cut of an English, or, as the inventor was a Scotchman, we ought perhaps to say a Scotch implement, of established character, and highly spoken of by those who have used it. We have no doubt that this machine, or a modification of it, would be of great service in the cultivation of many farms in Canada. It is particularly adapted to the clearing of land which has become foul with weeds. We are well aware that many implements which the farmer could not do without in England, are, either from their great cost or the form of their construction, unsuited to the wants of the Canadian cultivator. The soil of Canada is not so diversified, and is generally lighter than that of the British Islands. The form and character of our implements must therefore vary to suit the different nature of our soil. But we find that long-continued cultivation approximates our soil to that of the mother country in several of its

features. Thus it becomes advantageous and in many cases necessary to adopt English implements, or improvements upon them, constructed on the same principles. We shall occasionally describe such as appear to us worthy of adoption or imitation, or from which a useful hint might be taken by some of our ingenious mechanics or farmers. The principle on which the above machine operates, is very obvious from an inspection of the cut. We insert, however, the following observations of the maker:—

"This well-known implement may be called the parent of several of the same description, which, in improved forms, have subsequently come into use. It is formed of iron, and, according to the inventor, has the following advantages:—1. From the position in which the tines are fixed, their points hanging nearly on a parallel to the surface of the land, it follows, that this implement is drawn with the least possible waste of power. 2. From the curved form of the tines, all stubble, couch, &c., that the tines may encounter in their progress through the soil, is brought to the surface, and rolled up to the face of

the tines: when it loses its hold, and is thrown off, always relieving itself from being choked, however wet or foul the land. 3. The mode by which this harrow can be so easily adjusted to work at any depth required, renders it of great value; this is done as quick as thought by moving the regulator upwards or downwards between the lateral spring; and by each movement upwards into the openings, the fore-tines will be allowed to enter the soil about 1½ inch deeper by each movement into the different spaces, until the regulator is thrown up, when the harrow is given its greatest power, and will then be working at the depth of 8 or 9 inches. Also the axletree of the hind-wheels is moved, a space of 7 or 8 inches, by a screw through the axletree, which is turned by a small handle, so that the hind part of the harrow, by its simple mode, is also regulated to the depth at which it is found necessary to work. 4. When the harrow is drawn to the foot lands, the regulator is pressed down, and the fore-wheel is then allowed to pass under the fore bar, by which the nose of the harrow is lifted, and the points of the fore-tines will then be taken 2 or 3 inches out of the soil, which affords the means of turning the harrow with the greatest facility. 5. Being made of malleable iron, its durability may be said to be endless; whereas, if made of wood, the prime cost would be entirely lost at the end of every 5 or 6 years. Lastly, the mode of working is so easy, that any boy of 10 or 12 years of age is perfectly qualified to manage it. Next to Wilkie's brake, we consider this the most valuable of pronged implements, and think that, like Wilkie's implement, it might be substituted for the plough, after drilled green or root crops, on light soil generally. Some account of the astonishing powers of the implement, as exemplified in breaking up Hyde Park, London, in 1826, will be found in the *Gardener's Magazine*, vol. ii. p. 250.

ON THE STUDY OF NATURAL HISTORY.

The following passages from Dr. Carpenter's excellent treatise on *Vegetable Physiology*, will serve as a suitable introduction to the subject of Natural History. In making extracts for this and other departments, we shall study to select such as are, from their simplicity of expression, adapted to general readers, and for scientific accuracy and moral tendency, free from objection.

"Of all departments of science, there is perhaps no single one capable of exercising such an advantageous influence on the mind of its cultivator as Natural History. Every kind of knowledge has in it something that is valuable; for even if it be of no direct utility in the ordinary concerns of the world, the acquirement of it is a useful exercise to the mental faculties, and the possession of it may operate in a most beneficial manner on the habitual feelings, and give a corresponding direction to the whole course of life.

It is desirable to cherish correct views of the benefits of different kinds of knowledge, that those may choose most advantageously for themselves whom the necessary business of life debars from the

extended pursuit of it; and without understanding other branches of science, it may be safely affirmed that Natural History is capable of affording more to interest and instruct, more to refresh and relax the well-disposed mind, on a very slight acquaintance with it, than any other pursuit. Not a step can the learner advance in it, but he meets with wonders previously unsuspected,—not a height does he gain, from which his prospect is clearer and more extensive, but his notion of these wonders requires a yet more astonishing vastness. The more he knows, the more he desires to know; and the further he advances, the more does he perceive how much delight is yet in store for him.

"The beneficent Creator of all has not only ordained, that every part of His works should be good—should be adapted to answer its designed end, and should contribute in the highest degree of which it is capable to the well-being of His creatures; but he has made everything "beautiful in its season;" He has so formed the mind of man, that it derives pleasure from the contemplation of the glorious works around him. And it is, therefore, a worthy employment of our faculties to encourage this pleasure; and to place it upon a more solid foundation than that afforded by the mere forms and colours of the objects around us, however beautiful these may be.

"One great source of the pleasure derived from the enquiry into the structure and mode of existence of the living beings around us, arises from the beautiful adaptation of their parts to each other, and of the whole to the place it has to occupy, which we can easily trace in every one. The philosopher who studies the motions of the heavenly bodies, and the station of this earth among them, traces these adaptations no less clearly; but it requires profound and long-continued study to be able to comprehend them aright. The naturalist, however, can discern them with far less research, in every plant that grows, in every animal that breathes; and he meets with a constant variety, which prevents him from growing weary of the pursuit.

"Yet the young are too frequently kept in ignorance of the wonders and beauties around them; and whilst encouraged to learn languages, and read many books, they remain unacquainted with the bright volume of Creation, the pages of which are daily and hourly unrolled before them, "written," to use the impressive words of Lord Bacon, "in the only language which hath gone forth to the ends of the world, unaffected by the confusion of Babel." But these pages are not to be read without some study: the alphabet and grammar must be learned, in order that their beauties may be rightly comprehended: and those who are entering upon the enquiry, need to be rightly directed by those who are more advanced.

"Natural History has been too generally shunned, as a science of hard names and intricate classification, by those whose minds are occupied with the necessary employments and cares of the world, and who seek in the pursuit of knowledge a source of refreshment and relaxation. But the objects of its several departments are not commonly understood. The study includes the examination of the structure, habits, and mode of existence, of all the living beings which so thickly people the surface of the globe;

and it is only in order to become acquainted with these more readily, that the naturalist arranges or classifies them, placing those together which have most in common, and separating these from others, which are widely different. Classification, therefore, is not the object of Natural History, but a means of gaining that object; and it is very easy to enter upon many interesting enquiries without the slightest knowledge of it. The structure and actions of man, for example, may be examined in the greatest detail, without knowing anything of his place in the general scale of being (although such knowledge will often shorten the student's labour); and other kinds of animals and plants may be observed in the same manner. In fact, several of the most valuable and interesting observations we possess, upon the habits and actions of particular animals, were made by those who devoted themselves almost exclusively to that special object. Thus it is scarcely out of the power of any one to contribute something to the general stock of knowledge; still less, then, can any be prevented from adopting some department of this pursuit, for the health and invigoration of their own minds."

THE TEMPERATURE OF THE SOIL.

"O ye Fire and Heat, bless ye the Lord: praise him and magnify him together."—*The Benedictine.*

It is not only by the properties in respect to heat of the ocean, or by those in respect to heat and vapour of the atmosphere, by marine currents, by the winds, by rains, and by the dew, that the processes of vegetation are influenced, and the geographical distribution of plants modified; another vivifying element not less important in its agency is the *native temperature of the soil.*

There is a heat proper to the mass of the earth, increasing from a short distance beneath its surface downwards at the rate of about one degree of Fahrenheit's thermometer for every fifteen yards. This central heat becomes sensible in excavations reaching anywhere beyond a certain depth, and in some mines it is oppressive.

It is a constant heat. It does not by the slightest appreciable quantity vary from year to year, or season to season. Observations were made in 1671, by Cassini, on temperature of the air in certain closed cellars beneath the Observatory of Paris; they were repeated in 1730 by La Hire, and during the last forty-five years thermometrical apparatus of great sensibility have been fixed in these cellars and constantly observed; the temperature thus observed through a period of 175 years has never varied by more than one quarter of a degree from 11° 82 of the centigrade thermometer, or 53° 37 of the thermometer of Fahrenheit.

There is, however, a temperature proper to the surface soil which is influenced at once by this constant subterranean heat and by the superficial absorption, and the radiation of the solar heat. This is a variable temperature. It extends to different depths, varying from 40 to 60 or 80 feet on the continent of Europe, but being found in tropical regions at the depth of a single foot. If a surface be imagined to pass through all those points beneath the earth's surface, to which the surface heat is propagated, and to which, therefore, a variable

temperature extends, it will be that called "*the surface of invariable temperature.*"

Theory and experiment agree in indicating the temperature of any point in this surface of invariable temperature to be the mean temperature of that point in the earth's surface which is immediately above it.*

It is not a regular or even surface, but one having elevations and depressions dependent partly upon corresponding elevations and depressions of the earth's surface, and partly upon irregularities in the strata which constitute the earth's crust. Whilst beneath this surface there reigns an invariable temperature, a constant change is taking place above it, and that of a very remarkable kind.

From experiments made in Edinburgh, Zurich, and Strasburg, it appears that, during the winter months, January, February, and March, the temperature increases uniformly as we descend from the earth's surface to the surface of invariable temperature;—that in the months of April and May there comes, with the spring, a sudden and remarkable elevation of the temperature;† extending to a depth of about two feet into the soil, but continually increasing as we further descend, so that there is a depth (and a surface) of minimum temperature, situated between the surface of the earth and the surface of invariable temperature.

As the year advances, this surface of minimum temperature sinks continually deeper and deeper, until, in the month of August, it reaches the surface of invariable temperature and identifies itself with it. In this month, however, the mean temperature at the surface has begun to diminish, and beneath the surface it is reduced at different depths, more nearly to a state of uniformity, which state it actually attains in September, to the depth of 10 or 20 feet. It is in the months of October and November that this uniformity changes into an increasing temperature. And the temperature, which in the preceding months had increased from the depth of 15 or 20 feet to the surface of invariable temperature, now becomes throughout that space uniform.

Although the temperatures of the atmosphere and the soil are dependent for their variations on the same causes, yet in their amounts they are essentially different. During the day the temperature of the soil is much higher than that of the air ‡ At night it is sometimes from 14° to 18° below it. The relations by which these changes in the temperature of the soil are connected with atmospheric causes and the solar radiation, it is not easy to trace;—who can, however, doubt that when, in the months of March and April, the temperature of the soil so suddenly and so rapidly ascends, it is to meet the first efforts of vegetation—the bursting of the germ and the putting forth of the bud and blossom?

The black colour of the earth, favourable as it is to the absorption of heat, is one of the causes which

* Thus the mean temperature of Paris is 10° 6 of the centigrade thermometer, which differs but one degree from the invariable temperature of the cellars under the Observatory.

† In the experiments of Mr. Fergusson at Edinburgh, in 1817, that temperature at a depth of one foot, whose mean in February, was 37° 04, became in March 30° 4, and April 62° 46. No variation of the temperature of the surface soil comparable to this, as to its amount, and the shortness of the time in which it is brought about, occurs at any other season of the year.

‡ At Paris, the temperature of the soil is not unfrequently 112° F., and, in the summer of 1824, it attained 149° F.

contribute to give to the soil a temperature higher than that of the air above it; were some limit not indeed placed to the operation of this cause, the moisture of the soil might everywhere be transferred to the atmosphere. That limit is found in the fact, that, although black be the colour most favourable to the *absorption* of heat, it is also that most favourable to its radiation; and since, during the whole day, whilst the earth is in the act of receiving heat from the sun, it is also in the act of radiating it, in some degree unknown to us, into space, and since this process of radiation is going on also all night, it follows that the radiating properties of a body may have a greater influence to keep down its temperature than its absorbing properties have to raise it; and thus we may understand why vegetable mould, which is commonly the darkest, is at the same time the most humid; and why the gardener white-washes the wall against which his fruit-trees are nailed; not that reflecting the heat, it may be cooled, but that, radiating it ill, it may remain hot,—why regions of sand are parched with heat, and why the Almighty, in his wisdom and goodness, has given to the animals of cold regions a white covering, and one of a darker colour to those within the tropics; man himself being, in this respect, a memorable example.

Thus, too, that is obviously no visionary analogy which the covering of animals presents in arctic regions, to the covering of the earth's surface; in winter a white mantle of snow is thrown down upon it, and bodies of animals are enveloped in thick white furs. When summer comes, under the form of a single day, of from five to six months' duration, and the clothing of animals is made thinner and lighter, its colour also is changed, and the covering of snow is withdrawn from the earth.

"For are we not all Iliis, without whose care
Vouchsafed, no sparrow falleth to the ground,
Who gives his Angels wings to speed through air,
And rolls the planets through the blue profound."
Wordsworth.

—Moseley's *Astro-Theology*.

THE DISCOVERY OF HERCULANEUM.—In noticing the wells of ancient Italy, we may refer to a circumstance, which although trivial in itself, led to the most surprising discovery that has ever taken place on this globe, and one which in the interest it has excited is unexampled. In the early part of the eighteenth century, 1711, an Italian peasant while digging a well near his cottage, found some fragments of colored marble. These attracting attention, led to further excavation, when a statue of Hercules was disinterred, and shortly afterwards a mutilated one of Cleopatra.—These specimens of ancient art were found at a considerable depth below the surface, and in a place which subsequently proved to be a temple situated in the centre of the ancient City of Herculaneum! This city was overwhelmed with ashes and lava, during an eruption of Vesuvius, A. D. 79, being the same in which the elder Pliny perished, who was suffocated with sulphurous vapors, like Lot's wife in a similar calamity. Herculaneum therefore had been buried 1630 years! and while every memorial of it was lost, and even the site unknown, it was thus suddenly, by a resurrection, then unparalleled in the annals of the world, brought again to light; and streets, temples, houses, statues, paintings, jewelry, professional implements, kitchen utensils, and other articles connected with ancient domestic life, were to be seen arranged, as when their

owners were actively moving among them. Even the skeletons of some of the inhabitants were found; one, near the threshold of his door, with a bag of money in his hand, and apparently in the act of escaping.

The light which this important discovery reflected upon numerous subjects connected with the ancients, has greatly eclipsed all previous sources of information; and as regards some of the arts of the Romans, the information thus obtained may be considered almost as full and satisfactory as if one of their mechanics had risen from the dead and described them.

Among the early discoveries made in this City of Herculæ, (it having been founded by, or in honor of him, 1250, B. C.) not the least interesting is one of its public wells; which, having been covered by an arch, and surrounded by a curb, the ashes were excluded. This well was found in a high state of preservation—it still contains excellent water, and is in the same condition as when the last females retired from it, bearing vases of its water to their dwellings, and probably on the evening that preceded the calamity which drove them from it for ever.—*Ewbank's Hydraulics*.

OUR WONDROUS ATMOSPHERE.—The atmosphere rises above us with its cathedral dome, arching towards the heavens, of which it is the most familiar synonyme and symbol. It floats around us like that grand object which the apostle John saw in his vision, "a sea of glass like unto crystal." So massive is it, that when it begins to stir it tosses about great ships like playthings, and sweeps cities and forests like snowflakes to destruction before it. And yet it is so noble, that we have lived years in it before we can be persuaded that it exists at all, and the great bulk of mankind never realize the truth that they are bathed in an ocean of air. Its weight is so enormous, that iron shivers before it like glass; yet a soap-bell sails through it with impunity, and the tiniest insect waves it aside with its wing. It ministers lavishly to all the senses. We touch it not but it touches us. Its warm south winds bring back colour to the pale face of the invalid; its cool west winds refresh the feverish brow, and make the blood mantle in our cheeks; even its north blasts brace into new vigor the hardiest children of our rugged clime. The eye is indebted to it for all the magnificence of sunrise, the full brightness of mid-day, the chastened radiance of the gloaming, and the clouds that cradle near the setting sun. But for it, the rainbow would want its "triumphal arch," and the winds would not send their fleecy messengers on errands round the heavens. The cold ether would not shed its snow-feathers on the earth, nor would drops of dew gather on the flowers. The kindly rain would never fall, nor hail-storm nor fog diversify the face of the sky. Our naked globe would turn its tanned and unshaded forehead to the sun, and one dreary, monotonous blaze of light and heat dazzle and burn up all things. Were there no atmosphere, the evening sun would be in a moment set, and, without warning, plunge the earth in darkness. But the air keeps in her hand a sheaf of his rays, and lets them slide but slowly through her fingers; so that the shadows of evening gather by degrees, and the flowers have time to bow their heads, and each creature space to find a place of repose.—*Quarterly Review*.

VENTILATION.—In airing a room, both the upper and the lower parts of the window should be opened, as the bad and heated air, from its lightness, will pass out at the top, and the fresh, cool air come in at the bottom.

Prosperity is no just scale; adversity is the only true balance to weigh friends.

Domestic.

In this department of the *Agriculturist* we shall endeavor to furnish instruction and entertainment for our female readers. By the latter expression we would not be understood to mean the trifling nonsense and sickly sentimentalism which fills so many of the Magazines of the day devoted to their reading. In all our selections for this department we shall study the *useful*. We shall be very glad to receive contributions from the pens of some of our fair patrons. We are aware that it is not an easy thing for persons unaccustomed to the practice of recording their thoughts on paper, to write for publication. But we know also that there are many women among the wives and daughters of our country, who have had the advantage of education and enlarged experience, and who could easily find the leisure to communicate useful hints and advice to their less favored sisters. Will not some of them try? We shall be happy to afford the medium, and every assistance in our power.

LINES AT MY SISTER'S GRAVE.

BY MAJOR G. W. PATTEN.

Beside thy dewy grave I pass,
(A fresh and flowery mound,)
Sunlight is glancing on the grass,
And the red-breast chirps around ;
While from afar the city's hum
Steals gently on the ear :
And yet for me is Nature dumb !
Thy voice I cannot hear.

Thou told'st me from a distant land,
I ne'er should be forgot ;
I come—e'en at thy side I stand—
And yet thou heed'st me not—
Where are those accents which were heard
So soft on music's breath ?
Sister !—I hear no answering word.
Is this?—Yea ! THIS is death !

Beside my Father's aged form
They've laid thee breast to breast :
Too bitter was the world's bleak storm ;
But both are now at rest.
In life united—Oh ! with such
Affection undefil'd !
In death 't is well, their coffins touch—
The Father and the Child.

Thou, sister, had'st but little strength
To tread life's thorny track :
So calmly dost thou sleep at length,
'Twere sin to wish thee back ;
'The music of thy gentle tone
Tho' to my bosom dear,
And tho' my heart is sad and lone,
I would not have thee here.

For me is still life's stirring tide—
The battle and the storm—
The wave where warring navies ride—
The field where squadrons form !
But thou with no long watch to keep—
No dream at morn to tell—
Freed one !—Thine is an envied sleep !
Sweet Sister ! Fare thee well !

ITEMS FOR HOUSEKEEPERS.—The following items may appear insignificant. But they are not. Could I have had them in a written form some years ago, and not have been under the necessity of learning nearly all by experience, which is slow and dear work, it would have been quite an advantage to me. A novice will need them all ; an adept may find something new. To sweep the floor, in winter, of a room without fire or carpet, sprinkle snow upon it ; 'tis the best preventive of dust.

When cleaning a room used for company, it is best to place the wood in fireplace or stove, with plenty of kindlings all ready, so that a bright, blazing fire can be had at any time, in two minutes. Try this but once, and you will not again want the dirt, trouble and sometimes confusion, consequent upon carrying wood and fire after company arrives.

A large house, especially with a large family to make dirt and clean it, should not be without three or four brooms. One for each room would not be superfluous.

If you buy a broom, lopsided, with long ends extending out, nothing is more easy than to clip it with the axe ; while nothing is more foolish, than to sweep with it so until worn out, complaining all the while of the mean brooms, broom-makers and store keepers.

It is well to have a button or other fastening to the door of each room. Sickness, dressing or some other cause will bring them into requisition.

Paint, washed with a solution of saleratus in water, will not rub off. A brush, such as the common blacking brush, is often preferable to a cloth, in the cleaning of doors, &c.

Varnished furniture may be washed, and yet retain its gloss, by following the wet cloth immediately with a dry one, and rubbing until the moisture is all evaporated.

Every woman having broom corn, can manufacture the best of kitchen brushes. Place together a few pieces neatly, clip the top and bottom, scald the upper part until quite soft, then wrap and tie tightly with strong cord. Work is considerably facilitated by having a kitchen furnished with three or four of these simply made articles. One for sink—hanging on a nail over it—one for stove—hanging near it also—one for cupboard and shelves, and perhaps one for brushing around the feet of, and under the stove, benches, &c.

These are equally useful for cleaning rooms. For scouring, some use cobs, in preference to rags.

Brick-dust or some other scouring material should always be in readiness.

By all means, spend five minutes in washing your brass candlesticks in strong vinegar, instead of thirty, in rubbing them with brick-dust.

For heating the white of eggs, use a peachtree switch doubled, instead of a knife, and the work will be done in one-fourth of the time.

Spreads, made of glazed calico for the purpose, and used in place of white counterpanes and light quilts, save a great amount of that severest of all labor—washing.

Bolster slips should be made open at each end, so that when the one on the front side becomes somewhat soiled, the other can be turned. It is unnecessary to make them longer than usual—the bolster can be turned and the slip drawn over.

Every woman at all in the habit of writing—and there are very few who do not sometimes write memorandums of business or goods, social or business notes—should have a stand drawer in some unfrequented corner, furnished all the while with pen, pencil, paper, &c., unless a daughter or sister in the family keeps

such paraphernalia always on hand. Also, if a woman can do no more, she should practise the writing of her name until it can be done handsomely; then after signing a deed or other writing, the blood will not mount to the cheek upon a view of the signature.

No doubt many a dollar is squandered by neglecting the use of memoranda.

For a woman who rides, the pocket ought to be placed in the left side of the dress, as there is danger of losing the articles it contains when placed in the right.

If, upon being out, dust has alighted upon your bonnet, flit it off with a handkerchief before putting it away.

If you consult neatness, make the top bindings of skirts narrow; if health and comfort, make the fastenings of hook or buttons, instead of strings.

In making the common slab bonnet, care should be taken to cut the pasteboard small enough to move freely in and out of the cases, or the calico will soon cut, and as the bonnet always wears out first at the hinder extremity of the slabs, the lining should be allowed to extend two or three inches beyond.

If the common coat sleeves be gathered both over and under the elbow, and changed so soon as they wear thin on the under side, they will last about as long as the dress. And, in addition to this, should a half hour be taken to make the hem a little deeper, when it begins to scuff, the whole dress will wear much longer.

This is not only taking a stitch in time to save nine stitches, but time and money are also saved. Any sleeves being cut alike on both sides, can be turned.

If a silk apron be made at top with a hem and string through it, cutting can be prevented while not in use, by drawing it full length upon the ribbon before folding.

The sleeves of dresses, worn in the winter a long time without washing, ought to be turned very frequently, perhaps every night, in order to let the noxious matter which has been accumulated from the skin, pass off. I have known the itch to be the consequence of the neglect of this.

Beds too, to prevent their becoming filthy and unhealthy, should be aired half an hour or so, every morning. By putting them to air first thing in the morning, they will not often cause delay.

A good comb cleaner can be made and should be, by boring a hole in some back porch pillar, or wall, and wedging in tightly a nice bunch of horse hair.

Mrs. M. NICHOLS.

PEACH-PICKLES.—Take one gallon of good vinegar and add to it four pounds brown sugar; boil this for a few minutes and skim off any scum that may rise; then take clingstone peaches that are fully ripe, rub them with a flannel cloth to remove the down upon them, and stick three or four cloves in each; put them into a glass or earthen vessel, and pour the liquor upon them boiling hot. Cover them up and let them stand in a cool place for a week or ten days, then pour off the liquor and boil it as before; after which, return it boiling to the peaches, which should be carefully covered up and stored away for future use.

HOW TO PREPARE SUPERIOR MINCE-MEAT FOR PIES.—Take stoned raisins, currants, sugar, and suet, of each 2 lbs.; Sultana raisins, boiled beef (lean and tender), of each 1 lb.; sour or tart apples 4 lbs.; the juice of two lemons; the rind of one lemon chopped very fine; mixed spice $\frac{1}{4}$ lb.; candied citron and lemon-peel, of each, 2 oz.; brandy one gill; and chop the whole very fine. The preparation may be varied by adding other spice or flavoring, and the addition of eggs, or the substitution of chopped fowl or veal, for beef, according to fancy or convenience.

SCIENCE IN THE KITCHEN.—Professor Liebig, in a letter to Prof. Silliman, says:—"The method of roasting is obviously the best to make flesh the most nutritious. But it does not follow that boiling is to be interdicted. If a piece of meat be put into cold water, and this heated to boiling, and boiled until it is "done," it will become harder and have less taste, than if the same piece has been thrown into water already boiling. In the first case the matters grateful to the smell and taste, go into the extract—the soup; in the second, the albumen of the meat coagulates from the surface inward, envelops the interior with a layer which is impregnable to water. In the latter case, the soup will be indifferent, but the meat delicious"

CORN BREAD.—We are in the daily habit of eating corn bread made after the following recipe, by our good landlady, Mrs. Norton, of Astoria. It is equal to anything we ever tasted:—To one quart of sour milk add two teaspoonfulls, well stirred in, of finely pulverised saleratus, two eggs well beaten, one table-spoonful of brown sugar, and a piece of butter as large as an egg. Salt to suit the taste, and then stir in the meal, making the mixture about as stiff as for pound-cake. Now comes the great secret of its goodness. *Bake quick*—to the color of a rich, light-brown. Eat it moderately warm, with butter, cheese, honey, or sugar-house molasses, as most agreeable to the palate.—*American Agriculturalist.*

DYEING.—Secrets in dyeing are more easily kept than secrets in most other trades. Dyes usually require an intermediate substance called a "mordant." This word means a biter. This substance bites cloth and bites the dye, and so keeps them both together. If you dye a piece of cloth with any color without using a mordant, the color will come out on the first washing. The great secret of dyeing is to find out what particular mordant is adapted to each particular dye; for different mordants will produce different colors, even with the same dye. If you dip a piece of cloth dant, and then dye it with cochineal, it will produce a solution of alum, which is a very common mordant, and then dye it with cochineal, it will be a perfect black. Sometimes a color will be produced different from that of either the mordant or the dye. If you boil a piece of cloth in a blue mordant, and then dip it in a yellow dye, the color produced will not be either a blue or yellow, but a perfect green.—*Exchange.*

IMPROVED STRAINER FOR PAILS.—Mr. Wm. Cooley, of Geneva, N. Y., has invented and applied for a patent for a new and useful improvement of attaching a strainer to milk pails, which appears to be as valuable as the improvements which have lately been made on churns. His plan is to have the strainer fit on to a tube or spout on the pail by a screw or slide, so that it can be put on and taken off at pleasure, thus rendering the strainer easier cleaned, and at the same time one strainer will answer a number of pails better than a sieve and at one-fifth the expense.

TO PREVENT THE RUNNING OF CANDLES.—If you wish to prevent the running or gutting away in an hour or two of an ordinary candle, place as much common salt, finely powdered, as will reach from the tallow to the bottom of the black part of the wick, when, if the same be lit, it will burn very slowly all night, yielding a sufficient light for a bed-chamber; the salt will gradually sink as the tallow is consumed, the melted tallow being drawn through the salt and consumed in the wick.

Miscellaneous.

WHAT IS EDUCATION?

BY W. E. CHANNING, D.D.

The great end of education is not to train a man to get a living. This is plain, because life was given for a higher end than simply to toil for its own prolongation. A comfortable subsistence is indeed very important to the purposes of life, be this what it may. A man half-fed, half-clothed, and fearing to perish from famine or cold, will be too crushed in spirit to do the work of a man. He must be set free from the iron grasp of want, from the constant pressure of painful sensations, from grinding, ill-requited toil. Unless a man be trained to get a comfortable support, his prospects of improvement and happiness are poor. But if his education aims at nothing more, his life will turn to little account.

To educate a man is to unfold his faculties, to give him the free and full use of his powers, and especially of his best powers. It is first to train the intellect, to give him a love of truth, and to instruct him in the processes by which it may be acquired. It is to train him to soundness of judgment, to teach him to weigh evidence, and to guard him against the common sources of error. It is to give him a thirst for knowledge, which will keep his faculties in action through life. It is to aid him in the study of the outward world, to initiate him into the physical sciences, so that he will understand the principles of his trade or business, and will be able to comprehend the phenomena which are continually passing before his eyes. It is to make him acquainted with his own nature, to give him that most important means of improvement, self-comprehension.

In the next place, to educate a man, is to train the conscience, to give him a quick, keen discernment of the right, to teach him duty in its great principles and minute applications, to establish in him immovable principles of action. It is to show him his true position in the world, his true relation to God and his fellow-beings, and immutable obligations laid on him by these. It is to inspire him with the idea of perfection, to give him a high moral aim, and to show how this may be maintained in the commonest toils, and how every thing may be made to contribute to its accomplishment.

Further, to educate a man in this country, is to train him to be a good citizen, to establish him in the principles of political science, to make him acquainted with our history, government and laws, to teach him our great interests as a nation, and the policy by which they are to be advanced, and to impress him deeply with his responsibility, his great trust, his obligations to disinterested patriotism as the citizen of a free state.

Again, to educate a man is to cultivate his imagination and taste, to awaken his sensibility to the beautiful in nature and art, to give him the capacity of enjoying the writings of men of genius, to prepare him for the innocent and refined pleasures of literature.

I will only add, that to educate a man is to cultivate his powers of expression, so that he can bring out his thoughts with clearness and strength, and exert a moral influence over his fellow creatures. This is essential to the true enjoyment and improvement of social life.

According to these views, the labouring classes may be said to have as yet few means of education, excepting those which Providence furnishes, in the relations, changes, occupations and discipline of life. The great school of life, of Providence, is indeed open to all. But what, I would ask, is done by our public institutions for the education of the mass of the people? In the mechanical nature of our common schools, is it ever proposed to unfold the various faculties of a human

being, and to prepare him for self-improvement through life? Indeed, according to the views of education now given, how defective are our institutions for rich as well as poor, and what a revolution is required in our whole system of training the young.

The great aim of philanthropy should be, that every member of the community may receive such an education as has been described. To bring forward every human being, to develop every mind, is the great purpose of society. I say of society, not of government, for government is a mere instrument for holding society together, a condition of its existence, and not the great power by which its ends are to be accomplished. One of the pernicious doctrines of the day, very pernicious to the working classes, is, that government is to regenerate society, and exalt the individual to his true dignity. Government enables us to live together in society, and to make efforts for our own and others' welfare. But social progress depends on the spirit in each man's breast, and not on the operations of the state. Government may be compared to the foundation and walls of a manufactory, which enclose and protect not the moving and guiding power, but the necessary condition of their action. The people must not look to it for what their own energies can alone effect. * * * *

THE SIMPLIFICATION OF KNOWLEDGE.—All great truths, whether of morals or physics, are marked by their simplicity. Although not an absolute test, since false principles or paradox often seek shelter under the same forms; yet we may affirm, that in proportion as truths become more complete and comprehensive, so are the expressions appropriate to them more simple and determinate. And this is especially the case in regard to physical knowledge. Though facts have wonderfully multiplied, so as to encumber the mind of the student, and seemingly to dis sever the material world into endless fractional parts, yet has the discovery of new relations and connections tended unceasingly to reduce the facts under more general laws, and to give to science a unity and simplicity of a higher kind at every great step in its progress. To what future point this process of integration may proceed, we hardly venture to surmise. We may at least express our belief that we stand but on the margin of what science will hereafter attain in the union and simplification of all the great laws of the natural world.—*Quarterly Review*.

CAUTION NECESSARY IN INFERENTIAL REASONING.—Nothing is more characteristic of a manly and cultivated understanding, than the habit of suspending opinion in doubtful cases, and of abstaining from unwarrantable inferences. A wise man is induced to suspend his inferences by the modest recollection of his ignorance, and the fallibility of his judgment. On the contrary, both weak minds and ardent minds,—the former from fear, the latter from presumption, fix upon the first inference which the nature of an effect may suggest.

In philosophical inquiries, inferences should follow the most complete and satisfactory induction; and where, from the nature of the case, this complete and satisfactory induction cannot take place, we should ingenuously confess our ignorance. The chief source of false systems of natural philosophy has been, that probable or plausible conjectures have been admitted in place of just inferences; such conjectures, how plausible soever they may seem, ought rarely to be employed hypothetically to suggest and guide experiments.—*Taylor's Elements of Thought*.

BOOKS.—Books are not only the friends of individual solitude, but also of the family circle. They contribute to bind together, to fill up deficiencies, to cover flaws, to make it closer and brighter and firmer. By engaging the thoughts, improving the taste, and exciting the kindly feelings of the members of a household, they render each one more considerate and gentle, and more useful and agreeable to the rest. They insensibly introduce mental grace and refinement, and not only so, but refinement and grace of manners, wherever they become favorites. Show us a family in which the best and purest authors are loved and read, and we care not in what nominal rank of society they are stationed, or what may be their wealth, or want of it, or what may be their daily avocations; but we will answer for them, that vulgarity and coarseness have no place at their meetings, and that domestic peace is a dweller among them.

The domestic services which books are qualified to perform, are particularly valuable when the business and bustle of day-light are over, and the active interests of life are hushed into slumber under the brooding wings of night. The master of the house comes home from his office, counting-room, or workshop, the children come home from their schools, or places of employment, the mother's household duties are done, and they sit down together. What shall they do with the impending hours to keep them from hanging heavily. We suppose that there are some families, in town and country, who find, if there is no party to go to, or no place of public amusement to offer its attractions, such as they may be, or nothing particularly interesting to discuss in the events of the day, or the character or fortunes of their neighbours, that the long winter evenings, by which we mean the evenings of six months in our year, are apt to move off rather slowly and wearily. This would not be so, we are persuaded, if they would just call in to their assistance one or two of the friends which they would find in good books. How much more swiftly and pleasantly, not to say profitably, the hours would then glide away! What honest friends, what sympathising companions, what excellent instructors they are! How can a man be really solitary when these and nature are with him and around him? How can it be said of him, that he is without society, even though no being of flesh and blood should be near him, when he can sit down in his closet with the best and brightest minds which ever dwelt and beamed in residences of clay; with the master spirits of all time; with the souls of the mighty living and the mighty dead, the dead who are yet living; with ancient and modern lawgivers, philosophers, and bards; with moralists and satirists; with civilians and divines; with navigators and travellers; with the explorers of nature and the professors of art; with martyrs; with Apostles of Christ; with prophets of God? Who shall say that with these he is alone? Who shall say that in his sorrow he is without consolers; that in his trials and perplexities, and the various conditions of his mind and feelings, he is without spiritual advisers?—*Greenwood.*

FEMALE INTREPIDITY.—One of the guides described to us the adventure of a French lady called by him a *demoiselle*, and supposed to be nearly forty years of age, who, about five years ago, came to Chamouni with a determination to ascend Mont Blanc. The difficulties were represented to her as much too great for any lady to encounter, and especially one who did not appear to be strong and robust, though in good health. She persisted, however, at all hazards, and an unusually strong and numerous party of guides and attendants were accordingly provided to accompany her. It was in the month of August; the weather was remarkable, and there were two other parties; one of a Polish

gentleman with five guides, another of an English gentleman with six, and the French lady with eight. They all kept distinct and separate from each other, the Pole first, the Englishman next, and the French lady in the rear of all. Long before they reached the Grand Mulets—the first halting place in the ascent, and where it is usual to sleep in the open air or in a tent on the first night—the lady fainted repeatedly from fatigue and dizziness, and could only be restored with great difficulty by repose and an occasional draught of wine. When she recovered, her only answer to all the remonstrances of the guides was that she must go on to the summit at all hazards. They would then proceed a little further, and seeing her again droop would urge her not to proceed, as in all probability she would die, and they would have to answer for her life. Still she persisted in being taken to the top of the mountain, dead or alive. They accordingly fastened a rope round her waist, and a man holding her on each side, she was literally dragged up a portion of the way. On reaching the summit, she asked for wine, and drank a bumper to the health of her guides, after which she requested them to form a square, and caused herself to be lifted on their shoulders, where she remained some minutes, and waving her handkerchief in the air, exclaimed, “Viva la belle France!” boasting that she had been higher up above the earth than the native of any other country in Europe, at last! The descent was of course less fatiguing than the ascent, but the lady became at length so helpless by excitement and exhaustion, that it was necessary to take the greatest care to prevent her falling asleep, and the anxieties of the guides for her safety continued to increase all the way, until they landed her once more in bed at the Hotel Chamouni.—*Buckingham's Travels.*

FEMALE EDUCATION.—It was a judicious resolution of a father, as well as a most pleasing compliment to his wife, when on being asked what he intended to do with his girls, he replied; “I intend to apprentice them all to their excellent mother, that they may learn the art of improving time, and be fitted to become, like her, wives, mothers, heads of families, and useful members of society.” Equally just, but bitterly painful, was the remark of the unhappy husband of a vain, thoughtless, dressy slattern: “It is hard to say it, but if my girls are to have any chance of growing up good for anything, they must be sent out of the way of their mother's example.”

USEFUL FACTS TO BE KNOWN.—Water, when hot, dissolves more salt, sugar, &c., than when it is cold.—Hence the utility of pouring hot salt and water over articles to prepare them for pickling; and hot syrup upon preserved fruits; for the salt or sugar that would crystallize as the liquid cooled, is taken up by the fruit, &c., which by being heated also, absorbs more than it could be made to do if it were put on cold.

ON LISTENING TO EVIL REPORTS.—The longer I live the more I feel the importance of adhering to the rule which I have laid down for myself in relation to such matters:—“1. To hear as little as possible whatever is to the prejudice of others. 2. To believe nothing of the kind till I am absolutely forced to it. 3. Never to drink into the spirit of one who circulates an ill report. 4. Always to moderate, as far as I can, the unkindness which is expressed towards others. 5. Always to believe that, if the other side was heard, a very different account would be given of the matter.”—*Corus's Life of Simeon.*

PAINTED TEA.—Professor Reid, of New York, says that painted green tea may be most easily detected by putting a small quantity of it in a glass of cold water, letting it remain for a few minutes, and then stirring it.

Editors' Notices, &c.

- J. M., Fergus.—The back numbers have been sent to Mr. J. C. Raleigh as you request. The name was placed on a wrong list by mistake.
- S. T., Blenheim.—Yours of the 19th ult. received. All the numbers since June have been sent to Galt P. O. as you direct. There have been but five numbers published since June. You will get three numbers of the next volume, and may obtain the remainder complete for 3s. 9d. As there will be a continuation of several interesting articles through a large portion of the volume for 1849, and an index at the end of the year, you will find it worth your while to order the whole volume.
- W. S., Sharon, received.—To do as you request would be a deviation from a rule which we have determined to adhere to, without respect to persons, not because we have any doubt that in many cases the promise would be attended to, but because we cannot spare time or take the trouble to keep a set of books, such as the credit system requires, to prevent confusion. It cost us an immense deal of labour the past year, and led to many errors and considerable loss. When a subscriber pays, and his name is placed on the proper list, the troublesome part of the matter is at an end. As you are entitled to three numbers more, if you pay before 1st March, the whole of the next volume will be sent to you.
- R. L. D.—Your mathematical question will be inserted in the second number. As to the other points of your letter we had anticipated you.
- C. J. B., Gore.—Your request has been attended to. The communication will appear in our next number, with such remarks as we can make upon it. The subject is important, and we are very glad the discussion of it has been started. Useful facts will be elicited.
- J. P., Churchville, received.
- J. S., London, received.
- J. W., Chinguacousy, do.

TORONTO MARKET.

DECEMBER 28, 1848.

Flour, per barrel of 196 lbs.	17 6	@	21 6
Wheat, per bushel	4 0	@	4 3
Potatoes, per bushel	2 6	@	3 0
Pease, per bushel, 60 lbs.	2 0	@	2 3
Oats, per bushel, 34 lbs.	0 11	@	1 0
Bacon, per cwt.	35 0	@	40 0
Hams, per cwt.	0 5	@	0 6
Butter, in kegs, per lb.	0 6	@	0 7
Butter, (fresh) per lb.	0 7½	@	0 9
Pork, per 100 lbs.	12 6	@	17 6
Beef, per 100 lbs.	15 0	@	20 0
Turkeys, each	2 6	@	3 0
Fowls, per couple	1 0	@	1 3
Eggs, per dozen	0 7	@	0 9
Hay, per ton	50 0	@	65 0
Straw, per ton	25 0	@	30 0

Our Market is in a very inactive state for all descriptions of grain, as is usual at this season. There are

scarcely any deliveries of wheat from the farmers, and prices must be considered merely nominal. This will probably continue the case till the opening of the navigation, when prices will be materially influenced by the state of the British markets, which are likely to be much depressed by excessive importations.

Our Meat market at Christmas was, as usual, abundantly supplied, and the quality was excellent. We had an opportunity of taking only a cursory view; but a heifer bred and fattened by the Hon. Adam Ferguson, particularly struck us as being exceedingly fine, and highly creditable to that zealous and enlightened promoter of our colonial Agriculture. Our readers at home have no idea of the superior stock which this country can, by proper management, produce. We may also mention the excellence of the sheep, particularly those bred by Mr. Miller, of Markham, who is distinguished in this line. Mr. Moyle, of Brantford, sent some sheep of very superior quality; and we have much pleasure in directing the attention of our readers to that gentleman's article on sheep husbandry in another part of our paper.

MONTREAL MARKET PRICES.

Tuesday, Dec. 22nd, 1848.

Wheat	per minot	4 6 a	4 9
Oats	"	1 0 a	1 3
Barley	"	2 0 a	2 3
Peas	"	2 6 a	2 9
Buckwheat	"	1 8 a	2 0
Rye	"	2 9 a	0 0
Flaxseed	"	4 0 a	4 6
Potatoes	per bushel	2 0 a	2 6
Beans, American	"	4 0 a	5 0
Do. Canadian	"	6 0 a	6 8
Honey	per lb.	0 4 a	0 5
Beef	"	0 2½ a	0 6
Mutton	per qr.	5 0 a	10 0
Lamb	"	1 7 a	3 9
Veal	"	5 0 a	10 0
Pork	per lb.	0 3 a	0 5
Butter, fresh	"	0 10 a	1 0
Butter, salt	"	0 9 a	0 0
Cheese	"	0 4 a	0 4½

NEW-YORK MARKETS.

New-York, Dec. 23—6½ P. M.

Moderate demand for Flour, but prices firm; there is not much in market; sales, 3,500 barrels, at \$5.31 a \$5.44 for common and good; for fancy and extra, \$5.75 a \$6.25. Market for Wheat very dull: sales 2,000 bushels fair Genesee at \$1.23 for milling. Pork market continues to tend upwards: sales at \$10.50 for old prime; \$11.25 for new; \$13.25 for old mess; \$14 for new; and, at close, there was none selling under \$11.75 and \$13 50. For old Beef, \$5.75 a \$7 and \$9.75 a \$11.

BUCKWHEAT CAKES.—The griddle on which cakes are baked should never be touched with grease. Firstly, because it imparts a rancid taste to the cakes. Secondly, if a cooking stove be used, it fills the kitchen, if not the whole house, with a smell of burnt grease—to say nothing of the parade, and boasting to one's neighbors, by betraying what we are to have for breakfast.—Wash the griddle with hot soap suds; scour with dry sand, and when heated for use, rub it well with a spoonful of fine salt and a coarse cloth. It will then be ready to receive the cakes. After each cake is removed, the salt rubbing must be repeated. If the first does not succeed, try it again, and you will ever after follow this advice of an old housekeeper.—*American Agriculturist.*

ADVERTISEMENTS.

We make room in the advertising sheet of our journal for the following news. The *Europa* steamship arrived at New York on Sunday, the 31st Dec., bringing very important intelligence, of which the following are a few items:

MARKETS.—Prices are advancing. Flour and Cotton are "up," but the telegraph does not state the advance. In New York, the steamer's news caused holders to demand 12 cents per barrel on previous rates.

FRANCE.—The result of the presidential election was not known certainly, but no doubt existed as to the success of Louis Napoleon. As far as returns were known, General Cavaignac had received but 516,000 votes, while Napoleon had 1,737,000. The whole number of votes to be cast were estimated at 2,396,000. The Prince, as he is called, had therefore obtained a majority of the whole number according to the returns made, and that the final result would give him a majority over the General, was not questioned. This shews "what is in a name," for it is admitted the Prince had little else to recommend him. No disturbances had occurred.

ITALY.—*The Pope's flight from Rome.*—The Pope on the 29th November, left his palace disguised as a servant of the Bavarian Ambassador, and fled to Gaeta, which place he succeeded in reaching on the night of the 25th, without detection. No one in Rome recognised him, and the illustrious fugitive arrived in Gaeta on the night of the 25th, without experiencing the least danger. On his arrival there he informed the King of Naples of his flight, and apprised his Majesty that steamers had been placed at his disposal by the Governments of England and France, so that he was ready to depart if his presence caused the King the least disquietude; the answer was given by the King in person, who with his family and Court proceeded to welcome the fugitive. Before his escape he had been deprived of his own Guards, and surrounded by those favourable to the new administration forced upon him by the people.

CHOLERA is raging at New Orleans and Cincinnati. Several new cases have occurred at New York.

UNITED STATES SENATE.

CANADIAN RECIPROACITY.

DEC. 19.—*Mr. Dix* moved to take up the bill providing for the admission of certain Canadian products into the United States, free of duty. He said it was important that the bill should be acted on speedily, because, to perfect it, it would be necessary that there should be some reciprocal legislation on the part of Canada. The motion was not agreed to—17 to 26.

And the Senate went into executive session.

DEC. 20.—On motion of *Mr. Dix*, the bill providing for certain reciprocities in commerce between the United States and Canada, was taken up and made the special order for the fourth day of January next, at one o'clock.

LAW PARTNERSHIP.

THE Undersigned have this day entered into Partnership as ATTORNEYS, SOLICITORS, &c. under the style and firm of GORHAM & McDougall.

AMBROSE GORHAM.
WILLIAM McDUGALL.

Toronto, April 1st, 1848. I

OFFICE—Corner of Yonge and King Streets, next door East of the Hon. R. Baldwin's Office, Toronto.

ADELAIDE ACADEMY,
FOR THE EDUCATION OF YOUNG LADIES.

Corner of Bay and Wellington Streets,
TORONTO.

THE next Session of Adelaide Academy will commence on THURSDAY, the 4th of JANUARY, with Lectures on Chemistry and Astronomy.

Pupils are received at any time during the year, except from the 1st of July to the 24th of August.

Competent and experienced Teachers are engaged to give instruction in all the solid branches of an English Education, in Instrumental and Vocal Music, Drawing, Painting in Water Colours, Oil Painting, Miniature Painting, &c.

Lectures will be given to the classes in Natural Philosophy, Chemistry, Astronomy, Physiology, and Biblical History.

The Academy is divided into four Departments, with experienced Teachers over each.

Board, 10s. per week..... £0 10s. 6d. Week.

Tuition in English Studies..... 1 0 " Quarter.

Board, and Tuition in English Studies..... 26 0 " Annum.

Pupils attend the Church which their Parents or Guardians direct.

REFERENCE

Is politely permitted to—

The Honourable The Chief Justice.

The Honourable Robert Baldwin.

The Honourable Mr. Justice Sullivan.

The Honourable J. H. Price.

Henry Ruttan, Esq., Sheriff N. D.

W. B. Jarvis, Esq., Sheriff H. D.

W. S. Conger, Esq., Sheriff C. D.

Rev. Dr. Richey, Rev. E. Wood, Superintendent of Missions, Rev. H. Esson, A.M., Professor in Knox's College, and to numerous Patrons throughout the country.

Cards giving particulars, can be obtained at this Office, or at the Academy.

J. HURLBURT, A.M.

Principal.

Toronto, 14th December, 1848. I

CANADIAN

PATENT HEMP, FLAX, & OIL MILLS.

NOTICE TO FARMERS.—Wanted to purchase, for Cash—

10,000 Bushels Flax Seed
1,000 Acres Hemp Straw.
1,000 Acres Flax Straw.

The Proprietors of the above establishment having secured by Royal Letters Patent the invention of an entirely new process, especially adapted to this country, for the preparation of Hemp and Flax, hereby give notice, that they are now ready to enter into engagements, to an unlimited extent, with all persons wishing to sow the same. Those parties willing to contract for the ensuing season, will please make application at once to the Proprietors, either at the Works, opposite the Deer-Park, on Yonge-Street, or at the Office, No. 22, Wellington Street, Toronto.

McGEE & DEW,

Proprietors.

January, 1849. I

FRUIT AND ORNAMENTAL TREES.

1849.

PUBLIC attention is invited to the extensive and well-selected assortment of *Fruit and Ornamental Trees*, grown at the **TORONTO NURSERY**, for sale in the ensuing Spring. Persons about to plant Trees are respectfully requested to visit the grounds and examine the stock, which, for extent and variety of large, well-grown, healthy Trees, of the most approved varieties, now equals any establishment of the kind between this and New-York. The grounds now contain more than Twenty Acres, planted with all descriptions of Nursery productions.

FORTY THOUSAND APPLE-TREES,

and upwards, four and five years from the graft, are now ready for sale, with a proportionate number of the most desirable sorts of Pears, Plums, Cherries, Peaches, Nectarines, and Apricots. Also, Grape Vines, Gooseberries, Currants, Raspberries, Strawberries, Rhubarb, and Asparagus Roots. Many of the finest varieties of Pears may be had on Quince stocks, now so much esteemed for garden culture.

The collection of Ornamental Trees, Flowering Shrubs, and Hardy Roses, is quite extensive, and contains all the hardy varieties suitable for Pleasure-Grounds and Shrubberies. Also, a large stock of Dahlias, Herbaceous and Green-house Plants.

The supply of Hedge Plants is also worthy of special notice. Upwards of 100,000 plants of English Thorn, Privet, &c. can now be furnished.

Nurserymen commencing business, in want of Specimen Trees and Plants, and persons purchasing in large quantities to sell again, are supplied on liberal terms, and will find it to their advantage to give this Nursery a call.

Trees grown here are better adapted to the Canadian climate than those brought from the South. Trees sent out by boats or other conveyances are invariably freshly dug, and many Farmers can have them taken up and put in their own wagons while on the ground, thereby avoiding all risk of failure after transplanting.

A new Descriptive Catalogue, containing directions for successful Transplanting, has lately been published, and is furnished *gratis* to all post-paid applications.

Orders from a distance, accompanied by a remittance or a satisfactory reference, will be promptly and punctually attended to. Articles sent out are correctly labelled and securely packed, to secure safe transmission to any part of the Upper and Lower Province.

GEORGE LESLIE.

January, 1849.

By Her Majesty's Royal Letters Patent.

BUTTER'S PATENT

BRICK AND TILE MACHINE.

THIS Machine grinds the Clay and moulds the Brick directly on the pallets, by Horse Power, and delivers them ready to be put into the back or pile, making from 25 to 35 per minute, according to the length of the lever the horse is attached to, thereby saving 75 per cent. more manual labour than any other machine extant. Terms made easy. Orders promptly attended to, and Machines set in operation in any part of the Province. For further particulars apply to Mr. Thos. Anderson, Yonge Street; Mr. Wm. Groves, Richmond Street, Toronto; or Mr. Henry Beck, Builder, No. 11, Richmond Street, Toronto.

Jan. 1, 1849.

MAMMOTH HOUSE.

New Dry Goods & General Outfit Establishment,

Opposite the Market, King Street East, Toronto.
THOMAS THOMPSON respectfully solicits the attention of his numerous friends through country to his large and well-assorted Stock of

STAPLE AND FANCY DRY GOODS

particularly adapted for the Country Trade, consisting of Woollen Cloths, Blankets, Flannels, Sheetings, Prints, Cloaks, Bonnets, Factory Cotton Warp, &c., with an immense Stock of Hats, Furs, &c.; together with a large and general assortment of

READY-MADE CLOTHING,

suited for the Season, and manufactured on the best plan; also, a well-assorted stock of Ladies', Gentlemen's and Children's ROOTS and SHOES, of every description, and at unusually low prices; the whole of which with the Clothing, will be made by the best of men, under the direction of experienced foremen, will be sold at unprecedented low prices.

Farmers and Mechanics, call and try the "Mammoth House," opposite the Market.

January, 1849.

NEW DRUG STORE, WHOLESALE AND RETAIL.

DREWERS, McPHAIL, & Co., Chemists and Dispensers, 46, King Street East, have now opened the above line, in connexion with the other branch of their business, and will keep constantly for sale a large assortment of English Chemicals, Genuine Patent Medicines; Perfumery, Dye Stuffs, Horse Cattle Medicines, &c. Physicians' Prescriptions, Family Recipes carefully prepared.

Stationery, Books, and Paper Hangings.

Bookbinding, &c., as usual.

* * General Agents for Canada for Dr. C. VanZandt and Dr. Benj. Brandreth's Pills.

Toronto, Jan., 1849.

GARDEN AND AGRICULTURAL SEEDS.

THE Subscriber begs to inform his friends, and the public in general, that his stock of Fresh Garden and Agricultural Seeds for the spring sowing is complete. The Subscriber's long and practical acquaintance with his business enables him to select such kinds of seeds as are most suitable for the climate. The vitality of each sort is fully tested before offered to the public; new varieties and such as are raised in greater perfection in Europe, are annually imported from sources that can be relied on.

Country merchants, and others, wishing seeds sold again, can be supplied on the most moderate terms.

JAMES FLEMING,

Seedsman and Florist, Yonge Street

Toronto, Jan. 1, 1849.

CASH! CASH!! CASH!!!

THE Subscriber will pay the highest Cash price for 1000 Bushels clean Timothy Seed. 100 Bushels clean Spring Tares; 100 White Marrowfat Pea Bushels Flax Seed.

JAMES FLEMING,

Seedsman and Florist, Yonge Street

Toronto, Jan. 1, 1849.