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THE

CANADIAN AGRICULTURIST,

A MONTHLY JOURNAL

DEVOTED TO

AGRICULTURE, HORTICULTURE,

SCIENCE,

AND

DOMESTIC AND RURAL ECONOMY.

Illustrated with Engravings.

EDITED BY

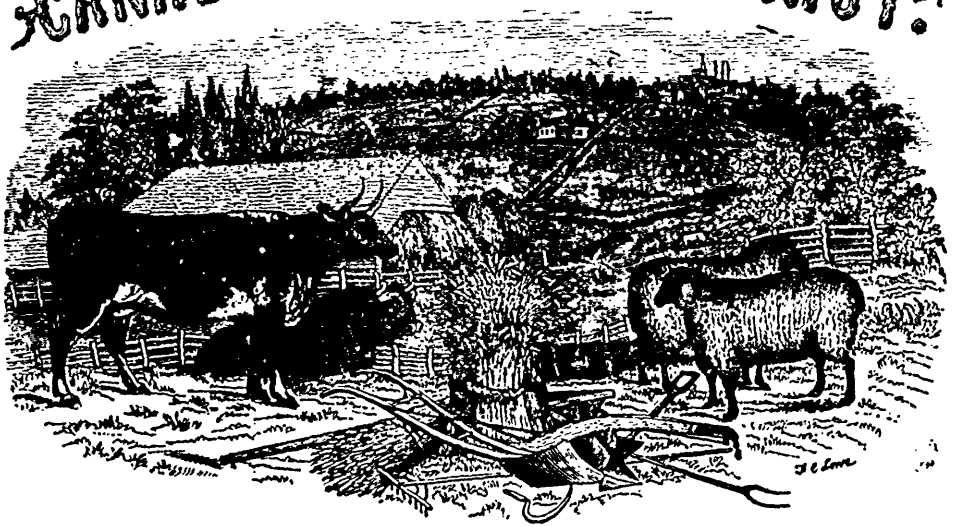
GEORGE BUCKLAND AND WILLIAM McDOUGALL.

VOL. II.—1850.

TORONTO, CANADA WEST,
WILLIAM McDOUGALL, PROPRIETOR.
M DCCC L

INDEX.

CANADIAN AGRICULTURIST.



"The 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. II. TORONTO, JANUARY, 1850. No. 1.

THE AGRICULTURIST.

In the last number of our paper for the year 1849, we stated some of the difficulties under which it had laboured, and referred to some of the changes we intended to make in the present volume. It will be seen that we have discarded advertisements, as we found they yielded no profit, at the prices usually charged, and added considerably to the cost of the publication, in the item of paper, as well as printing. By setting the type of articles, whether original or otherwise, close, i. e., without leads between the lines, (the use of which produces an open appearance, and causes a given article to occupy a much greater space than without them,) each number will contain as much matter, within a mere trifle, as one of the last volume. If the Agricultural Association agree to our proposal to publish their Reports in extra pages of the *Agriculturist*, the present volume will contain *more* matter than the last. And yet we offer it to societies and clubs ordering over twenty-five copies for *half-a-dollar* a copy! We have added a new feature to this volume, in the illustration by woodcuts, of cottages, plans of school houses, and important principles and questions in Natural Philosophy. The explanations which will be given on the latter subject especially, we consider highly desirable, and we have no doubt they will prove interesting and instructive to hundreds, nay thousands of our youthful readers, who may not have access to the same kind of information in books of science. We refer to our remarks on this subject in another place. We direct the attention of readers and our cotemporaries to the Prospectus published on the last page. Those of our newspaper brethren who will copy this prospectus and make such remarks upon our work as they may think it deserves, will greatly oblige us, and no doubt help us to enlarge the sphere of, we trust, our useful labours. We are happy to say that several orders from societies and clubs that did not take the paper last year, have already come in. From the reduction of price to societies, and the plan we have adopted of giving prizes, we anticipate a large increase to our circulation. Let the friends of agricultural improvement extend to us a reasonable support, of *the right kind*, and we promise them an interesting and a useful paper.

Neatly bound volumes of the *Agriculturist* for 1849, may be had for 6s. 3d. Societies ordering over a dozen copies, for premiums, will be supplied at 5s per copy. Unbound sets will be mailed to the address of any person remitting 3s. 9d., *free* of postage.

Signs of Rain.—The air, when dry, I believe, refracts more red, or heat-making rays; and as dry air is not perfectly transparent, they are again reflected in the horizon. I have generally observed a coppery or yellow sunset to foretell rain, but as an indication of wet weather approaching, nothing is more certain than a halo round the moon, which is produced by the precipitated water; and the larger the circle, the nearer the clouds, and consequently the more ready to fall.—*S. H. Davy.*

SPIRIT OF THE AGRICULTURAL PRESS.

We propose condensing into as small a space as possible, some of the more useful and interesting articles or facts that we may meet with in our Agricultural exchanges. As our limits will not admit of lengthy articles, we think a few columns monthly, of carefully abridged matter, relative to the state and progress of Agriculture in various parts of the world, will be well received by our readers.

Destruction of the Wire Worm.—Mr. Little in a recent number of the "Illustrated London News," observes that he had tried the application of the most powerful poisons to the wire worm, such as preparations of Corrosive Sublimate and Arsenic, without destroying its vitality. Even Vitriol and Aquafortis did not consume the worm till after a considerable time. He next tried liquid ammonia, (*hartshorn*), and the result is said to have been marvellous. The worms were shrivelled up in an instant, and reduced almost to a state of cinder. He afterwards took a portion of the earth containing the worm, mixing it with a small quantity of lime, adding some powdered sal-ammoniac; the result was the decomposition of the latter by the lime, and the liberation of ammoniacal gas, which had precisely the effect of the liquid ammonia. This experiment is worth pursuing on a larger scale. Ammonia, it should be remembered, constitutes a most valuable portion of manure.

Soot.—The effects of this manure on growing crops, as a top dressing, are immediate, owing to the large quantity of sulphate of ammonia which it contains. It promotes in a high degree the growth of grass, and the second cut of clover is also greatly increased thereby. Soot promotes the growth of cabbages and other herbaceous plants in a remarkable manner, and is much esteemed for garden purposes. It has been found advantageous as a top dressing for wheat, but care should be taken not to apply it in large quantities, or it may be injurious by burning the plants.—*Transactions of the Highland Society.*

Offal of Shambles.—Blood and other animal matter is too powerful a manure to apply by itself, and when unmixed, its effects are more *immediate* than *lasting*. It is a good substance to mix with dried peat moss, or with farm-yard manure. It is said that when animal offal has been much used, large numbers of maggots have been generated, that have been particularly injurious to the quality of turnips and other root crops.—*Ibid.*

Nightsoil.—This is a most powerful fertilizer, and in large cities manufactories have been erected for disinfecting and preparing it for the purposes of the farmer. It may be made into a compost with about four times its quantity of coal-ashes, with saw dust, peat, or some such slowly decomposable vegetable matter, to prevent the ammonia from flying off during the decomposition. Nightsoil appears better adapted to clayey than light soils. It contains phosphate of lime, and most other essential materials for the growth of crops.—*Ibid.*

Cost of Drainage.—The following table is taken from the *Scotch Agricultural Journal.* The length of draining-tiles is calculated at 15 inches, the cost at 18*s.* per thousand, the soles at 6*s.* per thousand, and the depth of drains at 2 feet 3 inches.

The expense of draining is very fluctuating, as it depends so much on the rate of wages, the nature of the soil—or rather the subsoil—and the depth required. Few drains should be made less than three feet deep, and pipes are a cheaper material than eliptical tiles, and they are thought to be equally efficient and durable.

Feet apart.	No. of Tiles pr. acre	No. of Soles pr. acre.	Cost of Tiles pr. acre.	Cost of Soles pr. acre.	Cost of cutting and filling in	Total.
			£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*	£ *s.* *d.*
10	3485	3185	3 3 0	2 2 0	3 0 6	8 5 6
15	2323	2323	2 0 0	1 6 8	2 0 3	5 6 11
18	1936	1936	1 15 9	1 3 10	1 13 6	4 13 1
20	1742	1742	1 11 3	1 2 2	1 10 3	4 3 8
22	1584	1584	1 8 6	0 19 0	1 7 6	3 15 0
24	1452	1452	1 6 0	0 17 4	1 5 0	3 8 4
26	1339	1339	1 4 3	0 16 2	1 2 9	3 3 2
28	1244	1244	1 2 6	0 15 0	1 1 6	2 19 0
30	1161	1161	1 1 0	0 14 0	1 0 0	2 13 0

Signs of Health in Sheep.—As sheep are liable to various diseases, much care on the part of purchasers becomes necessary, especially when they are intended for breeding stock. The usual appearances of soundness and vigour of constitution, are a lively briskness of temper, a brilliant clearness of the eye, ruddy colour on the inside of the eyelids, nostrils and gums, fastness in the teeth, a sweet, fragrant breath, dryness of the nose and eyes, the breath easy and regular, coolness in the feet, the various parts of the body properly formed, fleece firmly attached to the skin and unbroken, and the skin exhibiting a florid, red, appearance.

American Provisions in England.—In the December number of the *American Agriculturist*, there is an interesting article under this head. The last season, it appears, has been unprofitable to exporters, although a large business was done. Much of the loss is attributable to a want of proper attention in curing and packing, and this neglect is said to have created a general prejudice in the British markets against American provisions. The importation of bacon into London alone, had risen from 14,161 cwts. in 1847, to 140,096 cwts. in the first nine months of 1849; the largeness of the amount, and inferiority of the quality more particularly, had occasioned a serious declension in prices. Ice-cured singed sides, shipped during the summer months, did not answer, the meat having sustained great damage during transit. All bacon is best packed in well-seasoned boxes, containing about 3 cwt. each. *Hams* are objected to on account of over-saltness, which has occasioned a serious decline in price. They should be, when dried, from 10 lbs. to 14 lbs. each, in casks from 5 to 6 cwt. Salted hams from 15 lbs. to 25 lbs. *Mess Pork* had been a losing article, owing in great measure to defective curing. This gives it a dirty brown colour, instead of a

bright cherry-red, which all skilfully packed meat possesses. Irish and Hamburg pork, being well cured, consequently obtained much higher rates. *Beef* had turned out better. Refined lard, in white kegs, does not answer. The English refiners turn out a neater and firmer article, which is not exposed, like the American, to fermentation on the passage. The importation of *cheese* had been heavy, and the make of English very large, prices must therefore rule low. From 34s to 40s. per cwt. is expected to be the general range.

Milk Weed.—A correspondent of the *Boston Cultivator* recommends rather a novel mode of destroying this prolific weed. As hogs are well known to take a deep interest in most kinds of roots, especially when their noses are free from rings, it is suggested that they should be employed in sufficient numbers during early spring in all such fields as may require the benefit of their services. This is no new light after all, as the swinish multitude have been wont to exercise their intuitive propensities from time immemorial, to the no small annoyance often of the farmer. We should prefer deep and clean cultivation to the calling in the assistance of the grunters.

Quality of Milk.—We have often remarked that it is the quality of milk, rather than the quantity, which gives value to the dairy cow. Great astonishment is sometimes produced by statements of the large quantity of milk yielded daily, by some cows. But such statements are of little consequence. The most remarkable cows for the production of butter, have given but medium quantities of milk. For instance, the celebrated Sussex or Cramp cow, which for several years made an average of 600 pounds of butter a year, gave, at the most, but twenty quarts per day; and the Oaks cow, which made 480 pounds of butter in a year, gave but sixteen to eighteen quarts per day. John Hulburt, of Chemung, N. Y., states that he has found, by churning the milk separately, that *one* of his *best* cows will make as much butter as *three* of his *poorest*—all giving an equal quantity of milk. He states, also, that 100 pounds of milk, drawn from his cows which gave the richest milk, will make one pound more butter than 100 pounds drawn from the whole herd; and he adds, that there is more difference in the quality than in the quantity. His advice in conclusion is, that all dairymen look well to the quality of milk their cows give.—*Albany Cultivator.*

Black Sea Wheat.—In Vermont, this variety of wheat is sown any time between the 10th of March and the 10th of June. It yields, in good soil, from 30 to 40 bushels per acre, and weighs 64 lbs. a bushel. Mr. Wainwright, of Middlebury, in 1846, raised, upon 30 acres, as many bushels per acre of the above wheat. This was not done by the "skinning process," but by a liberal application of ashes and stable manure, and thorough preparation of the ground.—*Albany Cultivator.*

Broom Corn.—The *Ohio Statesman* says that C. Eaton and Brothers planted, last season, 700 acres with broom corn, 450 of which were rented at $5 per acre. Much of the land had been subjected to this crop for five years in succession, and the produce sent chiefly to New York.

We are glad to find that attention is beginning to be paid to the cultivation of this corn and the making of brooms in Canada; and, from all we can learn, the business is profitable. Surely we have soil and ingenuity enough to grow the materials for and make our own brooms.

Starch from Indian Corn.—Large quantities of starch are now made from this grain, in Ohio. An establishment, near Columbus, consumes 20,000 bushels of corn annually for this purpose. The offal of the grain is given to hogs, 500 to 600 head being annually fattened therewith. The quality of the starch is said to be superior to that of wheat, and commands a higher price in New York.

Winter care of Sheep.—"Shelter and feed well, feed well and shelter. If you do not shelter your sheep, you ought not to wear a coat." To this excellent and seasonable advice of our contemporary *The Wool Grower*, we would say to farmers, in these northern regions particularly, extend the same friendly and profitable care to *all* your domestic animals. Attention of this sort has a high economical value. But in studying warmth and shelter, don't be forgetful of proper *ventilation.* Remember it is a law of nature, that no animal can thrive or exist in a healthy state without a constant supply of pure air. We have seen animals, particularly sheep, both in Canada and in England, very much deteriorated from insufficient attention to this very simple and necessary rule.

Ransome and May's Portable and Locomotive Steam Engine.—We learn from an English Agricultural journal that steam, for farming purposes, is beginning to engage the attention of mechanics in right earnest—the above eminent firm having recently brought out an engine that can be worked from four to seven horse power, according to the pressure of steam employed. It is furnished with a tender, and is locomotive on a common road; it requires no other fly wheel than those on the hinder axis, which act also as carrying wheels, when travelling. As the process of grinding, chaff cutting and thrashing, require very different rates of revolution, the power can be taken off from the crank shaft, the wheel shaft or the edge of the driving wheel; and, by altering the gearing connecting the crank shaft with the shaft of the driving wheels, two changes of velocity may be made.

Paul's Deep-Draining Machine.—This machine, which is an English invention, may be made to cut a drain three or four feet deep at a single operation, at the rate of 300 feet per hour, having a level bottom for the tiles to rest upon. It is said it may be worked by three or four horses; but we should think, however, that power quite inadequate in stiff soils for the before mentioned depth. It is adapted for raising the sub-soil to the surface for the purpose of claying or making lands; and when the clay is in a plastic state is said to raise from four to five cwt. per minute. It

may be used to greatest advantage when the surface of the soil may have become so hard, either from frost or dry weather, as to render it impracticable to accomplish the cutting of drains by manual labour. The utility of this implement, when it is required to cut drains on clover lands in the course for wheat crops, and from which the first crop has been taken, is clearly seen; as the clay or marl from being immediately spread upon the surface, becomes thoroughly pulverized, and enters into immediate operation for the succeeding crop. We know not the expense of the implement, but from the brief description that has come under our notice, we should be inclined to think that it might be suitable to the heavy worn out land of this country. There is frequently much virtue in the sub-soil, and which only requires to be moved.

Smithfield Cattle Show.—The annual exhibition of this well known society took place as usual in London on December 10th, 11th and 12th, and was numerously attended; not less than 20,000 persons, including a large number of ladies, passed through the bazaar during the first day. In live stock, one fifth more entries were made than on any previous occasion; and the quality is said to have been of a very superior description. The Prince Consort as usual was a pretty extensive exhibitor, and three prizes appear to have fallen to the lot of His Royal Highness. The Duke of Richmond,—the president of the society, and the firm and consistent friend of agriculture,—the marquis of Exeter, Earls Leicester, Fitzwilliam, Radnor, and other noblemen, were more or less successful. The great bulk of the prizes, however, we are glad to see were carried off by tenant farmers, several of whom were for the first time winners."

The implement department was unusually crowded with almost every variety of the most valuable machines in use on the farm, and which fully maintained the reputation of the makers generally, in the quality and style of material and workmanship. Amongst the novelties were the "Royal Albert Scarifier," made (under the direction of general Wemyss, Prince Albert's farm steward,) by Mr. Smith of Uxbridge. Messrs. Clayton and Shuttleworth, of Lincoln, and Messrs. Barrett, Exall & Co., of Reading, each exhibited a portable steam engine, for agricultural purposes.

Irish Agricultural School.—A meeting, attended by Sir R. Kane, the president of the Queen's College, Mr. Fagan, M. P., colonel Chatterton, the High Sheriff, and several other gentlemen of distinction, was held in Cork lately, for the purpose of establishing an agricultural school of industry, in Munster, in connection with the provincial college, "by the formation of an agricultural garden and experimental farm; and also a museum of materials connected with these important subjects, so as to secure to this locality the appropriation of the £5000, as set forth in the second section of the 11th and 12th Vic., chap. 115." The necessary steps to carry out the objects of the meeting were unanimously adopted.

ON VARIETIES OF PLOUGHS AND PLOUGHING MATCHES.

The following communication from one more accustomed to handle the plough than the pen, was sent us some months back, and got mislaid. It refers to a subject of great importance in practical agriculture; and whether a ploughing match between Canada and the state of New York take place or not, we feel disposed to give our readers an opportunity of forming their own opinion on our correspondent's views and suggestions in reference to that subject.

To the Editors of the Agriculturist.

Gentlemen,—I send you a few thoughts on the subject of ploughing, after a six-and-twenty years' experience in that operation. I was first set to plough, or rather to annoy the soil, with an old one handle hog-plough, and from that to this, with very few exceptions, I have had opportunities of using all our different Canadian improved ploughs. On a careful examination, I find that our Canadian plough makers appear to have had but one chief object in view, that is, to see who can make the best plough for all kinds of work. Here lies the mistake. We should have, I think, not less than five different ploughs, to perform the work which one is often made to do. There should be a plough constructed for turning the green sod for a crop; another for summer ploughing when the ground is dry and hard; one for cross ploughing; one for deeply moving the loose soil; and another for making the seed furrow. Ploughing is a mechanical operation, and requires mechanical skill to manage properly. I would ask, where is the joiner that can do all his planing with one plane, and turn off work with speed and profit? Where is the smith that can split the heavy bar and weld the small rod with the same hammer, and turn off work advantageously? Where is the farmer that can plough the hard, heavy, green sod, and stir the loose, mellow fallow with one and the same plough, and turn off good work with speed and profit? The profit or advantage of mechanical operations depends on speed, the speed depends on the quality and suitableness of the tools employed. Perhaps some farmers may think, that to purchase a set of five ploughs, would be to incur a great and useless expense. But what says experience? I have an iron Scotch plough, which in ploughing twelve acres of hard stiff sward, will pay its own cost, from the perfect work it performs, and the greater crop which follows, compared with the imperfect work of the short handle, broad heel plough. But now I must lay it aside, with its long handles and all its other charms. On the other hand, the short handle broad heel plough will pay itself, in preference to the iron plough, in crossing twelve acres three times, counting speed and cutting the roots of thistles and weeds. For in a country like Canada, where the surface of the ground is confined by frost for one-third of the year, the ploughing season short, drought frequently severe, and wages high, it is evident that *speed* should be regarded as of first importance, as

much so in agricultural as in mechanical operations.

I will now offer a few thoughts on the national ploughing match between Canada and the State of New York, that was talked of a short time since. If this exhibition takes place, it should be for the purpose of ascertaining facts that will be mutually beneficial to both nations. I have witnessed a good number of ploughing matches in my time, and it is not uncommon to find some of the best ploughmen among the spectators, while a second-rate class are between the plough handles. Where is the man that has judgment and skill capable of ploughing a furrow to the credit of his country, who will not look beyond the end of his plough beam, and see the difficulty he may involve himself in by assuming the imposing title of national champion? Nine chances to ten but the champion belongs to the second-rate class; and the most perfect manner of turning the soil, the skill of doing which both nations are in search of, will in all probability remain in the dark. There would also be some danger that over estimates would be made of the value of the particular class of ploughs which might happen to win, and of calling out national political feeling and jealousy, which would be mutually injurious.

You may think from these remarks that I disapprove of such an enterprise, but far from it. Both good feeling and improved ploughing might result to both countries. I will give you some thoughts of my own as to what I think would be a desirable and profitable ploughing match.

Take the sum that is intended for the national match, say 100*l.*, and the 50*l.* which the ploughmen of Scarborough hold at stake. with the 50*l.* of the township that shall accept their challenge. This would yield a sum of 200*l.*; and if our Americal neighbours of the State of New York would raise another 200*l.*, a total of 400*l.* would be available for this purpose. Let there be given a premium for three sets, each to contain five ploughs, and each set draw 125*l.*, or 25*l.* for each plough. Those sets that draw prizes to be public property, never to be patented, but delivered up to the President of the Provincial Association till he has secured patterns for the province, when they are to be given up to the President of the New York State Agricultural Society. The remainder, 25*l.*, should be devoted to defraying the expenses of the judges, &c. I would recommend fifteen judges, all practical farmers, seven on a side, the fifteenth to be chosen in the country which produces the greatest number of patterns. Proper parties should be employed to ascertain the weight and draught of the ploughs, and mark the same on each before hitched on for trial. The judges should confine themselves to the best work and lightness of draught. The Provincial Association and New York State Society should give such premiums to the best ploughmen, as they might judge proper. Then let the Scarborough champions again come forward and give the Whitby gentlemen a chance to mend their ways. If such a trial of ploughs and ploughmen were to come off at one of our Provincial shows, say at Niagara next year, for 375*l.*, what a concourse of farmers and other spectators would be attracted to the spot from both sides. We might expect at least fifty competitors, bringing five ploughs each, all of different patterns. Such a competition would give a stimulus and honest pride in the noble and useful art of ploughing, and conducted on fair and honourable principles, must prove highly advantageous to all parties concerned.

I remain yours truly,
C. P. J.

Clarke, 1849.

INDIAN CORN AND PUMPKINS.

We have been favoured with the following facts by captain Shaw, of this city, which show what can be done in this country in the growth of the above productions. The corner of a field, consisting of a sandy loam, was well cultivated and manured with stable dung and planted with Indian corn (the yellow Dutton,) on the 21st May 1849, on a space comprising one fifth of an acre; the distance of the hills, four feet asunder. On the 2nd June, 18 hills of pumpkins were planted with the corn, of the mammoth variety, both of the green and yellow kinds. The gross amount of produce from this plot was 7053 lbs. of pumpkins and 29 bushels of corn in the ear! One specimen of the green pumpkins weighed, when gathered, 260 lbs; another of the yellow, 202 lbs.! Twelve selected specimens amounted together to 2102 lbs. The corn was hoed twice, and suffered in some degree from the depredation of crows and wireworm, and some hills of the pumpkins failed to vegetate. A small amount of night soil was applied to the pumpkins; and we must confess that such gigantic specimens have never come within the range either of our observation or reading. We understand that Mr. Fleming, nurseryman of this city has seeds taken from the largest, for disposal.

THE ROYAL SOCIETY OF VAN DIEMEN'S LAND.

This society, for the promotion of natural history and general science, was founded under the auspices of Sir J. E. Eardley Wilmot, in 1843. and in 1844 the Queen became its patroness. It receives a grant from the public treasury of 400*l.* a year. A museum, containing already a large number of specimens, illustrating the mineralogy, geology, and natural history of the island, has been formed, and the nucleus of a library commenced. The papers and proceedings of the society are published quarterly. The first part contains several interesting reports on the coal fields of Van Diemen's Land, which appear to be rich both in bituminous and anthracite coals, and will prove at no distant period an immense source of wealth. The society, we find, encourages the important pursuits of the farmer and horticulturist; it having under its management a large and beautifully laid out botanical garden, in the vicinity of Hobart Town. These things are highly creditable to our fellow colonists on the other side of the globe. When will Canada follow the example thus set by a junior member of our colonial family?

EXTRACTS FROM AGRICULTURAL ADDRESSES.

We find the following extracts in the *Albany Cultivator*. The sentiments are such as we should like to see more prevalent in our own country:

INFLUENCE OF AGRICULTURAL PERIODICALS.—Agricultural reading is another subject to which I would call your attention. Papers designed chiefly for those interested in farming pursuits, engaging as they do the best intellect and most practical talent in the land, must be a store-house of interesting and useful knowledge.—They are moreover, our common medium for interchanging thought and opinions, and for communicating from one to the other, our useful discoveries. Though the ignorant and penurious may spurn such means of gaining intelligence; yet, it is observable and encouraging, that among the more intelligent farmers, are always to be found the best patrons of our Agricultural prints. And where the land is in the highest state of cultivation, and the domestic arrangements are of the most agreeable character, you will discover intelligence to use and appreciate those publications which are designed to bring conveniences and improvements to their farms and dwellings. Go the county over, and you will see that, in all the cases of failure in realizing a fair profit from the farm, there has not been wanting the requisite capital, the energy, the bone and muscle, so much as the desirable intelligence to give a right direction to their other powers. The maxim, "knowledge is power." is applicable in no case more than in that of farming.—*Address of* MOSES EAMES *before the Jefferson county Agricultural Society.*

I would say to every farmer, *take a good Agricultural Journal*, read it, study it, ponder upon it, make yourself not only familiar with its contents, but strive to understand the subjects of which it treats through other sources. You will thus be kept acquainted with agricultural improvements, and will constantly be made to feel the necessity of a more thorough understanding of your occupation. It will lead to the study of soils, and the nature of the plants which they produce; the adaptation of different manures to each, the food which the various vegetable substances require, and the best method of administering it, so as to produce health and vigor of fruit; the means to be employed that the harvest may realize your anticipations, the qualities of the different kinds of stock, the usefulness of new agricultural machines, and a variety of other subjects which require your investigation. Through it you commune with the leading spirits in your vocation. You behold what experience, unwearied patience, and the application of powerful minds, have accomplished. It will afford you instruction in all the different departments of your business, and prove a valuable guide to your progress. These benefits will not accrue from a bare cursory perusal of it. If sketched over like an ordinary newspaper, for the purpose of amusement, and then thrown aside to be forgotten, it will scarcely pay the price of subscription. It should be read with the interest excited, "with the spirit and the understanding," and with a disposition to profit by its teaching.—*Address of* JAMES M. BANKS, *before the Chenango county Agricultural Society.*

Kindred to, and of equal importance with agricultural societies, are the benefits to be derived from agricultural papers, for one or more of which no farmer should fail to subscribe. By their means improved agricultural implements—the making and application of manures—the introduction of new varieties of fruits and vegetables—the most approved breeds and principles of raising stock—the best rotation of crops—in short, every species of information that is valuable to the farmer is spread out before him.

I have seen in some of your fields, improved implements of husbandry and labor-saving machines, your first idea of which was derived from the *Cultivator*; and the construction of which you yourselves superintended in the workshop of a neighboring mechanic.—One of your number told me not long since, in his harvest field, that he had derived one hundred dollars benefit from this paper in the two years he had taken it.—*Address of* THOS. B. WATSON, *before the Clinton county Agricultural Society.*

LECTURES BY PROFESSOR JOHNSTON.

BEFORE THE N. Y. STATE AG. SOCIETY.

We are glad to observe that Professor Johnston is commencing a course of lectures at Albany, to be delivered during the winter. We trust they will be well attended, and do much good. Although we can offer but little encouragement to the learned and world-renowned lecturer that a class could be collected here, should he be able to pay us a short visit, yet we hope that the lectures mentioned below will in due time be published, in order that we may lay them before the agriculturists of Canada, in whose welfare we know Professor Johnston feels a more than common interest.

Syllabus of a course of lectures on the general relations of science to agriculture, by James F. W. Johnston, F.R.S., &c.

1st. The Relations of Physical Geography to Practical Agriculture.

2nd. The Relation of Meteorology to Practical Agriculture.

3rd. The Relation of Botany and Zoology to Practical Agriculture.

4th. General relations of Geology to Practical Agriculture.

5th. Relation of Chemistry to the soil, and its practical improvement.

6th. Relations of Chemical physiology to the Plant, and the modes of promoting its growth.

7th. Relations of Chemical Physiology to the Animal, its food and its growth.

8th. Relations of Chemistry to the Doctrine of Manures.

9th. Means by which general scientific knowledge may be diffused and made available for the improvement of practical agriculture, and the general elevation of the agricultural class.

The lectures will commence early in January.

B. P. JOHNSON, *Sec.*

THE WORKING-MAN'S REST.—Cheer thee up, child of labour!—the blessed Sabbath is thine own. It is the excellent gift of thy Maker—see then that no man rob thee of thy boon! It is the heir loom of thy family—see that it be not alienated from their possession! It is a sacred inheritance, bequeathed by successive generations of the godly—see then that its frail fences are kept unbroken, and that its fruitful soil is not, through neglect, cursed with sterility and nakedness. The fifty-two Sabbaths of rest with which the year is interspersed, are like patches of verdure, watered by ever-spring fountains, that dot the inhospitable wilderness, and invite its fainting travellers to exhilaration and repose.

CHARRING TIMBER.—The best method of charring the surface of wood, is to wet it with the most highly concentrated oil of vitriol. By this means, you carbonize not only the outer surface, but the surface of all the cracks and holes.—*London Chemical Times.*

REPORT ON THE STATE OF AGRICULTURE IN THE OTTAWA DISTRICT.

From Dr. Cotton Mathew Everett.

(No. 2.) *East Hawkesbury, Sep.* 1849.

Dear Sir,—I trust you will allow me, instead of answering your questions seriatim, to make such general statements as my limited experience and capacity may justify. The successful culture of all vegetables depends on the following prerequisites: 1. A soil containing certain proximate principles. 2. Water and ammonia in the form of rain. 3. Oxygen and carbonic acid in air. 4. Certain electrical influence. In the present state of science, we can only secure the first conditions requisite to success. It is however in our power to place within the soil the proximate principles required by all plants for their nutriment, and these abound most plentifully in barn-yard manure, at a certain stage of decomposition; its chemical combination being then most adapted to appropriation by the delicate tissues of vegetables. The most valuable portions of this manure are too frequently allowed to exude in gasses, for want of a slight admixture of gypsum, or some absorbent material. The soil itself in this district, in its organic constitution, is sufficiently diversified to justify the culture of all kinds of grain; but the general principles of tillage, including the admixture of soils and a rotation of crops, are almost wholly unknown. Most of our farms are in an anomalous transition state, between the wilderness and arable land; a state attended with many difficulties, surmountable only by time and untiring energy. Our condition might be ameliorated by labour-saving machines, a great desideratum here. Much diversity of result has attended my own experimental agriculture, induced mainly by the fluctuation of the seasons. I have generally found early crops of all kinds the most prolific, though occasionally the reverse has happened. For some years wheat has been justly considered an uncertain crop. Corn was so for a term of years previously. Every other crop fails occasionally. Wheat has of late years probably averaged ten bushels; oats, twenty; peas, fourteen; and barley eighteen bushels per acre. This lamentably low estimate is intended for this vicinity, and is, I am persuaded, not far from the truth. Such a result is perhaps equally owing to imperfect tillage and to dry or otherwise unfavourable seasons. Little rivalry exists among the people, and labour (our only capital) is deteriorated by its injudicious and indiscriminate expenditure. Individual exceptions exist, but the example is well nigh lost upon the mass. I am ill qualified to propose remedial measures, nor do I suppose they would lie within the scope of your requisition. I must decline entering upon any other topics connected with this subject, for want of time, and subscribe myself,

I am, Sir,
Your obedient servant,
E. M. Everett.

To Charles P. Treadwell, Esq.,
President, O. D. A. Society.

From John Pattee, Esq.

(No. 3.) *Longueil, Sep.* 1849.

Dear Sir,—Your letter of the 20th of August, was duly received, in which you expressed your intention of representing this district by letter at the Grand Agricultural Show at Kingston, and requesting my opinion as to what kinds of grain are cultivated with the greatest success, the best time of sowing, the quantity of seed required per acre, the best kinds of manure used, &c. &c.

The success of growing different grains, o course varies more or less with the seasons; but as a general rule for this vicinity, I consider wheat and corn the two kinds grown with the greatest success. This district possesses a variety of soils, and consequently suited to a variety of crops, clay or marl being more especially adapted to the growing of wheat and oats, while a sandy or loamy soil is better suited to the growing of Indian corn, rye, turnips, &c. My own farm being of a sandy soil, I have not, to any extent, attempted the growing of wheat; but from observation and my own experience, I am of opinion that it should be sown as early in May as possible, and that the proper quantity of seed, on land in a good state of cultivation, is one bushel and a half per acre. Indian corn should be planted between the 12th and 20th May; old land requiring eight quarts of seed per acre, and new land somewhat less. This crop requires good husbandry in order to secure success, and when properly dealt with, generally gives a greater remuneration for labour than any other—thirty, forty, and sometimes sixty bushels being obtained from an acre. It is also a good crop to clear the land of weeds and prepare it for a crop of wheat. Two men with a team of horses can cultivate ten acres, when the land is not exceedingly foul. The time of labour may be said to extend from the 1st of May to the 1st of August, with the exception of harvesting, which is performed towards the close of September.

I would here beg to remark, that a sandy or loamy soil is more easily exhausted than a clay one. On this account, great regard should be paid to a rotation of crops, on lands of a light or sandy soil, and also to a regular system of manuring. The method which I have pursued, and which I think might be advantageously adopted on all the high lands in this district, is as follows. I break up pasture or meadow land and sow oats and peas, or plant corn: when I plant corn, I use gypsum or unleached ashes, say one bushel and a half of gypsum or ten bushels of ashes per acre, and apply it immediately after the first weeding. The second year, I give a good dressing of barn-yard manure, and plant corn or potatoes. The third year, I sow wheat or oats, and seed down; or which is preferable on dry land, I sow fall rye after wheat, and then seed down with timothy. The first year after seeding down, I sow about one bushel and a half of plaster per acre. I mow two years and then break up again, or pasture two years, which is better, when provided with fences. The present season has been very unfavourable for the hay crop, as well as for all others, in consequence of the drought. Where I

have usually cut forty tons, I have only about twenty-four this year.

With respect to the crops most neglected that might be cultivated advantageously, I am hardly prepared to decide. It is very natural for every practical farmer to sow or plant that kind of grain for which his land is best adapted, and for which he can find the readiest market. Experience and the good sense of the husbandman must decide upon this point.

It has heretofore been a practice among the farmers in this district to sow and plant more land than they could manure or cultivate well; the consequence of which is that a great quantity of land has been rendered almost useless. A method of renovating land exhausted by over cropping, has been of late very successfully practised in the state of Vermont, which would I am confident succeed well here. It is this—sow a crop of buckwheat and when in full blossom plough it in as manure. Two crops may be grown in one season, and the land sufficiently enriched to grow a good crop of wheat or corn.

With every respect I am, dear Sir,
Your obedient servant,
JOHN PATTEE.

To Charles P. Treadwell, Esq.,
President O. D. A. Society.

(From Elijah Brown, Esq.)

(No. 4.) *Hawkesbury, Sept.*, 1849.

Dear Sir,—I take the liberty, at your request, of saying a few words on the subject of Agriculture, at the same time not thinking of giving any thing of much general information.

I will give you a brief sketch of the farming I carry on; say the farm I live on. On this farm there are about 300 acres under cultivation. I plough 75 acres, and my hay land may be stated at 65. This season my hay crop is light, in consequence of the drought; but my wheat, oats and buckwheat, I consider good. My potatoes are rather a light crop, and my corn somewhat below an average. I sow black sea wheat in preference to any other, and have this year sown it at different times. My first sowing was on the 3d May, at the rate of 1¾ bushels to the acre. It was fit for harvesting on the 20th August, and will give about 20 bushels to the acre. My principal sowing was on the 28th May. On this I put 1¼ bushels seed per acre, and the produce is adjudged at 30 bushels to the acre. My last sowing was on the 15th June, on two acres of land that had failed for turnips. This last will, I expect, be fit for harvesting within three months from the time of sowing, and will yield 30 bushels to the acre. These facts may go far to prove the best time for sowing black sea wheat. They afford to me sufficient evidence that the most proper time of sowing it is the last week in May, and the first week in June. Upon the whole, I am of opinion that the wheat crop is considerably above the average of former years, particularly in this vicinity; and that our markets will be tolerably well supplied with that rich article during the present season.

I would further beg to say a few words on the improvement of cattle. I believe it is generally admitted in our district that the imported breeds of horses and horned cattle have been a failure. To say the least, they are not so susceptible of improvement, neither do they give such satisfactory results to the farmer, as those raised in our own country. Of all others, I conceive the Canadian breed of cattle the best for this climate; they are easier kept during our long and dreary winters, and they are easier fatted and make richer and nicer beef. Even in the early stage of the animal, say the veal calf, the quarter will be found heavier and the skin better than any at the same age of the imported breeds. I am also of opinion that there is more improvement to be made upon the common Canadian horse than either the Scotch or English drays.

I shall say a few words about gypsum or plaster. This absorbent has been mostly recommended by agriculturists in the state of New York for dry light land, or a sandy or gravelly soil. You, Sir, are well aware that there is not much of that kind of soil in this district, and if there were I have never been induced to believe that the farmer would derive much benefit from plaster; although it doubtless contains ingredients for producing a rapid vegetation. When ground is exhausted, plaster may be applied; but the crop should never be taken from the ground. It should be clover or buckwheat, and ought to be ploughed in while green; for it seems no more than fair that if the ground has been robbed of its substance it should be paid back with interest.

I remain, Sir, with respect,
Your obedient servant,
ELIJAH BROWN.

C. P. Treadwell, Esq.

Questions put to Mr. Pierre Leduc and answered by him as follows:

1. How many acres of wheat have you sown in any one year?

About seventeen years ago, I sowed 100 acres of wheat, which produced 1700 bushels of excellent grain. Since which the wheat crop has deteriorated; but within three or four years it seems to be more productive, and this year it will be a pretty good crop.

2. When wheat failed, what did you sow instead of it?

When the wheat crop failed I principally sowed oats and peas in lieu of it. Some years I have sown 150 bushels oats, 50 bushels peas and 50 bushels wheat. The oats and peas yielded well; but the wheat, although it yielded an abundant quantity of straw, had no grain in it. One year I gave 3000 bundles of wheat to my cattle, without thrashing it. Within the last three years I recommenced sowing black sea wheat; this year, by sowing it before the tenth of May, I have succeeded well.

3. Do you sow any other kind of grain?

Last year I sowed nine bushels of barley, which produced 300 bushels of excellent grain. This year I planted a piece of corn, which I consider not to be inferior to any in the district.

4. What quantity of grass seed do you sow on an acre?

After ploughing and manuring the ground well, I sow a peck of grass seed per acre, and have frequently harvested three tons per acre of superior hay.

5. When did you first begin to use the Scotch plough?

About twelve or thirteen years ago.

6. Do you sow winter wheat?

I never have, but I intend to try it this year.

7. What quantity of wheat did you sow this year?

Twenty-four bushels.

8. Have you a thrashing mill?

Last year one of my sons bought a thrashing mill of three horse power, which answers my use and that of my other sons, as we live near each other.

9. How many horses do you require to do your work.

Three.

10. How many cows do you keep?

Five.

11. How many sheep do you keep?

About seventy; had I not been unfortunate I would have had about one hundred and fifty.

12. What kind of land have you?

My land is a strong clay, and I find it advantageous to plough it as early as possible in the fall.

La Bay, Seigniory of L'Orignal, 20th August, 1849.

(No. 6.) *L'Orignal, Sept.*, 1849.

Mr. Pierre Daulth, whose farm lies on the low ground between L'Orignal and Caledonia Springs, states that several years ago, he had in one year 140 bushels wheat on four acres of ground, and on other four acres 180 bushels oats; that from the sowing of two bushels peas he had a produce of 30 bushels, and had 12 tons of hay on four acres of land, but these four acres were the best part of his meadow. Last year he raised on 50 acres, 25 tons of hay, 125 bushels wheat, and 400 bushels oats. The soil is a rich strong clay, with a covering of four or five inches of black mould. He generally does his ploughing in the month of September, and uses a Scotch plough and harrow.

[We regret our inability, from want of space, to insert the whole of these very interesting and instructive reports in the present number; the remainder will appear in our next. The public we are sure will feel indebted to Mr. Sheriff Treadwell, and the gentlemen who so promptly answered his call, for the ability and correct patriotic feeling which they have evinced. We hope other districts will follow the example.—EDITORS AGRICULTURIST.]

A WORKMAN'S HALL.

Messrs. Ransome & May, the great agricultural implement makers of Ipswich, England, have recently completed, at a cost of upwards of one thousand pounds, a large and commodious building for the use of their numerous work-people. It contains a library, reading-room, baths and a kitchen. All the advantages of the establishment may be enjoyed for the trifling payment of one penny a week. This firm, which has long been distinguished for useful inventions and superior workmanship, unites in an equal degree an enlightened and benevolent desire to promote the physical comfort and intellectual improvement of the five or six hundred hands in its employment.

Since writing the above paragraph, we regret to learn from our English files, that Mr. Ransome, the senior member of the firm, has paid the great debt of nature. Hundreds will have lost a generous and warm-hearted friend, and society one of its most valuable members.

HORSE BREAKING.

From the Amherstburg Courier.

A few words on the subject of horse breaking may not perhaps prove unacceptable to the majority of your agricultural readers, and probably, if followed out, will produce results to riders and drivers far different from what it has ever been my lot to meet with; for a more perverse, stubborn, and stiff-necked generation of horses, are not to be met with in the world, than those of the Canadians; simply and solely from their improper education. The first lesson to be taught a colt is, to stand properly with his hind legs well under his body, his head and neck erect; this position naturally takes a considerable weight off the fore legs, and places it on his hind legs. To effect this, the colt for some two or three weeks, should daily be bitted with a heavy broad breaking bit (with yeys for him to play with). Fitted into a driving bridle to his roller should be sown three buckles; one with a strap to it on the top of his back, and one on each side about three or four inches below the bearing rein buckle. Bear him up gradually daily, until he carries his head properly, taking care to have the reins buckled up an equal number of holes on each side; let him stand thus in his stable for several hours daily, till he is well accustomed to his bit. His next lesson consists in lounging. After the colt has stood in the stable some time with his gearing on, take a stout cord five or ten yards long; pass one end through say the right ring of the bit, fastening it to the left; loosen some four holes or more of the left hand rein, and tighten the right rein an equal number of holes; run him round a circle (near side outwards,) changing your ground all the time; stopping him occasionally by word. After perhaps half an hour's work, reverse the reins and your rope, and run him round, near side inwards. Pay particular attention to this point, for many horses are spoilt by favouring one side more than another in turning. I have frequently noticed breakers invariably running their horses only in one direction; and farmers servants, and many gentlemen also, turning their waggons, carriages, &c., always one way. The consequence is, if you were once obliged to turn round in the contrary direction, the devil a bit your horse would do it for you. This loung ng ought to be persisted in daily, twice a day, over rough ground, smooth ground, amongst logs, ruts, ditches, &c.; for nothing gives a horse more confidence in himself, renders him more sure-footed and quick-sighted, than exercising frequently in very broken ground. A young horse dreads a fall, and should he get one in this way he does not often get another. Nothing can be more disagreeable to a rider than a horse constantly tripping; yet from the method adopted here of breaking, there is not one that does not do it more or less. It is a wonder to me they do not come down much oftener than they do; for they go along with their heads sprawling out, their noses within a foot of the ground, looking as soon as they leave the stable just as if they had travelled 100 miles, and could hardly drag one leg after the other; but

let this system be pursued for some little time; an hour a day devoted to training a horse for three weeks, will render him a far different animal to one not so treated—and, believe me, adds to his price. Look at the difference between a recruit and a well drilled soldier: the one wollops along as if it were a trouble to him to move; the other with head erect, walks along with a light sprightly step, as if he could go for ever. Will any one tell me that the country clod looks as well as the soldier? just so the well broken horse carries himself fifty per cent. better than the badly broken. Having got your colt into something like form, by the above process, your next proceeding is to back him. This ought never to be done, however, until he is well tired out, by being lounged; for should he prove restive and throw the boy, the colt is very apt to resort to violence to get rid of his load in as summary a manner as he possibly can. A great deal can be done with kindness; harsh measures ought never to be resorted to, if at all to be avoided; coolness, patience and firmness rarely, if ever, failing to produce the necessary compliance; and when once you attempt to make a horse do a thing, it must be done, no matter at what sacrifice of time or trouble. The cause of so many horses refusing a fence in England, is chiefly to be attributed to their not having a determined rider on their backs when just broken. To render the boy's seat more secure, a horse blanket ought to be tightly rolled and strapped on each side, over the pommel, as a rest for the knee, should the horse kick, rear, or plunge. He ought at first to be led around by the lounging rein; the bearing rein held by the boy, the others strapped to the saddle; and for some time the boy is merely to be considered as a dumb agent; but by degrees he may take the side reins, fastening the bearing rein in the centre of the pommel. The boy must now walk him about; turning him to the right and left; but this turning must be done gently, in rather a largish circle, contracting by degrees till the horse will turn in his own length, both at a walk or a trot. After a short time the bearing rein may be taken away; but should the breaker find the horse bear too much on his hand, it must be put on again, until his acquired carriage becomes second nature. Martingales I altogether disprove of; they are of no possible use under any circumstances whatever, except in racing, or when a horse has a habit of chucking his head up, to the imminent danger of your teeth. A runaway horse is far easier stopped with even a plain snaffle, by sawing his mouth. A farmer has far greater opportunities of breaking horses to draught; harrowing, ploughing, drawing logs, being the best to teach them to draw truly. Still, if the horse shews fair to command a pull for gentlemen's work, the farmer ought not to neglect to lounge him; or, at all events, to work him pretty tightly reined up, taking care to turn him alternately to the right and left. After a while, when he is perfectly steady at the plough, he may advance him to the waggon and the road; if shy, he ought to be encouraged and patted; and should he shy at any object on the road, instead of being beaten, he ought to be patted and taken up to it; until he finds out the thing will not harm him, he will ever shy at it. This fault, however, is the most difficult to overcome of any I know, *unless that of drawing up at every tavern*. I apprehend the reason might, however, be traced to some fright in their earlier days, if people who bred were closely questioned on the subject. Be that, however, as it may, in some horses of fine spirit, it never can be got rid of; and the higher bred are just (if not more so) as liable to it as your rif rafs. I had an Irish pony years ago, that used to look for things to take a shy at; such a brute in that respect was he, that the first few times I rode him, he nearly sent me spinning twenty times a day; but "still I wore him on," until I became so used to it, that a sudden jump from one side of the road to the other never troubled me in the least. I tried scores and scores of times to cure him, but could never succeed; nor from all accounts was he ever cured of it. From the above few notes, any man with *temper* and firmness may break in a horse, without much trouble, to a certain point; after that they require to be taught all manner of things: to go up to the side of a gate, while you are on their backs, open and shut it; to back from a gate when you pull it towards you; to push against one till you shut it; to turn right or left by the slightest touch of the rein, or the heel; to stop when you tell them; to stand while you mount and dismount, or get in and out of your waggon; to lift their legs when you touch them; in short you cannot teach a horse too many tricks as long as there is no vice about them; the more obedient they are, the more pleasant to ride or drive one. Aye, and let me tell you, sells fifty per cent. better, for there is more a great deal in *carriage* and *appearance* than in the good shape of a horse. Not one in ten knows in what respect a horse differs from a cow; for all that every one pretends so to do. Give me a good tail, an arched neck, fine ish head, and a well set up horse; and though he be a concatenation of bad points in other respects, he will pass muster with ninety nine out of one hundred persons. Remember this, then—I paid for the information—I give it to you; but perchance, were you all to earn it as dearly as I did, you would never forget it. I do not think I need add more, except that I prefer the use of a curb to a snaffle, for both riding or driving, and horses when accustomed to the curb, go just as well as with the snaffle. It may be all very well for trotters, of which I know nothing and care less, not being able to understand the pleasure of having your arms pulled off by holding the beast up, while he does his utmost to pull you out of your waggon. There may be fun in it, but I cannot see it. Give me a horse that can go twelve miles an hour, and hold himself erect; and all the trotters may go to the bottomless pit for all I care. *Cha cun a sou gout*, they are not my fancy. It is quite a prejudice of mine perhaps; just as much so, however, is the objection to the curb. Almost all horses in England are driven with them, aye and ridden too; and where in the world do you see such elegant turns out, such style, action, and good fair natural trotters as there? For I look upon the outrageous pace they get to here, only as the result of training, based on good natural qualifications. There they do not consider a trotter as the ne plus ultra of a b'hoys delight; on the contrary, rather would eschew it. My paper is out, and I'll have done; perchance I may have conveyed a hint to one person—if so, I am satisfied; if not, I am equally so, for I'm tired. Adieu aux revoir.

DINKS.

NEW MODE OF PRESERVING BUTTER.—There cannot be a doubt that the cause why butter is difficult to preserve good, is, that some material or ingredient of the milk combines so intimately with the buttery particles, that it is very difficult to separate. It has been said that Mr. E. H. Merryman, of Springfield Illinois, has discovered that this substance is *casein*, or the cheesy matter, and that he has contrived a mode of separating it by mechanical means, and thus preserves butter a long time if it be exposed to the atmosphere. The *Scientific American*, remarking upon this subject, says, that this separation of casein is done, by the Tartars of the Crimea, by melting the butter over a slow fire, and removing the scum as it rises. The butter is kept in a melted state there by means of a water bath at 180°, until the caseous matter subsides to the bottom. This is a slow and tedious method, and if Mr. Merryman's method is successful, it must be a very great improvement.—*Maine Farmer.*

An Agricultural Bureau in Connection with a Government Department.

"No direct aid has been given by the General Government to the improvement of agriculture, except by the expenditure of small sums for the collection and publication of agricultural statistics, and for some chemical analyses, which have been, thus far, paid for out of the Patent Fund. This aid is, in my opinion, wholly inadequate. To give to this leading branch of American industry the encouragement which it merits, I respectfully recommend the establishment of an Agricultural Bureau, to be connected with the Department of the Interior. To elevate the social condition of the agriculturist, to increase his prosperity, and to extend his means of usefulness to his country by multiplying his sources of information, should be the study of every statesmen, and a primary object with every legislator."

The above extract is from the recent message of President Taylor to Congress. The friends of agriculture, the great and leading interest even in the United States, have long urged the justice and necessity of some provision like that which the President recommends, to promote effectually the advancement of this important branch of national industry. The expense of a Bureau of Agriculture which should be employed in collecting and disseminating officially all needful information, as well for the guidance of Government, as for the instruction of the people at large, would be trifling and insignificant compared with the immense advantages that would result to the country. We hope the enlightened and patriotic suggestion of General Taylor will be acted upon by Congress, and that the example will have some effect upon the Canadian Legislature. If some of the useless and expensive appendages of our Government were abolished, and the Board of Registration and Statistics, as it is called, remodelled, and new powers and duties assigned to it, embracing the interests of agriculture, an incalculable amount of good might be done to the country. In a country like this, depending almost solely upon its agriculture, the utter absence of any thing like a provision of law, or an arrangement of any kind connected with the Government, to obtain information or to diffuse it, relative to this great and paramount interest, is certainly remarkable. How is it possible to legislate wisely or beneficially when the difficulties and burdens, the condition and progress, —the *statistics*, in modern phrase, of that branch of industry in which four-fifths of the population are engaged, and on their success in which depends their prosperity and that of the whole country, are unknown and disregarded by the law-makers? The voting of a few hundred pounds a year to be distributed in premiums, without knowing or having any means of ascertaining the effect produced by it in an authentic and official way, can do but little good.

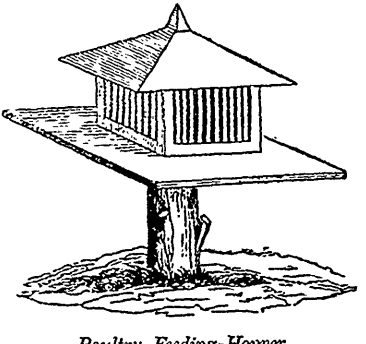
We should like to see a minister filling a department in which the guarding and fostering those interests of agriculture that may be affected by legislation, would form a prominent part of his duty. At all events, the person at the head of the Board which we have suggested, should have a seat in Parliament, in order to furnish information there, and be ready to prevent legislation that would prove hurtful, and promote that which would be a benefit to the farmer's interests. We shall return to this subject, and state our views more at large. If the farmers of Canada will only wake up from their present drowsy state and send men to parliament not because they are violent party hacks, or hungry lawyers ignorant of, and utterly indifferent to the wants and interests of the country, they would soon feel the benefits in bringing about real economy and needful legislation. The majority of their present legislators possess a keen scent for the spoils, and if Judgships, &c., will not fall vacant fast enough they are easily created, and of course an abundance of reasons can be brought forward to show how the people were suffering for the want of these blessings.

Poultry Feeding-Hoppers.—By C. N. Bement.

It is the practice with most farmers to feed their fowls grain, by strewing it on the ground from the hand. This is, however, considered by many as a slovenly and wasteful mode, and well calculated to invite rats and mice.

From experience we have found it more economical to keep grain constantly before them, where they can help themselves at all times; and for that purpose constructed several kinds of feeding-hoppers, but have been constantly annoyed by the depredations of rats and mice. Some of the patriachs, grey with age, would not only help themselves sumptuously, but actuall drive the fowls from their food.

Now, to obviate this difficulty, and to render them rat-proof, we present a plan, a figure of which accompanies this, which is so simple, that any man or boy who can handle a saw, a plane and a hammer, with a few nails, could make one in a few hours that would cost little or nothing.



Poultry Feeding-Hopper.

First make a platform of boards, say three feet square, then make a square sixteen inches in diameter of strips of an inch and a quarter plank, and three inches wide; nail this in the centre of the platform; saw four strips one and a quarter inches square, for the posts, which should be about eighteen inches high; nail strips of plank two inches wide to the posts at the top, to secure and steady them; then take common sawed lath, or thin strips of board one and a half inches wide, and nail them to the top and bottom, up and down, leaving a space of two inches between each slat, which will enable the fowls to insert their heads to pick the grain. The roof may be formed four square, like the figure, or may be made flat, or pitched on two sides, like the roof a house, and should be detached, so that it can be moved when grain is to be

put in. Now, to make it proof against the rats and mice, it will be necessary to elevate it a few feet from the ground, and this can be done by suspending it with wires, or setting it on a post firmly set in the ground. as represented in the figure. The wires being small and smooth, they could not pass down them, and the platform projecting so far from the post, they would find it rather inconvenient to climb over the edge of the platform.

The fowls will soon learn to leap upon the platform, and feed from the grain-box between the slats. From ten to twelve fowls can feed at the same time.

This may be made self-feeding, by setting a funnel shaped box within, the small end reaching down to within half an inch of the bottom. The size or capacity may be varied according to the number of fowls kept. The foregoing is calculated for about one hundred fowls.—*American Journal of Agriculture.*

THE FARMER IS NOT PROPERLY ESTIMATED—WHOSE FAULT IS IT?

It is a lamentable fact, that the farmer does not occupy that elevated position in society that his occupation justly entitles him to. He is looked upon as a being below the lawyer, physician, divine, artist, merchant, or even a merchant's clerk. To be a *farmer*, is to be a nobody, a mere clodhopper, a digger of bogs and ditches, and dung heaps, and free to wallow in the "free soil" he cultivates, provided he never seeks to elevate himself above that position, to what the world is pleased to term "good society" Hence comes the desire of "the boys" to escape, not so much the drudgery of their employment, as from the idea that they are looked upon and estimated as *mere* drudges.

What blindness, folly, and false philosophy is this! The result of these false premises is, that the "professions" are crowded to the starvation point; clerks not only go begging, but become beggars, or worse; merchants are multiplied, and good, old-fashioned labour is gone out of fashion.

While we would give all due honor to the professions, the farmer, who is the *producer* of all, both in food and raiment, that adds to the comfort and sustenance of the human family, need not feel that he is *below* occupations that gain their support from the folly, pride, misery, or wickedness of their fellow creatures.

If the aspiration of farmers were half so strong to elevate their sons to farmers, as it is to make them merchants or professional men, and, perchance, loafers, we should soon be taught to look to the agricultural class for the best bred, as well as best fed, men in America.—*Barnum's Address.*

Breeding Horses.—The report of the committee on horses, for the Chittenden County, Vt. Agricultural Society, contained some good remarks. In addition to the hereditary transmission of qualities, it observed, "The progeny will inherit the united qualities of their parents. The good as well as the bad qualities will descend from generation to generation. Hence you will see the importance of a knowledge of the parentage, not only as to the sire but also as to the dam. Peculiarity of structure and constitution will also be inherited. This is an important consideration, though too much neglected, for however perfect the sire may be, every good quality may be neutralized, if not overcome by the defective structure of the dam. Let the essential points be good in both parents; but if there must be some minor defects in the one, let them be met and overcome by excellences in those particular points, in the other parent. We would also advise you, to let your breeding mares be in the full vigor of life. Do not put them to the horse too young, and especially do not let your mares be incapacitated for work by reason of old age. If so, you may expect that the foal will have a corresponding weakness, and scarcely will a single organ possess its natural strength. Our farmers are usually too negligent in the selection of their mares. They are tempted to part with their best mares, and to breed from those which are inferior."—*Cultivator.*

GRAND EXHIBITION OF INDUSTRY OF ALL NATIONS.

Our readers are already aware that preparations are now making in England for holding in London, in 1851, a magnificent exhibition, such as never has yet been witnessed, of the industry of all nations. The idea originated with His Royal Highness Prince Albert, and the noble project appears, from the latest accounts, to be finding great favour with all classes of people throughout the United Kingdom. The premiums will be both numerous and munificent, and it is said will be presented to the successful exhibitors by the hand of royalty. We regard this noble enterprise of our Fatherland, if sustained and carried out in the truly liberal spirit in which it has been conceived and commenced, as one of those mighty agencies which an onward and christian civilization calls into practical operation for promoting the peace and improvement of the world and the brotherhood of mankind. As the natural and industrial productions of England's wide-spread empire must form a prominent feature of the intended exhibition, we hope for the credit of Canada, that she will bestir herself in time, that her characteristic productions may be fairly and fully represented in the coming congress of all nations. It is probable that our legislative and municipal authorities will shortly receive some instructions from Home relative to this subject, and we earnestly hope that the people of this country will not lag behind in doing their part in this most usefel and world-renowned undertaking.

AGRICULTURAL ASSOCIATION OF UPPER CANADA.

Notice is hereby given, that a meeting of the Agricultural Association of Upper Canada will be held on Wednesday the 20th day of February next, at 10 o'clock in the forenoon, at the Court House in the city of Toronto, for the purpose of considering certain amendments to the Constitution of said Society, to be then and there submitted; and also for the transaction of other important business connected with the Association. A full attendance therefore is urgently requested.

By order,

Geo. Buckland, Secretary.

Toronto, January 2, 1850.

Gas Tar, or Asphalte Floor.—Dig sifted gravel such as is used for topping walks, and use coal-gas tar; level the ground perfectly, mix gravel and tar, two quarts of the latter to each bushel of the former, till every particle of gravel is saturated with tar. This is best done on a boarded or stone floor; spread evenly, about one inch thick; roll till hard with a heavy garden roller. When dry, add from two to five inches more, according to the purpose for which the floor is required. Roll as soon as laid, and frequently, until it is quite solid.—*Gardener's Chronicle.*

Horticulture.

IMPORTANCE OF ORCHARD PLANTING.

J. Dougall, Rosebank Nursery, Amherstburgh.

Climate and Soil of Canada peculiarly adapted to Fruit Culture.

Canada is probably as favorable a climate for the cultivation of fruit as any in the world. The great chain of Lakes and Rivers is most beneficial in ameliorating the climate, and also serves for water communication to a market, as fruit will bear very little land carriage.

There is no place, probably, of Canada, even the most inhospitable, where suitable localities could not be found to grow apples, if not other fruits; and the banks of the St. Lawrence and Lakes, from a little below Quebec to Penetanguishene, are well adapted for raising nearly all kinds of hardy fruits, and in many localities any kind can be grown to perfection. It is a well known fact, that large bodies of water tend to equalize the sudden extremes of heat and cold, which are the most dangerous enemies the fruit culturist has to contend with in this country. Thomas says, "Large bodies of unfreezing water (such as Lakes and Rivers) are peculiarly adapted for the cultivation of tender fruits. They soften the severity of the cold, by the large and warmer surface constantly presented; on the other hand, they chill the dangerous warm air which starts the buds in winter, and they afford great protection by the screen of fog which they spread before the morning sun. Along the borders of the lower parts of the Hudson, and on the banks of the Cayuga and Seneca Lakes, tender fruit trees often afford abundant crops, while the same kinds are destroyed only two or three miles distant. Along the southern shore of Lake Ontario, the peach crop scarcely ever fails, and the softening influence of that large body of unfreezing water, extends many miles into the interior."

If the southern shores of Lake Ontario are so peculiarly suited for fruits, there is no reason why the northern shore should not be equally so: such is found to be the case on Lake Erie; the northern being, in fact better adapted for fruit than the southern, and as far as my experience goes, I have found the freezing of the Lakes and Rivers in winter to be no injury to the fruit crop. They remain unfrozen in autumn much longer than is necessary for securing the fruit, and, though frozen over in winter, it has no injurious effects, as the water being colder exerts a greater and longer influence in spring, by cooling the air, in checking the tendency to vegetation, often induced by a few warm days in early spring, which are generally followed by cold weather after.

It is not severe cold that injures the fruit crop nearly so much as the sudden changes from heat to cold, during winter and spring; and the great object to be attained is to keep your fruit trees in a dormant state from the commencement of winter till late in spring, when frost is nearly over, which is to be attained more by choosing a suitable soil and site for your orchard than by climate, as will be explained when directions are given for situation and soil of orchard. Lower Canada, owing to the more uniform severity and longer continuance of her winters, and absence, in a great degree, from late spring frosts coming after vegetation has commenced, is much better adapted for the cultivation of all the hardy kinds of fruits such as apples, and the greater part of pears, plums, and cherries, than many of the more southern parts of Upper Canada, where late spring frosts are very prevalent. Parts of Ohio, Indiana, and Illinois, are much worse situated in this respect, than any part of Canada. Owing to being further south, vegetation commences much earlier, and is far advanced by the latter part of April, but it is often suddenly checked, and the hopes of a fine crop of fruit completely ruined, by a few days continuous wind from the north, sweeping down over the great frozen northern lakes, and ending generally in a severe frost. A glance at the map will shew that Canada is pre-eminently favored above all other countries in the world, in her splendid lakes and rivers, which are, in a great measure, sheltered from the cold northern and north-eastern winds, that sweep down from the far north over Lake Superior, across Michigan, Indiana, Illinois, &c.

As regards *soil* there can be nothing better adapted for the culture of fruit, than the greater part of that of Canada, and it would be a difficult matter to say where the best soil is to be found. By many it has been supposed that the Western parts of Canada are the best—but I believe it is because they are newer and not worn out. A great part of the valley of the St. Lawrence, near Montreal, must have been as rich soil as any on this Continent, but it has been partly worn out by injudicious culture. What it once was, however, it could soon be made again, by draining, manuring, proper tillage, and planting trees, for, I believe, the almost total absence of trees, in many parts, for miles together, to be one of the great predisposing causes to barrenness, as there is nothing to break the sweep of the bleak and chilling winds. On some of the most exposed parts of the Atlantic coast, it has been found impossible to raise any kind of tree or vegetable, owing to the tremendous winds sweeping in from the sea. One person, however, has succeeded in making a rich and beautiful garden, filled with all the choicest fruits, flowers, &c., on one of the most bleak and barren parts of the coast, by the simple plan of having two pailing fences round the garden, within a short distance of one another, the outside one being the highest; these break the wind sufficiently to allow all sorts of trees and plants to grow with great vigor, where nothing would grow before. A close board fence would have been useless, as it would have soon been levelled by the force of the wind, besides, the wind would have swept over it with unabated violence. I have often thonght that belts of trees which would act in a similar way, would have a very beneficial effect on some of the more exposed situations, in improving the soil, besides giving shelter to the cattle; and fruit trees, though of slower growth than forest trees, would serve an excellent purpose for these belts, by selecting those of the quickest and largest growth. Many kinds of pears and apples would be well adapted for this purpose.

Any soil that is high and dry can be easily made to grow fine fruit; low lying, wet or peaty soils are not suited to plant fruit trees in, and should never be selected for this purpose. A great error is often made in choosing low warm sheltered places, at the bottom of the hills, or rising grounds, for planting the finer kinds of fruit, this is a mistake which often leads to the loss of the fruit, if not of the tree; the tops or sides of the rising grounds in these instances being much better places—but this will be more fully explained in my next—*Montreal Witness.*

REMARKS ON THE DISEASES OF THE PEACH, PLUM, AND CHERRY TREE.

From the Horticulturist.

Whoever has observed with attention the growth of fruit trees in this country, must frequently have seen with surprise the peach and plum tree struck with disease, and dying early, while other fruit trees appear in a sound condition, and live to a great age. The cherry tree, also, seems to be less healthy in this country than in Europe.

This fact justifies the suspicion, that these trees contain in themselves properties not to be found in such as remain healthy; and it is known that they differ from all others, in the abundance of a substance called *gum*. Let

us now inquire whether we can trace any connection between the existence of this substance and the predisposition to disease?

In the healthy tree, gum is found mixed with the sap in a dissolved state; when the tree is in a diseased condition, gum is secreted, and driven to the surface as a transparent, adhesive substance. In its normal state (dissolved in the sap,) it exists only in the bark; that is to say, in those vessels through which the sap, elaborated by the leaves, descends to form a new growth of wood. Gum is soluble in water, and its greater or less degree of fluidity will depend on the quantity of water employed in its solution. By the simple process of evaporation, it can be reproduced in concrete form; and is, therefore, in a high degree qualified to pass through the various stages of fluidity, under the reciprocal actions of heat and moisture. The health of a tree depends on the free circulation of the sap; and if this circulation be *at all impeded*, the tree becomes *diseased*, and, if not relieved, death ensues.

May it not, therefore, be believed that the diseases of the peach, plum and cherry arise from impeded circulation, since they are, in this country, invariably accompanied by bursting or rupture of the bark? And may it not be inferred, that this impeded circulation is caused by *gum*, when we remember the qualities of this substance, and how it may be acted upon by the excessive heats of the American summer? The influence of the sun-beams, when the air is clear, is very powerful, and must necessarily cause an evaporation more or less rapid in proportion as the heat is increased or diminished. In those parts of the tree which are exposed to the sun, the juices are drawn forth, and the gum, becoming less fluid, moves more slowly, and gradually accumulates in, and obstructs the natural passages; while, in other parts, the tree being subjected to more genial heat, a *more* active circulation is maintained. The consequence of which is an expansion, and at last a bursting of the vessels through which the sap flows, at those points where the obstruction exists; and then ensue warts, or knobs, or an effusion of sap, and eruptions of gum. Though this is only theory, and needs to be verified by actual experiment and chemical research, yet it derives support from the practice of many gardeners. It has been stated on sufficient authority that *salt*, applied to the soil about a plum tree, will prevent the black wart. If our argument be correct, the result of the action of salt is obvious enough: the tree receives in its system a solution of salt, which, by its nature, attracts moisture, (or gives greater fluidity to the sap,) and communicates it to the gum; thus preventing the concretion that would check circulation. The cause of the disease (excessive heat,) is not removed by the application of salt; but it acts as an indirect remedy; it alters the secretions of the tree, so that the same cause does not produce the same effect.

We are aware, that plants brought into a condition contrary to their nature lose, to some extent, their vital powers; and that, in consequence, a formation of slime-sugar (saccharum mucosum) takes place. It always follows a great decrease of phlegm, (principium mucosum,) which last substance abundantly exists in peach, plum, and cherry trees. In the capacity of the plant to produce slime-sugar at the approach, or, rather, in a certain stage of disease, we see how nature provides the means of accomplishing her ends, since the reduction of the plant to dust (its last destination, in the usual order of things,) is brought about by decay, and the first step towards decay is fermentation. Nature, then, has recourse to that powerful principle of fermentation—slime-sugar—to begin fermentation, and that the taste and odour of this substance will summon to its aid those additional agents of destruction—insects. When, therefore, we perceive, on diseased fruit trees, swarms of insects, let us not confound the effect with the cause, but rather attribute their presence to the disease, than the disease to their presence.—H. J. Ehlers, *Landscape Gardener*.

Barrytown, N. Y., Oct., 1849.

The foregoing suggestions are quite new to us, and come from one of the most intelligent German gardeners in the country. They appear to us to be worthy of the serious attention of our physiological readers, interested in the diseases of stone-fruit trees.

English Parks.—Your criticising correspondent, in the *Horticulturist* for September, speaks of the parks of the English gentry as if they were so many pieces of waste land, useless for all purposes except mere ostentation and display. Now, with all due respect for your excellent correspondent, I must say that his prejudice has to all appearance got the better of his knowledge. In short, he misrepresents Mr. Colman's excellent work in depicting the English as they are, and manifests total ignorance of what he is writing about. It is a notorious fact, that the private parks of the gentry are more fertile, and doubly more productive than any equal surface of land in the whole island. Productive of what? Of human food—and human labour, independent of the grandeur and beauty they give to the landscape. Where is the farm or field in the kingdom that produces an equal amount of these two grand requisites of society, 'food and labor,' as these private parks? I ask "Jeffreys" to point out any park in that kingdom, including trees and all—those monuments of time, coeval with the growth of centuries, that is not twice as productive as any other portion of the owner's estate. Look for instance, at Windsor Park, embracing a surface of many square miles, and where stands, perhaps, the finest avenue of trees in the world; a lover of landscape beauty would not grudge to cross the Atlantic to look at it. Now, according to the phraseology of "Jeffreys," one would suppose this beautiful park just so much waste land—a perfect sacrifice to royal extravagance and ostentation. Yet of all that fertile park at Windsor castle, which feeds double the quantity of stock of any park, arable or otherwise, that I have seen in *New* or *Old* England, there is but a single acre or so, appropriated to a terrace flower-garden opposite the private apartments of the Royal family. There you may see the cattle browsing close to the castle gates. And there you may see the Queen and her husband walking among them with far less peevish delicacy or false refinement, than most of the American ladies would do. Even the pleasure parks of London produce their quantum of human food in the shape of beef and mutton, since they are all kept short by the grazing of sheep or cows. The English gentry know the use of money, and the *want* of it, too well to allow their parks to be unproductive for mere ostentation and display.

The people of England are proud, and justly too, of their parks. They are the distinguishing features of an English landscape, and present to the lover of nature a combination of utility and beauty which no other country in the world can supply, and which the ablest writers and men of taste

have been labouring for years past to introduce into this country. Contrast one of these old country mansions with those cited in the editor's excellent leading article of the September Horticulturist—place them in juxtaposition, and I ask—which would you imitate and which condemn?

A critic should be *just* as well as generous; but especially ought he to be impartial and unprejudiced. Some people cannot write the name of England without spitting fire at it. But were the sentiments consistent, the language might be excused.

As I have ventured to quiz probably some great incog—I hope he will receive my remarks in the friendly spirit in which I write them, and thank me for my candour.—R. B. Leuchars. *New Haven, Ct., Sept.*, 1849.

[Although we think our American friend has somewhat overstated his case by saying that "the English parks are *doubly more productive* than any equal surface of land in the whole island;" yet so much impressed are we with the general justness and remarkable good taste of his remarks, that we could not resist the temptation to transfer them to our own pages. It is a vulgar and most erroneous notion that the noble parks of the British Islands are generally unproductive. They are usually stocked with the best breeds of sheep and the finest specimens of horses and horned cattle that the world can produce: and even of such portions as are allotted to deer, the returns are far from being inconsiderable. Who for instance, could visit the noble and classic grounds of Woburn Abbey, the seat of His Grace the Duke of Bedford, covering some thousands of acres, with the extensive gardens, conservatories, farmery, picturesque cottages, adorned with the vine, the rose, the jessamine and the honey-suckle, surrounded for many miles by a thriving and contented tenantry and working population, without recognising marks of England's freedom and greatness—not merely at the present, but comparatively so through ages that are past—and with fond hope of yet higher degrees in ages yet to come. Some of our earliest and most endearing associations are connected with parks, which with the ivy mantled tower of the old village church, form the distinguishing characteristics of English rural scenery. Heaven in its mercy long spare our native land from the vandalism that would render treeless the one, and the impiety that would raze the other. —*Editors of C. Agr.*]

MATERIALS FOR YOUNG PEOPLE WHO WISH TO THINK.

The Atmosphere.—The ponderousness of the atmosphere serves us in a number of ways, of which the following are merely specimens.

By this quality we have what is called "*draught*" in our chimneys. The heat evolved from the fuel applied to our fires produces a rarified state of the atmosphere, which, together with the smoke, being of less specific gravity than the surrounding air, must seek a higher region, on the same principle as wood swims on water. Nature rebels against a *vacuum*, and, wherever the slightest approach to this is produced, she sends forth her resources to keep up a *plenum*. There are two things which some people think constitute the greatest plagues of life, viz., "*a smoky house and a scolding wife.*" The former is always the result of the builder's non-attention to nature's law; the latter often arises from a cause which we shall not here define.

This ponderousness, too, is that which causes to ascend, far away from us, all the effluvia generated by decomposed substances, and the numberless other causes, with the effects of which most people are well acquainted. Were it not that the air is heavier than these vaporous emissions, most of which are noxious as well as unpleasant, we should in vain open our windows, or in other ways seek the comfort of "*fresh air.*" Our olfactory nerves, designed to be the means of conveying the pleasing sensations which the fragrance of vegetation is designed to supply, would, in the absence of this quality of the air, be the most intolerable nuisance, as we should be constantly sickened by stenches the most disgusting, and prolific of disease.

The ceaseless motion in the atmosphere is the result of this ponderousness. Perhaps few are sufficiently acquainted with the benefit of winds. For a commentary on these, we will not go to the owner of a wrecked vessel, nor to the weeping mother of a lost sailor boy—their circumstances are peculiar; but we shall take our readers up the eminence which unbiassed reflection will supply, whence numberless advantages will be seen as the result of winds. To say nothing on the subject of navigation, so replete with civilizing effects, we perceive their necessity in order to vegetation. Rain is produced by a most beautiful process, which we shall in a future paper describe; but, as rain is produced from condensed vapour, which the heat of the sun exhales from the oceans and seas, we may remark, that were it not for the winds, these clouds would discharge their contents directly into those reservoirs whence they were originally produced. But the winds are the aerial agents by which those cloudy magazines are carried with amazing velocity from clime to clime, and by whose ministry we are supplied with fattening moisture for our hills and vales. Now, winds are the result of the ponderousness of the atmosphere. The sun, always shining upon some portion of our globe, rarifies or expands the atmosphere beneath it by its heat; that rarifaction causes its subject to rise, and, as in the "draughts" before mentioned, the heavier atmosphere around the rarified part rushes forward or inward to prevent a vacuum, and that rush constitutes what we term the wind, the motion of which is more or less violent, according to the extent of the rarifaction in a given place. The inward rush of the denser masses of air from all sides, towards a centre, which centre is the point of greatest rarifaction, gives rise to the circular motion of storms.

Another peculiarity belonging to the atmosphere is, that it always revolves with our earth in her diurnal motion. To find out how many tons of atmosphere rests upon our globe, would form a nice exercise for some of our young readers. When they know that each square inch is subject to a pressure of fifteen pounds, and that the earth is 8000 miles in diameter, the product may be easily ascertained. The weight is almost inconceivable, and if this atmospheric pressure were *stationary*, while the earth *revolves at the rate of one thousand miles an hour*, the results would be most disastrous. Most of our readers who are acquainted with the nature and uses of the lathe, must be aware that the effect of iron or wood *revolving*, while the "lathe tool" is *stationary*, is to dress off every protuberance, and to produce smoothness and uniformity. Suppose the earth be considered the substance revolving, and the atmosphere like a stationary "lathe tool," what would become of our waving forests, our stately mansions, and our strutting population? But Infinite Wisdom has finely adjusted everything which His hands have made; and those things which lie beyond the polluting touch of man, do yet deserve the epithet "*very good.*"—*Manchester Spectator.*

General Science and Miscellany.

RURAL ARCHITECTURE.

The above represents a beautiful residence recently erected in the neighbourhood of Rochester, N. Y. A taste for architectural beauty in the construction of private, even more than in that of public buildings, is evidently gaining ground among our American neigbours. In some of the cities and villages of the state of New York, the traveller will meet with many private dwellings that display an admirable taste in the owner, as well as the architect. We do not mean to say that occasional instances are not to be found in the outskirts of our own towns and villages of a most correct style in the building and an excellent taste in the arrangement of the externals; but to our mind, there is generally a stiffness, and an unsociable air about our genteel country residences. We should like to see this got rid of as fast as possible.

The above design is not inserted as a suitable pattern, after which we would recommend our farmers to copy. There is much costly and useless ornament. At the same time valuable hints may be taken from it. When a farmer is about to erect a dwelling to replace the old log house, he may just as well select the best site with reference to surrounding objects, and adopt a neat plan, as the contrary. And if he feel himself able to spend a few dollars to adorn and beautify his "castle," and his children's "home"—to make it agreeable to the eyes and attractive to the hearts of those who shall grow up within its walls; that when pursuing in after years, far away perhaps from its hallowed precincts, the dazzling objects of this world's ambition, they may occasionally turn with real satisfaction to the reminiscences of a *pleasant* home and a happy boyhood, we are the last to say, nay.

The following extract from an agricultural address is to our purpose:

Farmers' Dwellings.—We need a great improvement in this respect—we need a distinctive *Rural style of building*—comfort and convenience combined with neat and simple elegance. Nothing expensive, gaudy or obtrusive, but graceful in form, chaste in ornament, with quiet, neutral colors sweetly blending with the surrounding green, all breathing an air of peaceful, calm repose on which the eye may rest with pleasure. I would gladly enlarge upon this, did time permit. The house should not only be sheltered but *adorned* with trees—none more beautiful than those of our own forests.

A few choice fruit trees of various kinds, with grapes and smaller fruits which need but little care, with flowering shrubs and ornamental climbers should be there. None of the adornments of beauty are more graceful or attractive than fragrant and blooming vines around the rustic porch. And—let there be a *garden* too, it need not be a large one—not the unsightly patch of neglected earth sometimes so miscalled, intended for potatoes and cabbages, and filled with burdoch and nettles, but a neatly arranged plat for shrubs and flowers, laid out with taste and kept with care—*cultivate a taste* for flowers, and teach your children to love them. In doing so, you give them new sources of pleasure—new facilities for enjoyment. And do not deem the time they bestow upon them, lost time; it is well bestowed, and will yield a rich return in pure and simple joy, and the cheerful love of home.—*Address of* T. D. Burral, *before the Ontario Agricultural Society.*

NATURAL PHILOSOPHY.

We have made arrangements to procure a number of cuts to explain the various facts and principles of natural philosophy, with which every young man, whether he intend to be a farmer, a mechanic, or to enter one of the so-called "professions," ought to be familiarly acquainted. We shall devote a portion of the space intended for scientific and miscellaneous subjects to this useful and interesting branch of study. During the year we hope to be able to publish a complete epitome of the principles of those sciences usually embraced under the head of Natural Philosophy. Those who subscribe for the *Agriculturist* for 1850, will thus, in addition to the agricultural and other matter, obtain the substance of a scientific work, which of itself would cost 2s. 6d. or 5s. The younger

branches of every family who take our paper will thereby be put in possession of the means of becoming acquainted with the laws of matter—with principles, facts and illustrations that concern their daily occupations, which will help them to understand many things that must otherwise remain a puzzle and a mystery, or the subject of ignorant, and perhaps superstitious wonder. When we take into account the scanty supply of useful books, especially on such subjects, that is generally to be met with in the houses of our farmers, and the consequent ignorance of the plainest and most important principles of natural science in which too many of the youth of Canada are growing up to manhood, we think we cannot render a more useful or acceptable service to our youthful readers, than to lay before them a series of articles containing a plain, concise, and easily understood explanation of the subjects mentioned, accompanied with wood-cut illustrations of the most important laws and principles involved. We shall make the articles published in the "Library of Useful Knowledge," some of which are republished in the fifth book of Lessons, of the National Series, the foundation of our selections and remarks, with such extracts from other works as we may think needful.

The following introductory remarks and definitions occupy all the space we can spare in this number:

Natural Philosophy, in its most extensive sense, has for its province the investigation of the laws of matter. that is, the properties of matter; and it may be divided into two great branches. The first and most important (which is sometimes called *Natural Philosophy*. by way of distinction, but more properly *Mechanical Philosophy*) investigates the sensible motions of bodies. The second investigates the constitution and qualities of all bodies, and has various names, according to its different objects. It is called *Chemistry*, if it teaches the properties of bodies with respect to heat, combination with one another, weight, taste, appearance, and so-forth; *Anatomy* and *Animal Physiology*, if it teaches the structure and functions of living bodies, especially the human;—for, when it treats of the functions of other animals, we term it *Comparative Anatomy*. It is called *Medicine*, if it teaches the nature of diseases, and the means of preventing them, and of restoring health: *Zoology*, if it teaches the arrangement or classification, and the habits of the different lower animals: *Botany*, including *Vegetable Physiology*, if it teaches the arrangement or classification, the structure and habits of plants: *Mineralogy*, including *Geology*. if it teaches the arrangement of minerals, the structure of masses in which they are found, and of the earth composed of these masses. The term *natural history* is given to the three last branches taken together; but chiefly, as far, as they teach the classification of different things. or the observation of the resemblances and differences of the various animals, plants, and ungrowing substances in nature.

Here we may make two observations. The *first* is, that every such distribution of the sciences is necessarily imperfect; for one runs unavoidably into another. Thus. Chemistry shows the qualities of plants with relation to other substances, and to each other: and Botany does not overlook those same qualities, though its chief object be arrangement. So Mineralogy, though principally conversant with classifying metals and earth. yet regards also their qualities in respect of heat and moisture. So Zoology too, beside arranging animals, describes their structures like comparative anatomy. In truth, all arrangement and classification depend upon noting the things in which the objects agree and differ; and among those things in which animals, plants, and minerals agree or differ, must be considered the anatomical structure of the one, and the chemical qualities of the other. Hence, in a great measure, follows the *second* observation, namely, that the sciences mutually assist each other. Thus, arithmetic and algebra and geometry, and the purely mathematical sciences aid mechanical philosophy; mechanical philosophy, in like manner, assists chemistry and anatomy, especially the latter: and chemistry very greatly assists physiology, medicine, and all the branches of natural history.

The first great head, then, of natural science, is mechanical philosophy; and it consists of various subdivisions, each forming a science of great importance. The most essential of these, which is indeed fundamental, and applicable to all the rest, is called *dynamics*, from the Greek word signifying *power* or *force*. It teaches the laws of motion in all its varieties. The application of dynamics to the calculation, production, and direction of motion, forms the science of *mechanics*, sometimes called *practical mechanics*, to distinguish it from the more general use of the word. which comprehends every thing that relates to motion and force.

The application of dynamics to the pressure and motion of fluids, constitutes a science, which receives different appellations according as the fluids are heavy and liquid, like water, or light and invisible like air. In the former case it is called *hydrodynamics*, from the Greek words signifying *water* and *power;* in the latter *pneumatics*, from the Greek words signifying *breath* or *air*. And hydrodynamics, is divided into *hydrostatics*, which treats of the weight and pressure of liquids, from the Greek words for *balancing of water*, and *hydraulics*, which treats of their motion; from the Greek word for several musical instruments played with *water* in *pipes*.

COMMON SCHOOLS.

We intend in the future numbers of our journal, to devote a little more attention to the subject of schools, and popular education, than we have heretofore done. We have arranged to obtain a number of cuts from the Chief Superintendent of Schools, illustrating the plan of building, seating, and fitting up school-houses, so as to secure the objects aimed at, in the best manner. Every farmer and every inhabitant of the country is directly interested in the improvement of schools, and the promotion of the instruction of our youth. The subject will not therefore be inappropriate to our pages, if treated on general grounds. The Common School, as an agricultural cotemporary truly remarks, is justly regarded as the palladium of our civil liberties. It is, and must be, from this source that the mass of our citizens derive the groundwork of the knowledge which will enable them to sustain the principles of a free representative government. It is, then, of the highest consequence, that these schools be made to confer the greatest possible advantages on those for whom they are designed. In regard to their character and utility, much depends on the countenance and encouragement given them by parents. The improvement of children will be comparatively unimportant, if parents are indifferently disposed towards teachers and schools.—This subject is brought forward in a striking light

in the following circular, addressed to parents, written by an observing and intelligent superintendent of schools, in the State of Vermont.

I know you feel an interest in the education of your children, and therefore I wish to call your attention to the winter schools, which are about to commence.—What shall be the value of the school in your district to your children? Are you aware that the success of your school will depend much upon your co-operation with the teacher? I find throughout the county, that where the parents take the most interest in schools, there they have the *best schools*, and where they take the least interest, the poorest schools. It is the uniform testimony of teachers, that the active co-operation of parents is essential to success in their schools. Shall *your* teacher have this co-operation the coming winter?—You may receive the public money, pay your taxes, employ a good teacher; but unless you take an interest *yourselves*, you cannot have a good school. The school will be what you make it. Do you ask what you can do to secure a good school?—There are many things you can do. I will mention some of them:

1. You can furnish your children with *suitable books*.

2. You can see that your children attend school, *punctually* in the *morning*, and regularly *every day*. The tardiness and irregularity of scholars is one of the greatest evils in our district schools. Parents can correct this evil, *if they will*. In Putney, the average attendance last year was much greater than the year before—the average attendance in one school of fifty scholars being sixty days out of sixty-six day's school. In most schools in the county, the average attendance is not over forty or forty-five days—more than one-fourth of the schooling being absolutely lost, *needlessly lost*, while the value of the remaining three-fourths is greatly diminished. If your children are tardy, or occasionally absent from school, they will not be interested in the schools, or make progress in their studies. A few days' absence frequently destroys the value of more than half a winter's school. If your breakfast is half an hour too late, it may be the means of preventing your children from being interested in their studies for that day, and so through the winter. Will you not, then, as parents, *see to it that your children attend the school punctually* in the morning, *and regularly* every day?

3. *You can visit the school.* The practice of visiting schools is becoming more common in some towns, and the good effects of such visits are seen in both teachers and pupils. Still, there are many districts where neither the parents nor the committees ever go into the schools, and the best teachers accomplish but little in such districts, on account of the indifference of parents. It is impossible for a teacher to keep a first-rate school where parents do not feel interest enough to look in and see whether their children learn or not. You may as well expect to raise corn in winter, as to find a good school in such a district. The neglect and indifference of parents will be as fatal to the interests of the school, as the snow and ice to the growth of corn. If you have a field of grain, are you not accustomed to visit it, now and then, to see how it grows, and that, too, when your visits do the grain no such good as they should do your children? for the grass and the grain have no eyes to see you, no smiling faces and cheerful hearts with which to greet you, as the children in the school-room have. If the sun shines and the showers fall, the grass and the grain will grow on. But what the sunshine and showers do for the fields, the interest of parents will do for the school. A visit from you who are parents, will often be as serviceable to the school, as a shower of rain on the grass, or the warm sun, with a dressing of plaster, on the corn. Will not every parent in the country visit the district school at least *once* during the coming winter? If the teacher is a good one he will be glad to see you. If he is unfaithful, negligent, or incompetent, there is still more need of your visiting the school, even though the teacher should not wish to see you.

4. *You can sustain the teacher in the government of the school.* There is great complaint in our country, that the schools fail for want of *order*. This want of order is sometimes the fault of teachers, and sometimes of the parents. If parents do not govern their children at home, if they allow them to stay at home for every petty dislike they may have against the teacher, or if they are accustomed to take their children out of school, when favorite son or daughter is punished, no teacher can govern the school. One of our town superintendents stated in a public address, last winter, that most of the failure of their schools in government, had arisen on account of the unwarrantable interference of the parents in the government of the school. If parents listen to the foolish complaints of their children, the children will generally have complaints enough to make. If your teacher has faults, it is better for you to go and speak of them kindly to him, than to find fault with him or backbite and slander him behind his back. For much of the trouble with teachers arises from some misrepresentation or misunderstanding, which a little explanation from the teacher would have removed. Where there is a decided public opinion in favor of order, there will seldom be much disorder or rebellion in school. It is because the unruly and disobedient expect "*aid and comfort*" among some in the district, that they venture upon open disobedience and rebellion in school. If your teacher is incompetent, or unfaithful, let him be fairly *dismissed*; but do not let a *faithful* teacher be put down or driven away by the ill-will of an offended parent, or the clamor of unruly boys and girls, to the disgrace of the teacher, and still greater disgrace of the children and the parents. Your duty as parents, and as good citizens is not discharged by simply *not encouraging disorder*; it is your duty to *sustain order*, and frown on rebellion by your words and your influence. Men may *encourage mobs* in school, as well as in government, by *looking on* and *keeping still*, when they ought to *speak out*, and *frown down* rebellion. It is because the orderly keep still, that the few disorderly in our school districts make so much trouble.

5. You can do much, also, to benefit your children, by endeavouring to interest them in obtaining an education; by encouraging them to study and improve their minds during evenings; by discouraging those amusements which take off their attention from the school, and dissipate their minds; by showing that knowledge and virtue are better riches for them than any treasure of silver and gold.—JAMES TUFTS, *Supt. of Common Schools.*

MILLIONS OF MONEY THROWN INTO THE GUTTER.

That man gets his bones from the rocks and his muscles from the atmosphere, is beyond all doubt. The iron in his blood and the lime in his teeth were originally in the soil. But these could not be in his body, unless they had previously formed part of his food. And yet we can neither live on air nor on stones. We cannot grow fat upon lime, and iron is positively indigestible in our stomachs. It is by means of the vegetable creation alone that we are enabled to convert the mineral into flesh and blood. The only apparent use of herbs and plants is to change the inorganic earth, air, and water into organic substances fitted for the nutrition of animals. The little lichen, which, by means of the oxalic acid that it secretes, decomposes the rocks to which it clings, and fits their lime for "assimilation" with higher organisms, is, as it were, but the primitive bone-maker of the world. By what subtle transmutation inorganic

nature is changed into organic, and dead inert matter quickened with life, is far beyond us even to conjecture. Suffice it that an express apparatus is required for the process—a special mechanism to convert the "*crust* of the earth," as it is called, into food for man and beast.

Now, in nature everything moves in a circle—perpetually changing, and yet ever returning to the point whence it started. Our bodies are continually decomposing and recomposing—indeed, the very process of breathing is but one of decomposition. As animals live on vegetables, even so is the refuse of the animal the vegetable's food. The carbonic acid which comes from our lungs, and which is poison for us to inhale, is not only the vital air of plants, but positively their nutriment. With the same wonderous economy that marks all creation, it has been ordained, that what is unfitted for the support of the superior organisms is of all substances the best adapted to give strength and vigour to the inferior. That which we execrate as pollution to our system, they secrete as nourishment to theirs. Plants are not only nature's scavengers, but nature's purifiers. They remove the filth from the earth, as well as disinfect the atmosphere, and fit it to be breathed by a higher order of beings. Without the vegetable creation, the animal could neither have been nor be. Plants not only fitted the earth originally for the residence of man and the brute, but to this day they continue to render it habitable to us. For this end their nature has been made the very antithesis of ours. The process by which we live, is the process by which they are destroyed. That which supports respiration in us, produces putrefaction in them. What our lungs throw off, their lungs absorb—what our bodies reject, their roots imbibe.

Hence, in order that the balance of waste and supply should be maintained—that the principle of universal compensation should be kept up, and that what is rejected by us should go the sustenance of plants—Nature has given us several instinctive motives to remove our refuse from us. She has not only constituted that which we egest the most loathsome of all things to our senses and imagination, but she has rendered its effluvium highly pernicious to our health—sulphuretted hydrogen being at once the most deleterious and the most offensive of all gases. Consequently, as in other cases where the great law of self-preservation needs to be enforced by special sanctions, Nature has made it not only advantageous to us to remove our night-soil to the fields, but positively detrimental to our health and disgusting to our senses, to keep it in the neighbourhood of our houses.

In every well-regulated state, therefore, an effective and rapid means for carrying off the ordure of the people to a locality where it may be fruitful instead of destructive, becomes a most important consideration. Both the health and the wealth of the nation depend upon it. If to make two blades of wheat grow where one grew before, is to confer a benefit upon the world, surely to remove that which will enable us at once to do this, and to purify the very air which we breathe, as well as the water which we drink, must be a still greater boon to society. It is, in fact, to give the community not only a double amount of food, but a double amount of health to enjoy it. We are now beginning to understand this. Up to the present time we have only thought of removing our refuse—the idea of using it, never entered our minds It was not until science taught us the dependence of one order of creation upon another, that we began to see that what appeared worse than worthless to us, was Nature's capital—*wealth set aside for future production* In our eagerness to get rid of the pollution, we had literally not looked beyond our noses; hence our only care was to carry off the nuisance from the immediate vicinity of our own residences. It was no matter to us what became of it, so long as it did not taint the atmosphere around us. This the very instincts of our nature had made objectionable to us; so we laid down just as many drains and sewers as would carry our night-soil to the nearest stream—and thus, instead of poisoning the air that we breathed, we poisoned the water that we drank. Then, as the town extended—for cities, like mosaic work, are put together piecemeal—street being dovetailed to street, as county to county in our children's geographical puzzles—each new row of houses tailed on its drains to those of its neighbours, without any inquiry being made as to whether they were on the same level or not. The consequence of this is, that the sewers in many parts of our metropolis are subject to an ebb and flow like their central stream—so that the pollution which they remove at low-water they regularly bring back at high-water to the very doors of the houses whence they carried it.

But, thanks to organic chemistry, we are beginning to wake up. Science has taught us, that an improved and comprehensive system of drainage is a question that concerns not only our health, but—what is a far more important consideration with us—our breeches' pockets. What we, in our ignorance, had mistaken for refuse of the vilest kind, we have now learned to regard as being, with reference to its fertilizing virtues, "a precious ore, running in rich veins beneath the surface of our streets"—whereas, if allowed to reek and seethe in cesspools, within scent of our very hearths, or to pollute the water that we use to quench our thirst or cook our food, it becomes, like all wealth badly applied, converted into 'poison" as Romeo says of gold, to the Apothecary—

> "Doing more murders in this loathsome world
> Than those poor compounds that thou mayest not sell."

According to the average of the returns, from 1841 to 1846, we are paying two millions every year for guano, bone-dust, and other foreign fertilizers of our soil. In 1845, we employed no fewer than 163 ships to bring home 270,000 tons of animal manure from Ichaboe alone; and yet we are every day emptying into the Thames 115,000 tons of a substance which has been proved to be possessed of even greater fertilizing powers. With 200 tons of the sewage that we are wont to regard as refuse, applied to the irrigation of one acre of meadow land, seven crops, we are told, have been produced in the year, each of them worth from six to seven pounds; so that, considering the produce to have been doubled by these means, we have an increase of upwards of 20*l.* per acre effected by the application of that refuse to the surface of our fields. This return is at the rate of 10*l.* for every 100 tons of sewage; and, since the total amount of refuse discharged into the Thames from the metropolis is, in round numbers, forty millions of tons per annum, it follows that, according to such an estimate, we are positively wasting four millions of money every year—or, rather, *it costs us that amount to poison the water about us.* Or, granting that the fertilizing power of the metropolitan refuse is—as it is said to be—as great for arable as for pasture lands, then, for every 200 tons of manure that we now cast away, we might have an increase of at least twenty bushels of corn per acre. Consequently, the entire forty million tons of sewage, if applied to fatten the land, instead of to poison the water, would, at such a rate of increase, swell our produce to the extent of four million bushels of wheat per annum. Calculating then that each of these bushels would yield sixteen quartern loaves, it would follow that we fling into the Thames no less than two hundred and forty-six million pounds of bread every year; or, still worse, by pouring into the river that which, if spread upon our fields, would enable thousands to live, we convert the elements of life and health into the germs of disease and death—changing into slow but certain poison that which, in the subtle transmutation of organic nature, would become acres of life-sustaining grain.—*Morning Chron.*

IMPORTANT DISCOVERY.—COMPLETE REVOLUTION IN THE ART OF PAINTING.

A very important improvement in the preparation of paint, both as to durability and cheapness, and in avoiding the deleterious effects of the lead used at present, has been recently introduced by a French painter in Paris. The substitution of the white of zinc for the white of lead is the great fact of the discovery, and it would seem that the improved paints have been sufficiently tested to warrant their general use. We find the following interesting article translated from the French by the New York *Tribune*, and as it contains some useful information on painting generally, we give our readers the benefit of the whole article as early as possible:

The new invention of which we have spoken, considered in any point of view, either as regards the serious evils for which it offers a remedy, the resources which it creates in the greatest and most precious of the arts —Painting; the economies which it realizes, and the beauty which it procures, must excite universal interest in the highest degree. It is nothing less in fact than a complete revolution in the process of painting in oil.

If you open any of the reports of the Sanitary Council, presented every year to the Prefect of the Seine, you will always find an article entitled *Intoxication Saturnine*, which will always tell you in the words of the report of 1841, with but trifling variations in the numbers, 302 *sick*, taken with the Saturnine Affection, (Painter's Cholic,) viz: 237 workers in white lead; 43 house-painters, &c. &c., have been admitted in the hospitals; 289 have been cured, 12 are dead ,one became insane, and has been taken to the Asylum Bicetre, &c.

Now, then, let us repeat it again: In the nineteenth century, when science has made such great progress, surmounted so many obstacles, overcome so many difficulties, a product of almost primary necessity, manufactured by a large number of workmen, who are beset by a cruel infirmity, who are constantly decimated by death, a product used by a multitude of artists, exposed daily to its deleterious influence; this product, we say, still held its place, already necessary, always sought after, casting a scornful defiance upon humanity leagued together in vain against it!

Mr. Leclaire, a well known house-painter, who was the first to introduce in his establishment that excellent system of joint-stock association, of equitable division of profits, and of mutual assistance, which a happy emulation will realize every where, we trust at least, had yearly the misfortune of seeing many of his workmen affected with violent cholic, with paralysis, insanity, and even death itself, or forced in the prime of life to give up their avocations, with the sad prospect of letting their families sink into poverty and misery.

The deadly influences which every year prey upon so many victims have only one and the same cause, viz: *the use of colors in oil having lead for their base*, for these colors and these oils, by their property of oxydation, are cruel homicides.

The enemy, then against which, first of all, it was necessary to declare uncompromising war, over whom it was necessary to obtain a brilliant victory, was Lead, which had become, by an inexorable necessity, the main ingredient of all painting in oil. After that came the tints obtained by a combination of copper, also easily oxydised, and consequently greatly deleterious.

As we desire always, in all of our articles, to enable our readers to acquire the greatest amount of clear and practical knowledge possible, we shall here enter into some details upon the subject.

The fundamental colors in painting, those by means of which all tints possible are obtained, are white, black, yellow, red and blue, and for greater facility green is added; grey is a mixture of black and white, green a mixture of yellow and blue, violet and indigo are mixtures of red and blue, &c. &c.

The most important of the primitive colors, that which it is the most essential to render perfectly innocuous and unchangeable, is white, which enters into the composition of nearly all paints.

The white exclusively employed now is the white oxyde or carbonate of lead, of which that called the white of silver is only a more perfect variety. But the oxyde of lead is at once a violent poison and eminently subject to decomposition; it becomes dirty and black, and is destroyed by contact with sulphurous vapours, which are so abundant in nature that it is impossible, with every imaginable care, to protect it from their corroding influence.

For the yellow, we have the chromes and the orpines, and also the ochres, which are durable but deleterious; the chromes and the orpines are as fugitive and dangerous as white lead. The orange mineral is equally homicidal.

The blues, composed of cobalt, &c., leave nothing to desire; they have all the durability and innocuousness that are needed.

The greens are either too dear for house-painting, like Veronese green, or worthless, like the green of commerce, or deleterious to the system, or subject to rapid decomposition, like the green of copper, verdigris, &c.

The blacks, like the blues, are perfect.

This brief enumeration shows us that the great and difficult problem presented, which Mr. Leclaire sought to find a solution of, with so resolute a purpose, may be summed up in the production of

First: A white, dazzling, unchangeable, inoffensive, and endowed at the same time with all the desirable properties of white lead.

Second: A yellow, a substitute adapted to all tints and shades, and without the objections in the yellows named above.

Third: A red, fixed and brilliant.

Fourth: A green, intense and exclusive of all preparations of copper and lead.

This is not all yet. The colours employed must not, before all, compromise the health of the artists or workmen, while they produce perfectly the desired effect. As regards the tint, it must effectually resist the destructive influence of all the corroding substances naturally or accidentally combined with the atmosphere. An indispensible auxiliary was an oil that would dissolve readily and dry in a short time. But the oil hitherto used, having these properties, contained a salt of lead (litharge) which was poisonous and disagreeable. It was then necessary to discover a new drying, innocuous and unchangeable oil.

Here, then, was the problem to be resolved by Mr. Leclaire. He worked at it assiduously for years, and finally obtained, by easy and certain means, and with great economy:

First: A pure and dazzling white—the oxyde of zinc.

Second: A gold, lemon and straw yellow—a preparation of the oxyde of zinc.

Third: An excellent red, having for its base sulphate of antimony.

Fourth: A number of fine greens, resulting from the oxyde of zinc and the sulphate of cobalt.

Fifth: A perfect drying oil, which is obtained by boiling 100 pounds of linseed oil with five pounds of per oxyde of manganese.

For several years Mr. Leclaire has made exclusive and successful use of his various discoveries in colours and the drying oil. The experience of every day, made

on the largest scale in more than six thousand public and private establishments—the departments of war and of public works, the bank of France, the prefecture of police, the railroad depots, &c., demonstrate, or rather, establish beyond question, the following facts:

First: The new colours with their base of zinc, manganese, &c., are not injurious to the health of the workmen employed in their manufacture, the painters who use them, or the occupants of freshly painted houses. In the establishment of Mr. Leclaire an average of a dozen workmen were formerly attacked with painters' cholic yearly, and some, more unfortunate, suffered five or six attacks of this dreadful disease. Since the introduction of the oxyde of zinc and the oil prepared with manganese, *not a single workman has been poisoned.*

Second: The new colours are infinitely more solid and durable than the old: they are not affected by sulphurous vapours; they preserve, everywhere and always, their primitive tints, even in sulphuric bath rooms; and they have a property still more precious, namely: When they are cleaned by simple washing they resume their original brightness; while the old colours, when washed even with acids, which dissolve a portion, remain dull and spotted, and for the simple reason that everything which decomposes stains them.

Third: The white of zinc is so much superior to the white of lead, that when the framing of a panel is painted with the best white lead and the centre with zinc white, the contrast makes the framing look yellow and grey and offensive to the eye. In such a comparison even the Venetian white loses its purity. The white lead appears to absorb the light, while the white of zinc reflects it completely, and is brilliant and transparent.

Well! All the new colours invented by Mr. Leclaire, when compared with those having their bases in lead or copper, possess a preeminence as marked as the white of zinc does over that of the white of lead. They are at once richer, brighter, and fresher in tone. It is quite impossible, with the white of lead and the oil prepared with litharge, to obtain the delicate and tender tints which the white of zinc and the oil prepared with manganese give with great facility and in infinite variety.

Fourth: an important consideration.—By the employment of the new colours a great economy of time and money is obtained.

Experience has fully proved that if we compare the quantity of white lead with the white of zinc, or the quantities of oil necessary to prepare these two substances, the advantage of at least thirty per cent., is in favour of the white of zinc, which covers better with equal weight.

The application of the white zinc is as easy and requires no particular care.

The white of zinc dries in a shorter time.

There is then, *economy* in the cost of the primary material; *economy* in the quantity necessary to produce a given effect; *economy*, incalculable, in the durability; and *economy*, no less remarkable, in the quality of being easily cleaned and restored to original purity with fresh water!

We have spoken freely and earnestly on this subject, because, first, it is a question concerning one of the largest and most important branches of industry in the civilized world; and, secondly, a brilliant scientific discovery successfully introduced by long years of labour and constant sacrifice which were necessary to triumph over culpable indifference, blind routine and irrational opposition.

Now the truth begins to triumph. We have seen more than sixty certificates of our most renowned painters and architects, who have fully tested the discovery of Mr. Leclaire, and confirm all his assertions respecting its advantages. In place of a deadly substance there is given to the world a new material, which with the advantages of beauty, durability, economy, &c., has no dangerous effect in its preparation or use. It is a great conquest of science.

We learn that Mr. Leclaire has received the decoration of the Legion of Honor. Never was a distinction more gloriously and meritoriously earned.

GRANDFATHER WHITEHEAD'S

LECTURES TO LITTLE-FOLK.

(From the *Family Friend*, a little English monthly periodical of very great merit.)

LECTURE I.

My Dear Boys and Girls—I intend giving you some very pleasing and instructive lectures. I wish you to love knowledge and virtue, because thereby you will be made happy and prosperous in your future lives. I hope to come to you frequently and to tell you, upon each occasion, something that it will please you much to understand. In these days, it is very bad for any one to be without knowledge. There was a time when there were no books, no paper, no pens, or ink; things now brought to light were then unknown; people used to believe in false gods, worshipped wooden images, and were in great dread of wicked spirits, which they supposed to exist. They had no comfortable houses wherein to dwell; no glass to admit the light, yet shut out the wind and rain; they had no proper fire-places, with chimneys to carry away the smoke, but used to live more in the style of the gipsey tribes, roaming from place to place, having no one dear spot to call home. They were in danger of wild beasts—in our country there were many wolves, which are animals, something like dogs, but very wild, hungry, and fierce; these often used to kill the beasts which people desired to keep for food, and sometimes they used to kill and eat the people themselves. The people, too, were rude, and very cruel, and instead of loving one another, they used to quarrel, fight, and kill each other; and they used to do this because they were ignorant; they knew not what it was good and profitable for them to do. But now we enjoy peace. We may go to bed at night without fear of being robbed by men, or devoured by wild animals. And although there are some wicked men now, who do their fellow-creatures wrong, they are comparatively very few, and are ignorant and idle men, something like those of old; they do not love the knowledge and virtue which I wish you to prize, and therefore they are disobedient to God, and bad towards their fellow-creatures.

I am not intending to give you a long lecture now; but merely a few words of introduction and promise as to what your Grandfather Whitehead hopes to do in the future. I know that this is your holiday time—that you love your holidays, and ought to have them. I know how much you delight to come home with your parents—to enjoy your family parties—to meet with your uncles and aunts, and cousins and companions, and talk about the merry Christmas and the New Year, and to sit by the fireside and tell anecdotes, and ask riddles, and try puzzles, and enjoy the fun of amusing conversation cards! And then the nice things which are about at Christmas!—the cakes—the puddings—the roast-beef, and the geese! These are all welcome things, and serve to make the time pleasant both to old and young.

But hereafter, when the pudding and the cake are gone, and the time comes for reading and learning, then I hope to tell you many things on what is called Science, and to explain to you how many wonderful inventions have been brought about, and how they are carried on. In the old times the people living in different places could seldom see or hear from each other; and if they travelled fifty miles it took them a long time of weary and often dangerous exertion. But now, the wonderful inventions

of science have enabled us to travel as fast as a bird can fly, with nothing to do but to sit down cheerfully and easily, and glance at the trees and rivers, hills and dales, as we pass along. So wonderful are these discoveries, that instead of waiting a fortnight or a week for a letter sent from London to Edinburgh, a person may now send a message to or from these cities, and receive an answer in as many minutes as were formerly required days. Think of messages being sent hundreds of miles, and an answer returned, while a person waits no longer than a little boy might do who had taken a letter to a gentleman's house, and was told to wait for an answer. Yet this is really done—not by any magic, or mystery, but by the study of God's works, and by conformity to his laws. And this makes it all the more delightful, that whilst man studies and enquires, God is willingly disclosing these delightful means, and putting it into the heart and mind of man to apply them for good and useful purposes.

Sometimes a friend is invited from afar off—perhaps he has to travel sixty miles. Well, he may be told that dinner will be on the table at two o'clock. The cook begins to get the nice things ready. Still the expected friend has not started on his journey—perhaps he is sitting down reading the newspapers. The cook actually goes on preparing the dish of which he is to eat, and after she has been thus engaged for some time, he goes quietly and takes his seat in a carriage, rides the whole of the sixty miles, and knocks at the door just as the cook begins to think the dinner nicely done, and wishes the gentleman had arrived. This *is* wonderful. And I wish you not merely to understand that it *is* so—but *how it is managed*—who discovered it, who improved upon the first discovery—and how, and when, and where, it was first applied; so that you may have plenty to think and talk about, and that you may feel what a pleasant thing it is to live in a time free from trouble and dangers, and with so many blessings and privileges around you.

Some years ago, people used to employ for lights at night, great torches, with a flickering, smoking flame, and suffocating vapours; next came candles and lanterns, with their dim and uncertain rays; then came gas, which was considered a wonderful discovery, and has enabled us to have our shops and streets lit up long after the sun has gone down. But now a new discovery—the electric light—is to be tried, and it is very likely that ere long our streets and houses may be almost as light by night as in the day. And instead of lamp-lighters running about our streets with noisy boys after them, first lighting one corner, and then another, it is likely that *a whole town may be lit up at once*, and as this will take place before sunset, if this plan succeeds, there will be scarcely any darkness in large towns. What is more astonishing, is, that this light will endure under water—so that if it were necessary to have lights under water, as it might be in mining, or in making breakwaters, or piers, or harbours, it would be quite possible to do so.

These, then, dear Boys and Girls, are wonders which Grandfather Whitehead intends to lecture you about. I intend to speak in plain and pleasant words, so that you may not be puzzled by difficult terms; and when I think it will help you to understand the subject, I will present a pretty little picture to show you how a machine is constructed, or how an experiment may be performed.

Besides, I wish you to study these things, that you may try in your turn to discover useful things to do good to your fellow-creatures. For as others have laboured and done good for you, you should delight to labour for the good of others. Watt, who discovered the steam-engine, Harvey, who discovered the circulation of the blood; Newton, the great astronomer; Sir Humphrey Davy, the great chemist; Howard and Wilberforce, the kind-hearted, good men, were once playful boys like you, and knew but little; they turned their minds to good pursuits, and became wise and good men, and did much for the well-being of their fellow-creatures. Mrs. Hemans, Mrs. Barbauld, Mrs. Fry, and other good and clever ladies, were once girls with very little knowledge, but they strove for it, and gained it, and became great and good. And so may you, my dear Boys and Girls, if you will but try. Grandfather Whitehead will endeavour to lead you on. I have spoken (I must tell you,) to your Aunt Mary, and she has consented to give you some interesting lectures upon History—about the rude times and people I have hinted at—and many pretty anecdotes she will have to tell. Therefore, I hope you will give your Aunt Mary and me your attention, and we shall do our best to induce you to love knowledge and virtue.

[At the conclusion of Grandfather Whitehead's introductory lecture, the boys and girls all clapped their hands, saying, "God bless you, Grandfather Whitehead!"]

Curiosities of Science—Geological Changes of our own Time.—Lyell, Darwin and others, have lately collected and powerfully applied a curious class of facts, to show the slow and continuous upheaving or depression of large tracts of land, in different parts of the world, in effect of subterranean changes going on underneath. The phenomenon belongs to our own time, as well as to anterior ages in the history of the globe. In Sweden, for instance, a line traverses the southern part of that kingdom from the Baltic to the Cattegat, to the north of which, even as far as the North Cape of Europe, there is evidence, scarcely disputable in kind, that the land is gradually rising at the average of nearly four feet in a century: while to the south of this axial line, there are similar proofs of a slow subsidence of surface in relation to the adjacent seas.—This, and various other examples of what may be termed secular changes of elevation, particularly in South America, amidst the great coral foundations of the Indian and Pacific Oceans, have led the eminent geologists just named to regard such slow progressive changes as the probable cause of many or most of those great aspects of the earth's surface, which by others have been attributed to paroxysmal actions of subterranean forces, sudden and violent in kind.

To Black Grates and Stoves.—Mix a gill of stale beer and two ounces of black lead together; add a piece of common soda, the size of a nut. Having removed all soot and ash dust from the grate, rub it over with the mixture. Take a hard brush and rub it well; a great brilliancy will soon be produced.

A Cheap Filter for Water.—A very simple means exists, by which any poor family may filter all the water required, viz., by using a large pan or tub as the tank, and filtering the water (by ascension) through a sponge stuffed into the hole in the bottom of flower-pots, using two pots, the lower one being half filled with charcoal, and loosely covered with thin flannel, the upper one placed in it so as to sink the flannel with it, and then secured by a string; nothing can be more simple, nor more easily cleansed.—*The Builder.*

Hens Eating their Eggs.—Hens, it is well known, when kept shut up, are very apt to eat their eggs. The best preventive is to keep them well supplied with lime and gravel, and with *meat* in some form. The nests should be so deep in the boxes, that they cannot reach them while standing on the edge.

BOILING POTATOES.—The correspondent of the London Times says:—"The following method of dressing potatoes will be found of great use when skins are tough and potatoes are watery. Score the skin of the potatoe with a knife lengthwise and across, quite around, and then boil the potatoe in plenty of water and salt, with the skin on. The skin readily cracks when it is scored, and lets out the moisture, which otherwise renders the potatoe soapy and wet. The improvement to bad potatoes by this method of boiling them is very great; and all who have tried it, find a great advantage in it, now that good potatoes are very difficult to be obtained.

NOCTURNAL LIFE OF WILD ANIMALS.—Below the mission of Santara Barbara de Arichuna we passed the night as usual, under the open sky, on a sandy flat on the bank of the Rio Apure closely bordered by the impenetrable forest. It was not without difficulty that we succeeded in finding dry wood to kindle the fire with which it is always customary in that country to surround a bivouac, in order to guard against the attacks of the jagur. The night was humid, mild, and moonlight. Several crocodiles approached the shore; I think I have observed these animals to be attracted by fire, like our cray-fish and many other inhabitants of the water. The oars of our boat were placed upright and carefully driven into the ground, to form poles from which our hammocks could be suspended. Deep stillness prevailed; only from time to time we heard the blowing of the fresh-water dolphins which are peculiar to the Orinoco net-work of rivers [and, according to Colebroke, to the Ganges as far as Benares], which followed each other in long lines. Soon after eleven o'clock such a disturbance began to be heard in the adjoining forest, that for the remainder of the night all sleep was impossible. The wild cries of animals appeared to rage throughout the forest. Among the many voices which resounded together, the Indians could only recognise those which, after a short pause in the general uproar were first heard singly. There was the monotonous howling of the aluates [the howling monkeys]; the plaintive, soft, and almost flute-like tones of the small sapajous; the snorting grumblings of the striped nocturnal monkey [the Nyetipithicus trivirgatus, which I was the first to describe]; the interrupted cries of the great tiger, the cougor or maneless America lion, the peccary, the sloth, and a host of parrots, of parraquos, and other pheasant-like birds. When the tigers came near the edge of the forest, our dog, which had before barked incessantly, came howling to seek refuge under our hammocks. Sometimes the cry of the tiger was heard to proceed from amidst the high branches of a tree, and was in such cases always accompanied by the plaintive piping of the monkeys, who were seeking to escape from the unwonted pursuit. If one asks the Indians why this incessant noise and disturbance arises on particular nights, they answer, with a smile, that "the animals are rejoicing in the bright moonlight, and keeping the feast of the full moon." To me it appeared that the scene had originated in some accidental combat, and that hence the disturbance had spread to other animals, and thus the noise had increased more and more. The jaguar pursues the peccaries and tapies, and these, pressing against each other in their flight, break through the interwoven tree-like shrubs which impede their escape; the apes on the tops of the trees, being frightened by the crash, join their cries to those of the larger animals, this arouses the tribes of birds, who build their nests in communities, and thus the whole animal world becomes in a state of commotion. Longer experience taught us that it is by no means always the celebration of the brightness of the moon which disturbs the repose of the woods; we witnessed the same occurrence repeatedly, and found that the voices were loudest during violent falls of rain, or when, with loud peals of thunder the flashing lightning illuminated the deep recesses of the forest. The good-natured Franciscan monk, who, although he had been suffering for several months from fever, accompanied us through the Cataracts of Atures and Maypures to San Calos on the Rio Negro, and to the Brazilian boundary, used to say, when fearful on the closing in of night that there might be a thunder-storm, "May Heaven grant a quiet night both to us and the wild beast of the forest!"—*Humboldt's Aspects of Nature.*

LAMPAS.—The brutal custom of the farrier, who scars and burns down the bars of the mouth with a red-hot iron, is most objectionable; it is torture to no purpose, rendering that part callous on the delicate sensibility of which all the pleasure and safety of riding and driving depend. It may be prudent, in case of Lampas, to examine the grinders, and particularly the tushes, in order to ascertain whether either of them is making its way through the gum, and if so, two incisions, across each other, should be made on the tooth, which will afford immediate relief. In the majority of cases, no surgical operation is necessary; in others, a few slight incisions across the bars, with a lancet or penknife, may allay the inflammation, and cause the swelling to subside.

THE TERROR OF THUNDER.—Timid people are subject to alarm at a clap or roar of thunder, when, in reality (despite the saying that "man has too high an opinion of himself who is afraid only of thunder and earthquakes") *thunder is harmless:* it is only the martial music of heaven, vaulting over us, the fear-inspiring tones proportioned so truly to the terribleness of the most dreadful war-weapon, lightning! It remains for some future chemist to develope better information than we now possess concerning the relations of electricity, and its twin (more subtle) element, galvanism, to vital economy, both animal and vegetable; but, in the mean time, it has to be thoroughly believed and acted upon, that man has power over this fluid, to control it, and that its mischief is in no instance of heaven's ordaining, but because, notwithstanding its fugitive track has no definable point, people will not understand how they may get out of its way; and one or another object comes within its reach, forming the chiefest *attraction.* They act cautiously who allow the freest possible access of air into their rooms during the prevalence of a thunder storm.

USEFUL RECEIPTS.

Lime Liniment for Burns, Scalds, &c.—Linseed or common olive oil and lime water, equal parts; to be shaken up together every time of use, for scrofula and syphilitic sores, and still more for burns and scalds.

To Cure Hiccough, or Hiccup.—This spasm is caused by flatulency, indigestion, and acidity. It may be relieved generally by a sudden fright or surprise, or any sudden application of cold, also by swallowing two or three mouthfuls of cold water, by eating a small piece of ice, taking a pinch of snuff, or anything that excites coughing.

SODA CAKE.—Take one pound of flour, half a pound of butter, half a pound of sugar, three quarters of a pound of currants, two eggs, a few drops of essence of lemon, and a teaspoonful of carbonate of soda, which should be previously mixed with the flour; the whole to be mixed with half a pint of warm milk.

Editors' Notices, &c.

PROVINCIAL ASSOCIATION.—We have much pleasure in observing that the finance committee are at length enabled, by the receipt of the government grant, to meet the outstanding claims against the association. They have announced their intention of paying the Hamilton premiums on Wednesday, January 16th, at the Farmers' Arms, in Toronto, and on the following Wednesday, the 23d instant, at the City Hotel, in Hamilton. All parties having claims must attend personally, or by properly authorized deputy. Persons having claims for premiums, at Kingston, should apply to the local treasurer there, Wm. Ferguson, Esq. We hope this valuable institution will now get free of debt, and that by judicious management, and the liberal support of the legislature and the public, it will continue to keep so.

GOLD MEDAL FOR CANADIAN INGENUITY.—His Excellency the Governor General has, with his wonted discriminating liberality, offered through the Toronto Mechanics' Institute, a gold medal for the best specimen of mechanical ingenuity, open to the whole province. Any article, we understand, coming within the wide range of practical mechanics will be considered within the scope of the competition. Ingenuity in the design, as well as skill in the execution, is to be regarded in the decision. Full particulars, we presume, will shortly be made public.

W. B.—We shall receive your proffered assistance with thanks. Our limits require that all articles should be short. When a subject requires more length for its treatment, it may be broken up into parts. We find it necessary to have *variety* in our pages.

T. H. S.—Thanks for your suggestion, and more for the interest you evince in the circulation of our paper. If every township had but one or two that could catch a portion of your spirit, our enterprise would soon be remunerating to ourselves, and of ten fold value to the country.

A YOUNG FARMER, Markham—Will find several things serviceable to him in Mr. Dougall's valuable paper in the present number; and in our volume for 1849, he will meet with some excellent advice from our Canadian horticultural correspondents. We can now only say, don't plant fruit trees on low wet land; choose high ground, and if the soil contain lime, or rest on a gravelly limestone, so much the better. The ground well drained and prepared, the trees properly selected and planted, and afterwards *carefully protected*, manured and pruned, success may with certainty be depended on.

TO CORRESPONDENTS.—There is no occasion to acknowledge, through the paper, the receipt of letters containing merely an order and price of subscription. It would consume a large space to do so, in every case, and as we send no paper unless ordered and *paid* for, the fact of its receipt will sufficiently show that the letter has reached this office. Where any thing special requires notice, we will refer to it in this place.

OUR ILLUSTRATED PROSPECTUS.—We send to each of our subscribers a copy of this prospectus. Will they do us the favour to cause it to be put up in the nearest tavern, store, or other place of public resort? We have already sent three copies to each Post Master in Canada, and paid the postage thereon. Will they also be kind enough to place them where they may be seen?