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THE

Canadian Agriculturist.

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THE APPROACHING PROVINCIAL EXHIBITION.

Preparations at Brantford for holding the Exhibition of the Agricultural Association of Upper Canada, commencing Tuesday, Sept. 29th, are satisfactorily progressing,—and a show surpassing any hitherto held is confidentially anticipated. The following particulars will be useful to our readers, and the public generally.

All articles must be entered on printed forms, and returned to the Secretary, in Toronto, *by Saturday, Sept. 12th*:—blank forms having been sent to all the agricultural societies for this purpose. Entries will be taken, however, in the Ladies' Horticultural, and Foreign Department, up to Monday, Sept. 28th, when the books will *finally* close.

Exhibitors must become members by enclosing a dollar with their entries; this does not apply to the Ladies', Indian and Foreign classes, in which competitors can enter *free*.

Members' Badges, one dollar each, admitting the wearer to free access to the show grounds, during the exhibition, may be obtained at the Treasurer's office on the grounds, or previously by applying to the Secretary of the Association, in Toronto. The price of admission, each time, for non-members, will be a quarter of a dollar.

All articles for exhibition must be on the ground for arrangement, on *Monday, Sept. 28th;* except live stock, which must not be later than *Tuesday noon*, as it is intended that the judges shall make an inspection, during the afternoon of that day. Exhibitors are particularly requested to notice this regulation.

The judges will meet in the committee room on the ground, on *Tuesday noon;* but it is expected that they will finish their duties next day, so as to have all stock and articles gaining prizes, ticketted for public inspection, during Thursday and Friday.

Members will be admitted to the grounds on Friday afternoon; non-members on Wednesday, at noon, and on Thursday and Friday mornings, at 8 o'clock.

On Wednesday evening there will be a public meeting in the Court House; subject of discussion:—"The means of making the Provincial Association still more effective in promoting the Agricultural, Horticultural, and Mechanical, interests of Canada." It has been arranged to have a Farmers' Banquet on Thursday afternoon, in a spacious tent on the grounds:—several distinguished guests and spectators from the United States, as well as this country, will be invited.

The testing of implements will take place on fields as convenient to the show grounds as can be possibly obtained, on the Thursday; mowers will be tried on clover, and if practicable, reapers on oats. Exhibitors therefore must be in readiness with their machines on Thursday morning.

Each judge will receive as soon as all the departments are provided, in the course of a few days, an official notice of his appointment.

Potato Yeast.—Cook and mash ten peeled potatoes, pour on a quart of boiling water and stir well, and add a coffee-cup of sugar; let this stand a few minutes; pour in a quart of cold water, wanting a gill, and when lukewarm stir in a pint of yeast, and set in moderately warm place to rise. When well fermented, put into a stone jug, cork tightly, and tie the cork down and keep it in a cool place. After the first rising keep enough of this yeast for the second batch. A teacup of this yeast is sufficient for two large loaves of bread; most excellent it is for muffins and griddle cakes also. There is no need of hops or flour in it, and in my opinion it is the best yeast I have ever tried, and I experimented in all known receipts.—*Anon.*

Maxims for Farmers.—A writer in the Boston *Cultivator* says:—"I would lay down the following rules, or maxims, which I think experience has demonstrated to be sound:

For rich farms, stock with the stately Durhams; for poorer, the active Devons.

The best point for a milker is a thin thigh.

To kill caterpillars, rub them up with the hand.

To kill lice on cattle, dust lightly with ashes.

To make the best hay, cut the grass early; when partly made by spreading, cock it up for two or three days, then open and cart it. By curing hay in this way, it contains all the aroma and nutriment of grasses.

Use of Plaster.—A correspondent thinks every crop benefited by plaster, and that upon clover it is indispensable. An application of 100 lbs. plaster will increase the hay crop one-third. He sows early in the spring on grass, and on grain as soon as it shows green over the ground. Potatoes, he says, should never be planted without rolling the seed in plaster. It is beneficial on all but wet clay soils. Sandy, gravely, loamy soils never fail to have their crops well benefited by plaster.

Take Care of the Vines.—If you have not already done so, cut off the fruit bearing shoots of your vines, two joints from the last bunch of grapes. Also cut out all unnecessary and useless shoots so that the fruit, and the wood required for enlarging the vine, may receive all the strength of the roots. It is useless to try to ripen grapes well in this climate all covered up in a thicket of leaves and branches.

To Prevent a Cow Sucking Herself.—Take a stick some two or three inches in diameter, and from 2½ to 4½ feet long—the length depends on the size of the cow—the larger the cow the longer the stick. Make a mortice an inch and a half or two inches wide in each end, and put the stick between the cow's fore legs, and buckle a strap that is passed through the mortice in the stick just behind her fore legs and fasten the other end of the stick in the same manner around her neck. Neither of the straps need be buckled very tight.

'Seed Ticks,' on Horses and Cattle.—The best remedy for the evil is to wash the parts affected with strong soap-suds, and then rub well with sweet oil or hog's lard. Spirits of hartshorn (aqua ammonia) 2 ounces; sweet oil, 2 ounce; shake well and sponge the horses with it before riding through "the brush," and they will not take hold.—*Correspondent Country Gentleman.*

THE BUREAU AND THE WHEAT DESTROYERS.

The information which has for sometime been expected from the Bureau of Agriculture, on the subject of the insects injurious to wheat, has not yet made its appearance. It will now, of course, whatever it may amount to, prove too late for the guidance of wheat growers this season. Before it can be circulated the wheat sowing will be over. It does seem strange that six months should have been consumed in perusing a few hundred pages of manuscript, and deciding what portion of it is suitable for publication. Surely, the Minister of Agriculture, if he was serious in offering prizes for information in regard to wheat insects, might have found means to bring it before the public at a period when it would have proved useful as well as interesting to the agriculturists of the country. We never expected much from this source, because we had no confidence in the plan adopted,—and we so stated our views at the time,—but we thought it might result in a compilation of what was already known on the subject, which, being scattered through numerous books and periodicals, was not within the reach of farmers generally. So much we expected from Mr. Vankoughnet's prize essays. But we cannot say if they even come up to this mark, for we have neither seen them nor heard anything of their purport.

We notice that two or three journals in the interest of the government have deemed it necessary to attack the *Agriculturist*, and to denounce the writer of this article for unwarranted hostility to the Minister of Agriculture, because another journal (with which he is supposed to be connected), can see no merit in the Minister's plans, no propriety in his occupying an office, of the duties of which he was necessarily ignorant, and no principle or honesty in the government of which he is a member. Now, it may be sufficient to say to our contemporaries, that the *Agriculturist* has not, and does not intend to concern itself with mere political questions, whoever may be the Minister of Agriculture, or whatever may be the political stripe of the government to which he belongs. We have managed to pursue the even tenor of our way for some ten years, in the midst of much political excitement, without losing sight of our mission as an independent organ of the agricultural interests of Canada. We have often abstained from the discussion of questions having an important bearing upon those interests, just because they were made the foot-ball of politicians for mere party ends. We did not wish to be drawn into discussions in these pages, that would even look like partizanship on the one side or the other. We are not conscious of having published a line in the *Agriculturist* that could fairly be objected to on account of its political bearing. We have spoken favorably of some government measures relating to agriculture, and unfavorably of others, without any reference to politics or individuals, and we shall continue to do so. If any reader should deem our strictures unwarranted in any case, he will find our columns open for reply so long as he confines himself to the questions at issue.

As to the writer's political opinions, we humbly submit that so long as he does not intrude them offensively here, no subscriber can complain. His right to use other channels that may be open to him, cannot be questioned. He has never denied his principles, nor hesitated to defend them upon any legitimate occasion; but we venture

to say that thousands who read the *Agriculturi* ' do not know whether he goes with the government or the opposition. At all events, they have not learned the fact from these pages. So much for our political assailants.

To return to the "weevil" question. We are told by some of the journals alluded to, that it is *our* business to find out the remedies for the wheat insects, and not the Minister's. We beg to demur to this statement. We have from time to time published such information as came within our reach, and those who have read the *Agriculturist* attentively will not, probably, be much enlightened by the essays when they appear, if they ever do. It was just because no individual farmer or journalist could spare the time or means necessary to observe the habits of all these insect depredators, test the various remedies proposed, and discover new ones, that we recommended the Minister of Agriculture to take adequate measures for the purpose as a public officer, and at the public cost. We suggested the appointment of competent men in various parts of the country to make observations, try experiments, and carefully record results. Unless some such plan be adopted, we feel satisfied that but little will be added to the present fund of knowledge on the subject; mistaken views, confusion as to facts, and foolish attempts to find remedies will continue, and the mischief will go on increasing until wheat-growing will have to be abandoned. A great deal has been lost in allowing the present season to go by without making any effort to ascertain the extent of the evil, or the possibility of preventing its progress. For this omission or neglect we hold the Minister of Agriculture and his advisers, as well as the Board of Agriculture, responsible. If they can render no assistance in a case like this, then indeed the hopes excited by the establishment of these departments are doomed to a sad disappointment. Our duty as a journalist is to make suggestions; to discuss the comparative merits of different propositions; to urge the adoption of those that may, upon examination, appear best; to observe the acts of those holding places of trust, and condemn or approve without fear or partiality, as justice may point out. In the discharge of this duty we have been careful to avoid hasty conclusions, and have forborne to censure when facts and public opinion would have warranted very plain speaking. Our desire has been to secure harmony and zealous co-operation among all those, who as public officers, managers of societies, or private individuals, are engaged in the noble work of improving the agriculture of our country. The time is coming, however, when silence in regard to the mismanagement of some of our agricultural institutions will not be just to the public. There must be reform, even if some unpleasant episodes should occur in the efforts to bring it about.

Position of Posts.—Posts set in earth particularly in loose, sandy soil, which allows the air to penetrate, are apt to decay very rapidly. Inverting the position, so that they stand "t'other side up with care," has long been known as inducing a considerably increased endurance, and has been often published, but never yet sufficiently introduced into practice. This will be found worthy of trial by those planting fence or other posts.

A "magic corn-husker" has been invented by a resident of Seneca Falls village in N. York The *Reveille* of that place, thinks it one of the most useful inventions of the kind that has ever been constructed. It is said to husk corn with quickness and certainty, and will remove wet corn as well as dry. Its movement is exceedingly rapid. The "husker" is simple, and may be worked by hand.

BREEDING SHEEP—PERMANENCE OF CHARACTER.

The following detailed account of the successful experiments, made in France—and the principles on which they were founded, which led to the origin of a new breed, of excellent and permanent character,—the La Charmoise, will be read with interest.—The animals usually take prizes in France, whenever exhibited. The late Earl Spencer, so eminent as a breeder, remarked in accordance with the statements of Malingie Nouel, that the worse-*bred* the female is, the more likely is the offspring to resemble a well-bred sire; and that he should prefer, a cow of no breed, to an indifferent pure-bred cow, for a good thorough-bred bull.

"Now in all breeding, experimenters attach the greatest importance to purity of race on each side, because of the natural law by which the offspring resemble, not merely the father and mother, but sometimes the grand parents, great grand parents, and further back still. Many other observers as well as myself, have seen in young animals the clearest resemblance to some ancestor long since dead, who was marked by some distinctive feature. The purer the race of such ancestor, the more strongly do its characteristics overcome the subsequent mixture of breeds and imprint themselves on the new offspring. Would it not then have been more reasonable for French farmers to attach the utmost importance to purity and antiquity of blood in the ram, representing as he does, the improved type that is aimed at, but to avoid on the other hand, those qualities in the ewe whose defects were to be corrected? In giving motion to a projectile (for instance a cannon-ball,) the velocity obtained is not merely in proportion to the propelling force, but also to the resistance of the medium, (air or water for example) through which the body is driven. Now in our case the ram represents the power of propulsion, the ewe that of resistance; since, if there were no obstacle on her side, the complete effect would be realized by the faithful reproduction of the improving type. Clearly, therefore, the influence of the ram upon the offspring will be the stronger, the purer and more ancient in the first place, his own race may be; and in the next place the less resistance is offered by the ewe through the possession of those qualities of purity and long decent which are so valuable in the sire.

"It appeared then that in order to unite the Gordian knot whose threads I have traced, inasmuch as one could not increase the purity and antiquity of the blood of the rams (I purposely repeat the first principles of the problem to be solved), one must diminish the resisting power, namely, the purity and antiquity of the ewes. With a view to this new experiment, one must procure English rams of the purest and most ancient race, and unite with them French ewes of the modern breeds, or rather of mixed blood forming no distinct breed at all. It is easier than one might have supposed to combine these conditions. On the one hand, I selected some of the finest rams of the New-Kent breed, regenerated by Coord. On the other hand, we find in France many border countries lying between distinct breeds, in which districts it is easy to find flocks participating in the two neighbouring races. Thus, on the borders of Berry and La Sologne one meets with flocks originally sprung from a mixture of the two distinct races that are established in those two provinces. Among these then I chose such animals as seemed least defective, approaching, in fact, the nearest to, or rather departing the least from, the form which I wished ultimately to produce. These I united with animals of another mixed breed, picking out the best I could find on the borders of La Beauce and Touraine, which blended the Tourangelle and native Merino blood of those other two districts. From this mixture was obtained an offspring combining the four races of Berry, Sologne, Touraine, and Merino, without decided character, without fixity, with little intrinsic merit certainly, but possessing the advantage of being used to our climate and management and bringing to bear on the new breed to be formed, an influence almost annihilated by the multiplicity of its component elements.

"Now, what happens when one puts such mixed-blood ewes to a pure New-Kent ram? One obtains a lamb containing fifty hundreths of the purest and most ancient English blood, with twelve and a half hundredths of four different French races, which are individually lost in the preponderance of English blood, and disappear almost entirely, leaving the improving type in the ascendant. The influence, in fact, of this type was so decided and so predominant, that all the lambs produced strikingly resembled each other, and even Englishmen took them for animals of their own country. But, what was still

more decisive, when these young ewes and rams were put together, they produced lambs closely resembling themselves, without any marked return to the features of the old French races from which the grandmother ewes were derived. Some slight traces only might perhaps be detected here and there by an experienced eye. Even these, however, soon disappeared, such animals as showed them being carefully weeded out of the breeding flock. This may certainly be called "*fixing a breed*," when it becomes every year more capable of reproducing itself with uniform and marked features. Such was my secret, which, however, has been made no secret at all, but has been declared from the first in my entries at the shows of Poissy and Versailles. Such is the origin of the La Charmoise breed of sheep.

"From the first dropping of our lambs, the strongly-marked English character gave us the strongest hope that they would retain the excellences of the English fathers; and this hope was not disappointed. The young animals as they grew up preserved their beauty of form, maintained their condition without extraordinary food, and did not suffer from weaning. The ewe lambs were carefully preserved, a few ram lambs selected, and the rest castrated.

"The next year the same cross was tried with the same success.

"The third year was still more interesting. Our first ewe-lambs, at the age of 20 months, have been put to the rams which had been saved. The offspring was most equal in quality, though proceeding from parents which were a first cross; indeed they were more level in appearance than the offspring of some native flocks.

"From that time now for some years there has been at La Charmoise a double set of lambs; one set from the New-Kent rams and the mixed-blood ewes, another from rams and ewes, the result of that cross.

"A remarkable circumstance continues to this very year—I mean the perfect resemblance of the two sets of lambs obtained by the two different methods. I have often divided them into lots, and then found it impossible, even by careful examination, to distinguish one set of lambs from the other. This fact is most important—it proves that the breed is established. It only remains, in order to attain the utmost fixity and perfection, that we select carefully the rams and the breeding ewes, the limit of our establishment. We have now the power of selection, in order to keep up that number; and we have great encouragement, in the prizes already won, still further to improve this breed by careful selection."

To Make Berlin fine Castings.—To produce such castings in iron, it is necessary, in the first place, to have a perfect pattern, brass being generally preferred for this purpose; in the next place, the pattern must be accurately moulded. In order to accomplish this, a fine close sand is required, (perhaps Waterford sand would answer,) which must be partially tried and sifted through a fine sieve. When the pattern has been moulded and withdrawn from the mould, the latter is dusted over with fine brick dust made from fresh burnt soft brick. The pattern is now dried, carefully returned to its place in the sand mould and rapped home with a wooden mallet and again withdrawn. If the mould has been sufficiently dusted, it will have a surface as fine as the pattern. The mould or flask is now put into an oven and dried. Before it is quite cold, it receives a coat of lamp black, by putting some oil in an open dish, and using a large wick so that it will burn with considerable smoke. The mould is now held over the smoking oil until it is sufficiently coated with lamp black; when this is accomplished, the flask is closed, clamped or screwed together, and is then ready for the molten metal. This is the way the fine Berlin castings are made. I have seen quite a number of these castings made in our country, by a Berlin workman, who was in my employ.—A Subscriber *in Scientific American.*

Dead Animals.—We have just seen some elaborate discussions on the way of disposing of dead animals. The space might be saved as well as not. If the carcasses are small bury them in a manure heap, and let the whole lie a few months. The mass will all be good manure then. If they are large bury them in the ground, in an orchard or garden, when the decaying matter will be taken up and used by trees and plants, or if you can do so easily cover the whole with clay and turf, till all the bones shall be decomposed. Use the covering for manure, and put the bones beneath the roots of the next apple trees or pear trees you can transplant. You can thus profitably dispose of all the carcasses, from a dead mouse to a dead ox, that may encumber grounds.—*Exchange.*

A FEW REMARKS ON AGRICULTURAL CHEMISTRY.

"People thrashed their corn with fiery flail,
And ploughed with horses harnessed by the tail."

It will be necessary in the course of the present remarks to employ a few technical terms, which might at first appear difficult to some, but the difficulty is only imaginary, and will soon vanish. Every trade and profession, even that of the husbandman has its technical terms, which appear very hard looking to those who hear them for the first time; but these terms do away with the trouble of long descriptions, and, when once acquired, greatly facilitate our progress.

We will endeavour to give an outline of some of the leading principles of agricultural chemistry, and to make use of the most simple and familiar language, so that the subject may be easily understood and remembered. To assist the memory and facilitate reference, the following arrangement will be observed.

I. The food which our crops require for their support.

II The origin and composition of natural soils.

III. The nature and use of artificial soils or manures.

First, then, of the food or materials which our crops require for their support.

It will be evident, that a knowledge of the food which plants require for their growth, and of the essential conditions upon which their life and perfection depend, must be regarded as of the greatest importance to the practical farmer. Agricultural chemistry teaches us, that, for the support of the life of plants—for the growth of the stalk—for the formation and perfect development of the seed—*sixteen* substances are required, and that of these the plant can procure only *four* from the air which surrounds it, and the water it drinks in from the clouds; the remaining *twelve* substances must be procured from the soil in which it grows, or be supplied by the agency of man, when the soil does not contain them.

It was formerly erroneously supposed that the atmosphere, as that immense ocean of air which surrounds us is termed, was a simple element;* but it is now well known that it is most complex in its composition, being a mixture of certain *airs* or *gases*, known among chemists by the names of OXYGEN, NITROGEN, and CARBONIC ACID, and containing diffused through it at all times, a small but essential quantity of AMMONIA,† and a variable proportion of WATERY VAPOUR. The three substances last mentioned, carbonic acid, ammonia, and water, are compound bodies. Carbonic acid being formed by the union of oxygen gas, with a black solid inflammable substance, having the appearance of charcoal, called CARBON; ammonia being a compound of two gases, nitrogen and hydrogen; and water being composed of the latter, and oxygen. It is by the decomposition of these compound bodies that the growing plant

* By the term *element*, chemists understand a simple substance from which no other kind of matter can be procured; thus iron is an element, as we can procure from it nothing but iron, while sulphate of iron (the substance commonly termed green vitriol) is regarded as a compound body, as we are able by chemical processes, to procure from it two kinds of matter, sulphuric acid and iron.

† Ammonia is a kind of air which, when mixed with water, forms the liquid sold under the name of hartshorn. It produces the peculiar pungent smell which we perceive in stale urine, in hot stables, and in the neighborhood of badly kept manure heaps.

receives those elements which are supplied to it from the atmosphere, and which may be regarded as the essential constituents of its food. Those who have seen a bulbous plant, the hyacinth for example, thriving vigorously in a glass of water, know that the presence of the soil is not a necessary condition of vegetable life; but to all those plants which are the subject of the farmer's care, the presence of the substances contained in it is absolutely indispensable. During the life of a plant, the carbonic acid which is taken into its circulation undergoes decomposition, its oxygen is given off from the leaves, while its carbon remains behind, and becomes a part of its structure: and, by certain processes, we are able to discover that it forms nearly 50 per cent. of all our cultivated plants.* Ammonia and water also undergo decomposition when absorbed by plants—the former yielding to them its nitrogen, the presence of which is necessary to the formation of some of the most valuable ingredients of our crops; and indispensable for the support and nutrition of animals using them as food and the latter supplying them with hydrogen, which is essential to the production of their starch and oil.

If we take some pieces of straw, or a few grains of wheat, and hold them on a piece of metal, a tea-spoon for example, over the flame of a lamp so as to heat them strongly, they will char and burn away, leaving only a small quantity of ashes. That which disappears is usually termed the ORGANIC part of the plant, and consists of the four substances, Carbon, Nitrogen, Hydrogen, and Oxygen, which have just been described as the elements supplied to the plant by the atmosphere. The incombustible matter which remains behind, when examined, is found to contain all those substances which the plant had withdrawn from the soil, and is termed the INORGANIC part of the plant. Again, if we take a piece of animal matter, such as a bone, and expose it to a strong heat, we find that a part of it also will be consumed, its organic part, and that an incombustible matter will be left containing nearly the same substances as were contained in the inorganic parts of wheat. During the decay and putrefaction of both plants and animals precisely the same thing occurs as we observe when we expose them to heat, their carbon, nitrogen, hydrogen, and oxygen, gradually escape into the atmosphere, from which they were originally derived, and there unite together once more to form the carbonic acid, the water, and the ammonia, which are destined in process of time, to build up the bodies of another generation of man and animals, and to clothe the face of the earth with a new vegetation. The inorganic part of a plant weighs considerably less than the organic, as is found upon repeating the simple experiment described above, with a portion of any vegetable substance. Burn, for example, 100 lbs. of potatoes, and we will not procure more than about four pounds of ash; yet this small portion of ash is as essential to the full growth of the potato as the 96 lbs. which we burn away.

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* 100 parts of the following substances, when all their moisture has been expelled by drying, contain—

	CARBON.	HYDROGEN.	OXYGEN.	NITROGEN.
Wheat (the grain) ...	46·1	5·8	43·4	2·3
Oats do. ...	50·7	6·4	36·7	2·2
Potatoes.....	44·0	5·8	44·7	1·5

The quantity of dry material contained in 100 parts of those substances is, in Wheat, 85·5; Oats, 79·2; Potatoes, 24·1.

The great object of all cultivation is to introduce into plants those substances which are adapted to the food of man. In their natural state they receive, from the air and the soil, merely food enough for their own support, the elements required to form the blood of man are contained in them in very small quantities. It must always be borne in mind by the farmer, that our cultivated crops are in a state as much unlike that intended by nature as the stall-fed ox, which has been made to attain an enormous development of fat by excessive supplies of the most nutritious food, is unlike the cow which is obliged to seek its nourishment over the extensive range of scanty mountain pasture. Transplanted by man from their native soil, and collected for his convenience around his dwelling, there has been produced by art a forced and unnatural development of all their parts, but especially of their seeds, and to maintain this forced development the utmost care of the farmer is required; for should he trust his fields to nature, his crops would again return to their natural state, or perhaps entirely disappear. It is well known that the produce of an acre of the wild potato in Chili, its native country, would scarcely suffice for the daily consumption of an Irish family, yet the wild plant and the cultivated are equally exposed to the influence of the atmosphere; the difference in their value as food must therefore depend entirely upon the amount of nourishment supplied by the soil. When the incombustible matter which remains behind after burning a piece of animal matter, such as bone, is examined by the aid of chemistry, we find that it consists chiefly of an acid containing phosphorus, called *phosphoric acid*, with some *lime* and *magnesia*. The composition of the ashes of animal matter is similar to that of the incombustible part of vegetables, and we find if we examine a table in which the composition of bone, and of the grain of wheat is given, that the bones of animals contain from 67 to 68 per cent. of inorganic matters, consisting chiefly of compounds of phosphoric acid, (*Phosphates*), while wheat contains so much as 96 per cent. of the same substances. It was evident then, that upon the presence of the phosphates in our wheat, its value as food chiefly depends. The successful practice of agriculture requires that the farmer, whose object it should be to produce the largest amount of food upon the smallest possible ground, should make himself acquainted with the mode of supplying his crops with those substances which are indispensable to their full development. If those substances do not exist in his fields in sufficient quantity, his wheat and his other crops may spring up, but they will not thrive—and even if they did grow they would be useless as food; for, unless the plants which we consume contained phosphoric acid, magnesia, and lime, our system could no more form bone or muscle, than a carpenter could form a table if we kept from him the wood.

For thousands of years men have been content to remain ignorant of the beautiful relations which, ever since the creation, have connected together animal and vegetable life. They composed learned treatises upon the geography of the moon, and the nature of its inhabitants, while they neglected to investigate the composition of the soil of this globe, and of the plants which ministered to their own existence.

The careful study of the food of plants by Liebig, gave us the first correct notions respecting the true constitution of the soil, and of those curious processes by which

the incombustible inorganic substances just described, enter into the circulation of our grain and other crops which are cultivated as food, and led the way to the establishment of agricultural chemistry, upon the immoveable foundation of observation and experiment. Before that, when any of those inorganic substances were discovered by the chemist to be contained in plants, it was imagined that they were there only by accident; but it has now been proved beyond all question, that they are invariably present in our crops, contributing not only to their growth, but, by a wise and beautiful management of the Creator, affording to animals those substances required for the formation of their bodies. Upon analysing the dung, and other excrements of animals, we find that these inorganic matters are again discharged from the body, again to be taken up by the vegetable tribes: and thus, ever on in an eternal round, they perform the part assigned to them in the economy of the universe, in contributing to the support of organic life!*

Amongst the most interesting and instructive researches which have lately been made respecting the substances which plants withdraw from the soil, are those of two German chemists, Weigmann and Polstorff. These philosophers caused the seeds of different species of plants to vegetate in sand which had been heated to redness, and treated with acids, so as perfectly to remove all organic matters; and also in artificial mould, made by mixing together the substances which are contained in fertile soils. By careful analyses of samples of the seeds employed in these experiments, the exact quantities of the inorganic elements contained in them were ascertained. The soils prepared as described, were carefully protected, by being enclosed in cases, and watered with pure water free from ammonia. In the pure sand it was found that the plants shot up, but soon decayed; while in the artificial soil they flourished vigorously, producing ripe fruits and perfect seeds. The plants obtained in both cases were analysed, and the result was, that the plants grown in pure sand contained about twice the weight, and those grown in the artificial soil from four to five times the weight of inorganic substances in the seeds used. To ascertain how the increase in the weight of the inorganic elements grown in what was considered as pure sand had occurred, a portion of it was submitted to analysis, and was found to contain silica, potash, lime, oxide of iron, and other substances, resulting from the decomposition of some grains of felspar (one of the ingredients of granite) which were contained in it, and which had been rendered soluble by the action of the carbonic acid of the atmosphere.

Thus when we understand that plants extract from the soil the inorganic substances existing in it, we easily comprehend how what is termed *exhaustion* of a field is produced; for, let us suppose, that in the soil of a field there are just 520lbs of one of those substances, silica for example, which is particularly required for the growth of wheat, and that by an examination of the whole amount of crops raised in the field, we find it has taken up 260lbs of that substance, it is evident that if we raise another crop of the same kind, in the following year, the field must have no silica for

* The inorganic substances which have hitherto been discovered in the ashes of land vegetables are, according to the researches of Drs. Will and Fresenius of Giessen, as follows:—Potash soda, lime, magnesia, peroxide of iron, oxide of manganese, silica, phosphoric acid, sulphuric acid, carbonic acid, chlorine, flourine.

plants in the third year, and the soil will then be exhausted for wheat. But different plants require different quantities of silica, and the other substances supplied by the soil for their support; so it happens that a soil which has become exhausted, and totally barren to one description of crop is, in the highest degree, nutritious to another. Thus, upon a field which would yield inorganic substances sufficient for the growth of one crop of wheat, we can raise three crops of oats, and in a field containing the quantity of silica 267lbs mentioned as required for one crop of wheat, we would have more than sufficient of that one element for five harvests of peas. It is upon the knowledge of this fact that the *rotation of crops* is founded the judicious application of which has been of so much service to agriculture. We are now prepared to believe that the presence of the inorganic matters which remain after burning a plant is not accidental, but that they form an essential part of its food, absolutely necessary to its full development. Different plants require different *proportions* of those elements for their growth, and it will at once suggest itself, that it is only by obtaining an accurate knowledge of these proportions that we can, with any degree of certainty, decide upon the kind of soil best adapted to the production of any species of crop. It is only by the assistance of the chemist that we can hope to acquire this indispensable knowledge.

How to Save your Trees.—If you find some of your transplanted trees flagging, and looking as if they were going to say good-bye to you, don't imagine you can save them by pouring manure water about their roots. You might as well give a man nearly dead with debility and starvation, as much plum pudding as he could make a hearty meal of. The best thing you can do is, first to reduce the top a little more (or a good deal more if needful), for the difficulty most probably is, that we have more top to exhaust than root to supply. Then loosen the soil, and water it if dry, and lastly, *mulch* the ground as far as the roots extend. This you may do by covering it with three or inches of straw, litter, tan-bark, or something of that sort, to keep the roots cool and moist, so as to coax them into new growth. Watering a transplanted tree every day, and letting the surface dry hard with the sun and wind, is too much like basting a joint of meat before the kitchen fire, to be looked upon as decent treatment for anything living. If your tree is something rare and curious, that you are afraid will die, and would not lose for the world, and yet that won't start out, in spite of all your wishes, syringe the bark once every night after sunset.—*Downing.*

Beans for Sheep.—Bean straw is valuable for sheep, and when properly cured they eat it with avidity. In a chemical analysis of beans, it is found that they abound with a greater quantity of the elements of wool than any other grain or vegetable, to make sheep produce heavy fleeces. They will eat them with avidity, whole or ground, even in a damaged state. To our store flocks during the winter season we generally give a pint of beans per day, and potatoes. Corn is good for fattening sheep, but not so valuable as beans, oats, and most other grains, for the production of wool.

To Destroy Grubs in the Head of Sheep.—Make a hole in a standing board, 24 inches from the ground, and large enough to let a sheep's nose through up to the eyes. Let one man hold the sheep in this position, another with with a syringe throw up each nostril of the sheep a slush of yellow snuff and water, strong enough to make them sneeze, and they will thus throw out the eggs of the fly that are deposited in July and August.—*Cor. Ohio Cultivator.*

Lemon-Juice in Dropsy.—Lemons are recommended for dropsy in a Russian medical journal, and are said to be benefical in the most hopeless cases. The first day one lemon was given, after taking the peel off, and cutting it up into small pieces in sugar; the two following days three were given, and afterwards eighteen every day. For nourishment, meat was given. In every case the water came off on the seventh day.

THE WHEAT CROP AND ITS ENEMIES.

We are glad to notice a very general disposition among those who do not, as well as those who do, cultivate the soil, to render aid in checking, if that be possible, the progress of the enemies now threatening the destruction of our wheat crop, the staple production of Western Canada. The press has for some time teemed with articles, communications, and suggestions on the subject, and much useful information has thereby been disseminated. In some townships the farmers have met together and compared notes on the subject. We find the following report of one of these meetings in a Haldimand paper; and though some of the views propounded are obviously unsound and not remarkable for shrewdness, yet the report as a whole is worth perusal. It may suggest to the farmers of other townships the propriety of meeting together for similar purposes more frequently than they do.

Report of a meeting of the farmers of the township of Sherbrooke, held on the evening of 8th August, 1857.

A. McD. Lockhart, Esq. being called to the chair, and Wm. Chalmers, Jr. acting as Secretary, the Chairman opened this meeting in substance as follows:—

"Gentlemen, the object of this meeting as you all know, is to consider the extent and cause of the deficiency of our wheat crop, and to suggest if possible, a remedy for the evils in future. The causes, as it is generally admitted are three in number, viz: An unpropitious season, rust, and insect destroyers. The atmospheric cause operated in this way, seeding was dry and very late, the tender plant had to contend with the most trying of winters, the spring was wet, cold and late, the plant was thus checked in all its earlier stages of growth, and hastened through its later stages by weather unusually warm and accelerating, maturity being hastened too rapidly, a shrivelled grain is the consequence; however, to know that this cause existed and that prevention was beyond our power is all that can be said.

Of the rust I am happy that I can speak to the meeting in well satisfied assurance. Science has made the investigation, and I have merely to relate to you the result of her disclosures. A number of years ago, rusted wheat was examined by the microscope, and rust was ascertained to be a minute parasitic plant, growing on the wheat stem exactly as moss does upon trees or mould, which is also a perfect plant, upon soft vegetable and animal matter. The rust then is a plant, perfect in all its parts, as much so as the largest oak in the forest, and carries its seed as the oak does its acorn; but its resemblance to moss on trees is the most striking. Trees in and around swamps are the most covered with mosses, and wheat on and around what had once been swampy is the most rusted; the remedy then becomes apparent, reduce the black vegetable mould by exposure to the sun, by sowing with crops requiring to be hoed, as corn, potatoes, turnips, &c., and by plowing deep and mixing with the solid soil beneath, and lastly by using every possible means to keep the surface dry, as without moisture the seeds of this plant cannot germinate. Now this moisture is supplied by exhalation from the surface of spongy wet ground, by a heavy dew, continuing most of the day under a cloudy sky, with still warm air, and by slight frequent showers with heat.

We come now to the most recent, most difficult and darkest part of the subject of enquiry, *The insect destroyers*, and here I am at a loss what to say. I know too well they exist, but how, or in what shape they come into existence, through how many stages of being they pass, where their abiding place is before coming into the wheat or after leaving it, and what is the term of their natural life, and many other things connected with those unwelcome visitors, I feel no shame in confessing that I am profoundly ignorant; the government has encouraged the enquiry by offering premiums for the best essays, or in other words, the fullest investigation into the whole subject. Government has been blamed and ridiculed for this, it is in my estimation, the only hope of success, and yet hope falters, not because the Province is lacking in men equal to the task, but because those men, really qualified, may lack time and opportunity to continue their investigations to the full development of the question. There are at least two distinct insects which attack the kernel, the one in form of a caterpillar, the other in form of insect larva.

The former large and active, the latter small and with little animation and of a bright orange colour. Although from the opinions I have already expressed, I anticipate little that is really valuable to come from farmers who are farmers only. Yet it is well for every one present who has an opinion on the subject to give that opinion fully; nevertheless, I would venture to forwarn them that mere opinion unsupported by facts in this, as well as in all other investigations, is of very little real value. And we must look to science at last for a full revelation of what is now dark and mysterious; and as an illustration of the truth of what I say, I would refer you to what I have already stated, about rust. What farmer would have ever discovered the exact truth, and although it has now been discovered for years, how many are there that know the simple but valuable fact, and how many are there still giving their vague unsupported *opinions*, their "stands to reason," *beliefs*, about overflow of the juices, bursting of the straw, running down the stalk, dropping on the leaf and all that: and how many are still talking of being struck with rust, as trees are struck by lightning? Then there is the bug in the pea, which has been with us now for many years, and how many foolish, uncertain, doubtful, disputed notions do we not hear about that insect? And who is nearer the truth now than when it first made its appearance among us?

The chairman after stating that it is our duty to give our views to the world, and trusting that many other townships would follow our example, called upon Mr. Logan, who he understood, had some valuable suggestions to lay before the meeting.

Mr. Logan then rose and promulgated the following.—The speaker had not the same respect for science that the chairman had, he believed that a grain of experience is worth an ounce of theory, as many might be skilful in hunting bees, but the man that cut the tree down got the honey. He did not care where the pesky things were born, how they were brought up, or who went to their funeral, if he could find an easy way of throwing snuff into their eyes, or salt on their tails, and so get rid of them, it was all he wanted to know: now he believed he had an easy and effectual way of doing the same thing. Every one had seen a candle set down in the month of July, the candle immediately surrounded with thousands of small flies, and hundreds of dead corpses lying at the foot of the candle stick—that was his plan and he took it from nature. and nature was fact—he would make a great many bright glowing lights all around the field every evening for a week or so, just at dark, and he would warrant the meeting that every weevil, fly and midge, to say nothing of a whole host of other kinds of vermin would be completely eradicated and never muster in the ranks of war again.

Mr. R. Spec asked the speaker if he had tried it.

Mr. Logan replied that he had not, but was sure it would succeed.

Mr. Spec then said, try it first and then make us convinced afterwards.

Mr. Spec then rose and said, that in his opinion, the only effectual way to extirpate the weevil and caterpiller, was to pass a prohibitory act against the sowing of wheat, except in small experimental quantities, not exceeding one tenth of an acre for a number of years, or until the insects had entirely disappeared; that he said was the only way the bug in the pea could be exterminated, and he had thought of writing to our representative Mr. McKenzie, to that effect.

Mr. Logan asked if he had tried it.

Mr. Spec said he had not sown peas for several years.

Mr Logan again asked if the bugs were gone.

Mr. Spec replied that his neighbour this year has a fine field of peas of a superior quality, and there does not appear to be a bug in them.

The chairman doubted the wisdom of any government trammeling the industrial resources of the country by any prohibitory act.

Mr. Spec concluded by saying that in his opinion the crop of wheat throughout this township is not more than one third a common average.

Mr. S. Hood then rose and said he was almost a stranger in the Township, but that the question before the meeting was one of such painful interest, that he would not stay back on that account. He, too, in common with others, had his own ideas on the subject. His own observations and the reports of others, convinced him that the outside of the field was most attacked, and that the centre was comparatively unharmed; from which he would infer, that the insects originate in the grassy borders along the fences and grassy spots around stumps. A few accidental ears of bearded wheat in the centre of a hay field contained more weevil than any similar number of ears in his wheat field. Does this show that grass lands are favorable to their production?—If so, wheat should not be sown

in juxtaposition with grass lands, the fences should be removed, and the strip of ground they occupy ploughed up, but whether they burrow in the ground, or find shelter beneath this grass, or lodge on some part of the plant, or like the musquito, pass the day in any shady place; or, whether, like the musquito, moisture is absolutely necessary for their reproduction, or, like other insects, pass through their transformations regularly, have all to be brought to light by the skilled and practiced naturalist, a task in which we farmers do not know how to take the first step. Science alone is able to grapple with the matter, and it is wonderful what science has achieved in other departments of industrial art, and still greater no doubt are the discoveries yet in store for her. Entomology has heretofore been considered by many as an useless waste of intellectual application. So also was Electricity only a few years ago, amusing, curious, but nothing more, and little did Galvani think when he employed a pair of zinc and copper plates to set a dead frog dancing, or Voltaire, when he multiplied the combination, that the science they were then founding, would, within half a century, be employed in transmitting news of the utmost importance thousands of miles with a speed only surpassed by the light of the sun, in multiplying works of art in metal, in engraving, in producing light of surpassing brilliancy, and many other applications equally wonderful.

With regard to Government and their prize essays, my only complaint is that the Government has not gone far enough in the same direction. Sir William Logan and a numerous staff have been employed for a number of years in investigating the mineral wealth of the Province, and excellent service has the good knight rendered his country. This is as it should be, this is making science the pioneer of art. Cannot the same rule hold good as regards agriculture, decidedly the most in need of scientific aid. The poor farmer is forever compelled to grope in the dark with nothing to guide him but his own untaught judgment. And yet I believe the day is not far distant when the farmer will consult scientific and professional agriculturists in all his important operations, as he now consults a physician with regard to the health of his family.

The British Association suggests to Government certain investigations, likely to promote the public welfare, but beyond the fiscal powers of the Association. Parliament grants them funds to carry out their views, and much good has resulted; we have a miniature of the Association in the Canadian Institute; let the Institute name a Committee, and Government furnish the means, and in the lapse of, say two years, authentic information could be arrived at. Those who persist in practical men—meaning farmers—alone, to prosecute the subject, are deeply in error. Those who expect farmers, who govern themselves in sowing, reaping, and other operations by the change of the moon, and are in the constant habit of employing knavish Doasterswivels, with the crotch of witch-hazel, to show them where to dig for spring water, must be as far gone in lunacy as the deluded farmers themselves.

After various remarks by Messrs Niece, Root, Chambers and others, the meeting was adjourned for two weeks, when the subject would again be resumed.

SHERBROOKE, August 8th, 1857.

MALAGA RAISINS.—HOW PREPARED.—The process is the most simple imaginable. As soon as the grapes begin to ripen, the vinedressers pass through the vineyard, and cut the clusters off from the vines, and leave them on the naked ground, turning them over daily, until the heat of the sun and the warmth of the earth upon which they lie, have baked and dried them, when they are gathered up, put into boxes, and are ready for use. This is all the wonder and mystery there is in preparing this delicious fruit. To my inquiry why they did not place leaves, or some clean substance of the kind upon the ground for the fruit to lie upon, I was told that naked ground was much better, that in fact, the fine flavour of the fruit was dependent more upon the warmth of the earth, than the more external heat of the sun. Care has to be taken, however, that the fruit does not get wet while undergoing the process. But as it seldom rains during the summer or vintage in this country, it is very rarely that the fruit has to be taken up before it is dried.

SWALLOWING POISON.—If poison should be swallowed accidently, take two tablespoonfuls of ground mustard, mixed in warm water. It will operate as an instantaneous emetic.

Good fruit is something more than a mere luxury; it is highly nutritious and conducive to health. Every family should be well supplied with it; and children be allowed to eat of it freely *when ripe*.

TO CLEAN CHESS OUT OF WHEAT.

It is supposed by some farmers that wheat actually turns to chess in the process of growing. The following communication to the *Genesse Farmer* by John Johnston, of Geneva, N. Y., will throw some light on the subject.

"Some twelve or fourteen years ago, two farmers and myself went to call on an enterprising farmer, not fifty miles from where I now write. We found him sowing wheat. He quit his work, and politely showed us over his farm, out-buildings, &c., all of which were neat and well arranged—showed us what improvements he had made by underdraining, &c., and asked us politely to stay to dinner, which we declined, as we had other arrangements. We accompanied him into the field where he had been at work, and I put my hand in a bag of wheat and took out a handful to look at it, but what was my surprise to find it full of chess! I said I was astonished to find a man of his reputation as a farmer sowing chess. He looked me right in the eye, evidently irritated by my abrupt reproof and said, 'How the h—l would you help it, when it was there?' I told him I would blow it out. He looked up again evidently a good deal irritated, and said, 'Neither you nor any other man can clean it out. He had a first-rate mill, and had put it four times through, and yet there it was: and he said he would bet me one hundred dollars that I could not clean it out. I told him it would not be justice in me to bet with him, as I had done the same thing so often that I knew I should have no difficulty in doing it; but if he would take a bag of wheat to the barn, if I did not clean out all the chess in going once through the mill, I would pay him five dollars for his trouble. He said 'done,' and took the bag on his shoulder and started for the barn; but before he got out of the field he threw it down, saying he had 'plenty of the same kind in the granary. After going to the barn, I took off the shaking-rod of the fanning mill, and took out the riddles. We carried the fanning mill into the granary, and I requested one of my companions to turn the mill steadily, not very fast, and not to stop until I notified him that it was all out of the hopper. I put in the wheat, and we run through about two bushels. The owner carried it to the barn floor, near the door, and all the three gentlemen got on their knees, and examined it, and they could not find one chess seed. After examining thoroughly, the owner rose from his knees, saying in a subdued tone, 'I see a man can never be too old to learn, and I have learned something. I then said, 'Gentlemen, you had better look behind the mill—perhaps there was no chess in the wheat!' The owner said he knew 'there was plenty of chess in it. To make sure, I went and swept up behind the mill, and I should think I got at least four quarts of chess. The owner then said, 'Gentlemen, your horses shall go in and be fed, and you shall not leave until you take dinner. I have got paid for many dinners.' So we dined, and got an excellent dinner, and left without saying 'chess' again.

"I have never had the pleasure of calling on the gentleman since. I have thought I should like to see his wheat, to ascertain if he raised chess. I have seen him often since, but I never mentioned 'chess" to him, as I knew he felt a little grieved at his obstinacy in not believing me. I have been thus particular in making a long story out of a little matter, to try, if possible, to induce men to clean their seed, so that there may be no 'more wheat turning to chess;' but as long as chess is in your neighborhood, you are always liable to occasionally having a little. Your neighbors' cattle may get on your fallows when they have been eating chaff with chess in it, or swine when they have been eating screenings of wheat with chess in it. You may in this way get chess from their droppings, but still that will only be a trifle.

"Now, brother farmers, I beg you will try blowing the chess out of your wheat for a few years, and I know you will never again say wheat produces chess. I wish you Messrs. editors, would go up the Genesse Valley about seeding time, (I mean wheat sowing,) and see that they sow clean wheat. I know that some of the best wheat growers in the country believe wheat that is damaged by the treading of horses or cattle, or nibbled off close by sheep, geese or turkeys, produces chess. Now, I know they are mistaken. It is only because the wheat is killed, that the chess gets a better chance to grow. Those who sow chess, get chess; those who do not sow it, do not get it."

LEMON PIE.—Pare 2 fresh lemons, chop the rinds, and grate the rest. Take ⅔ cup of flour, 3 cups of sugar, 2 water, 1 egg. Beat thoroughly.—This will form material for 3 pies.

WHEAT IN WESTERN NEW YORK.

(*From the Rochester New Yorker.*)

The culture of Winter Wheat has to a large extent been abandoned in Western New York, and in many instances to the profit of the farmer. If, for instance, it has been pursued upon a poor soil—one worn by long culture of this grain, perhaps, or by methods of husbandry unsuited to its wants, and but partially developing its productive capacity, it has been followed without profit, and may be well laid aside for other branches of agricultural production. Cropping with wheat regardless of the character of the soil, regardless of the changes of seasons which seem to have taken place, and above all regardless of the character and habits of the new and potent insect enemy it must now contend with, has resulted in the loss of millions to the farmers of Western New York. Yet with proper attention to these influences, we would still advocate a share of attention to this late great staple of this section of the country.

What are the demands of the wheat plant, and what the causes of its general failure among us? A partial consideration of these questions will show us, that under certain circumstances its culture is still profitable, and that under other certain circumstances we but throw away the labour and expenses of attempting its production.

To grow wheat, we need a fertile, well-drained soil, either a porous but heavy loam, or a clayey soil made porous by artificial drainage. A soil containing lime, and above all rich, so that it shall be capable of sustaining a vigorous and healthy growth, is *now* a necessity of the wheat crop. It must be a porous soil, that the plants may not winter-kill, and that their maturity may not be retarded by a late, wet spring and summer. A rich soil, if liable to suffer from the long continued rains of spring, will be a cold soil as well, and produce an unhealthy vegetable growth, maturing but slowly as well as unevenly, and hence extremely liable to the various casualities which affect the wheat crop. What is called a *warm, quick soil* is needed, as that secures healthy and perfect growth.

Another demand of the wheat crop is *early sowing*, so that the plants may get a fair autumn growth, be prepared for the rigor of winter, and for tillering, so as to fill all the ground in the spring. Early sowing also tends to hasten the ripening of the crop, at least to some extent. Attention should also be given to selecting the most productive and vigorous varieties,—those of early maturity, of course, are to be preferred.

That the soil be well tilled, is also a requisite of the wheat crop. It should be in *the best order* possible; if manured at this time, the fertilizer applied, should be intimately mixed with the soil, and near the surface as may be. Let the land be in fine tilth, and then drill in the seed, and an additional security is had against winter-killing and other injuries consequent thereon.

The alleged cause of the failure of the wheat crop, and its consequent abandonment, is the *wheat midge*, and its ravages have been truly appaling. But many serious failures occurred before this injury became general, or was considered of much account—failures from *poverty of soil* caused by wheat after wheat, &c.,—from *lack of drainage* and consequent winter-killing and rust,—from *late sowing* on imperfectly prepared ground, also inducing blight and rust, and from *poor management* generally. All these causes prepare the wheat plant for the attacks of the midge, and it will generally be found that the poorer and later the wheat, the less there is left by the weevil to reward the labor of the farmer; while the best wheat, *the brightest, earliest and heaviest growth*, though injured to some extent, still yields a fair product, and pays at present prices a good profit.

The average injury by the midge in many instances known to us, has been from five to seven bushels per acre—the lighter and later the wheat, the greater the comparative loss. A light yield say ten bushels per acre, will be one half or more destroyed—a good crop of twenty-five or thirty bushels per acre, will seem comparatively uninjured, though one sixth of it has gone to feed the insect. Hence the importance of securing a good growth, for a light one fails to repay the labor of its production. Hence we advise the sowing of *only* such soils as are in fertility and characteristics *suited to the crop*, and of *sowing these early to vigorous and early maturing varieties*. Let our farmers again select such soils and situations, and sow wheat again, but only so much as they can put in in the best order on a rich, warm porous soil, and we think they will not long have occasion to buy flour or use so largely of other grains as many are now obliged to do.

One breed of animals does not suit all localities. Mountainous regions, bleak northern latitudes, rich warm pastures, and torrid climates, each have their own peculiar species.

A STORY FOR LARGE FARMERS.

The last number of the *Farmer's Magazine* contains the following under the head of "Mr. Bakewell's anecdote, *alias* good farming in a nutshell." The lesson inculcated is one which so many farmers would profit wonderfully by learning, that we transfer the article to our columns:—

"The far-famed Mr. Bakewell, of Dishley, Leicestershire, the founder of the new Leicester sheep, and the man who lived a century before his day, used to tell an anecdote with exceedingly high glee as a farmer of the olden school and golden times. This farmer, who owned and occupied 1,000 acres of clay land, but poor in point of money, had three daughters looking their father very hard in the face for money. He went to Mr. Bakewell to know what to do for them. Mr. Bakewell told him to keep his money and give each daughter some land, and make it known that he would do so, and he would very soon lessen his family at home. He then made it known that he would give his eldest daughter 250 acres of land. I need not add that the lady had forthwith plenty of beaus to choose out of: the father's house was haunted with young men, and she soon got married, and the father gave her the portion that he promised, but no money; and he found by a little more speed and better management, the produce of his farm increased. Three years after he made it known that he would give his second daughter 250 acres of land, which drew shoals of beaus, and she soon got married, and her father gave her her portion. He then set to work and begun to grub up his furze and fern, and ploughed up some of his poor furze land—nay, and where the furze covered in some closes nearly half the land. After giving half his land away to two of his daughters, he found the produce of his farm increased; because his newly broken up land brought him excessive crops. At the same time he farmed the whole of his land better, for he employed four times the labour upon it; had no more dead fallows the third year; instead of which he grew two green crops in one year, and ate them upon the land. A garden, Mr. Bakewell told him, never required a dead fallow. He no more folded from a poor grass close to better the condition of a poor ploughed one. But the great advantage was, that he had got the same money to manage 500 acres as he had at first to manage 1,000 acres.—Three years after the second marriage, he made it known that he would give his third and last daughter 250 acres of land. She had a beau who stood in readiness, and three or four more within call, and she was married in a week. She thought it never too soon to do well, and the father portioned her off with land. He then began to ask himself a few questions, how he was to make as much of 250 acres as he had done of 1,000 acres. He found necessity was the mother of invention. He then paid off his bailiff, who weighed twenty stone; he found that he had been helping the men to manage the master, instead of helping the master to manage the men. He then rose with the lark in the long days, and went to bed with the lamb. He got much more work done for his money, for instead of saying to his men, 'Go, and do it,' he said, 'Come, my boys, let us go and do it." He found a great difference between "come" and "go." He made his servants, labourers, and horses move faster—he broke them from their snail's pace: he found the eye of the master quickened the pace of the servant. He grubbed up every bit of furze on the farm, and converted a great deal of corn into meat. He preserved the black water, the essence of the manure, and conveyed it upon the land. He cut down all his high hedges, straightened his zigzag fences, cut his serpentine water-courses straight, and gained much land by so doing: made dams and sluices, and irrigated all the land he could. Some of his hedges and borders were covered with bushes from ten to fourteen yards in width, and some of his closes were no wider than streets; and there he grubbed up the hedges and borders, and threw several little closes into one. He found that, instead of growing little thorn-hedges and haws, to feed foreign migratory birds in the winter, he ought to grow food for man. "I sold him long-horned bulls, and let him rams," said Mr. Bakewell," and told him the value of labor, and what ought to be performed by a certain number of men, working oxen, or horses, within a given time. I taught him how to sow less, and plough deeper and better, and that there were limits and measures to all things; but, above all, the husbandman ought to be stronger than the farm. I taught him how to make hot land colder, and cold land hotter; light land stiff, and stiff land lighter I advised him to breed no inferior cattle, sheep, or horses, but the best of each kind, as the best consumed no more food than the worst. Size has nothing to do with the profit. It is not what an animal makes, so much as what it costs making.

My friend became a new man in his old age, and died rich, by Mr. Bakewell's improved management.

WINTER-KILLING OF GRAIN AND OTHER PLANTS.

The phenomena which are commonly classed under this head are various, and the causes which produce them must also vary. Some of them are undoubtedly beyond our control; but others it is in our power to obviate, or at least to alleviate. More careful observation, and a collection of facts, will aid in determining these causes and the corresponding remedies.

Winter grain, as wheat and rye, suffer more than the common grasses, yet they will often endure an exposure which is astonishing. Last winter, rye, with a bare surface exposed to the fiercest north-westers, during a zero temperature, not only survived, but came out in fine condition. But, if this exposure is accompanied with frequent freezings and thawings, the result is different—the roots are thrown out of the ground, torn and weakened, and if the plant lives at all it retains but a feeble vitality. Clover, under the same circumstances, suffers even more severely and entirely dies out, when the rye may live. This freezing and thawing is more destructive where the soil is moist or of a tenacious character, called *heavy*. The roots of clover are in this way so laid bare that they would die even without the cold. Some other plants as parsnips, are killed by this severe freezing in a damp soil, or where water stands on the surface. In the spring several inches of the top of the root will be found decayed, while the lower part remains sound. The biennial flowers, mullien pink, foxglove, and Canterbury bells, will not endure this severe freezing without protection.

Various shrubs, as some varieties of roses and the flowering almond, will live if the soil is well drained, while upon a moist soil with the same exposure they will be killed to the ground. The cause is not the same as in the case of winter grain, and the herbaceous plants just mentioned, for these meet the winter at all periods of their growth, and continue to grow whenever the ground thaws. But it is necessary that the shrubs should fairly mature their wood, and thus prepare for winter. A well drained soil enables them to do this most perfectly, and thus prepared, shelter from piercing wind being added, they will endure almost and degree of cold ever experienced in our climate.

The flower buds of some fruit trees as the peach, are killed by extreme cold, though the wood, if well ripened, may survive. Last winter, with us, at a temperature of eighteen degrees below zero, they were all killed, except those of some blood peaches. The young wood suffered somewhat, but they still ripened a fair crop of fruit, while other varieties of peach as well as apricots, did not produce a single blossom. At fourteen degrees below zero, a previous winter, the flower buds on a nectariane were all killed except on one limb, which being covered with snow, bore fruit, while the peach generally produced a fair crop.

The different kinds of grass and other plants which clothe our fields, are all more or less affected by the same causes. Those that are of the least value or positively injurious often endure the winter best, and take possession of the space vacated by better plants. Once noticing the extreme prevalence of a species of golden rod in the pastures of a good farmer, and throughout the neighborhood where the soil was similar, we asked the cause of its abundance. He replied, "The winter brought it in." Now if the winter had any effect to increase this plant, it could only have been by destroying the grasses which otherwise would have occupied the soil to its exclusion.

The covering of grain with straw has been recommended as a preventive of winter-killing, but this practice can never become general. Early sowing, by enabling it to get a good start and cover the ground, and thus shield its own roots from the repeated freezings and thawings is desirable. If it follows oats, their growth may serve as well as a coat of straw to shield it, and in the spring they will be out of the way, though if too abundant. they may choke the fall growth of the crop.

The preservation and cultivation of the belts of timber may do much to break driving winds, that sweep of the snow and expose the fields, but this is a slow operation, and it only by a general dissemination of a spirit to this effect, that any extensive good can be accomplished. It is true that a screen of evergreens will shield an orchard or garden, or protect a dwelling from the winds; but to break up the force of our storms through the country, the gorges through which the wind now draws must again be filled with forests and the hill tops stand bristling with their native guards. We have recently noticed the effects of clearing the forest from a single acre. The winds were allowed free sweep, and the halfway was blockaded with snow drifts, more than half a mile distant, where the snow was never known to accumulate before.

The fierce zero blasts of last winter embrowned the foliage of those hardy evergreens, the laurel and the hemlock, while in sheltered situations they were unaffected, allowing the importance of protection even to them.

But the most efficient assistance we can render our grass or grain in enduring the severity of our winters, consists in thorough draining. Though it is true that grain and clover sometimes winter kill upon warm, dry land, the cases are camparatively rare.

But grains die in the winter from some other causes, than those we have mentioned. When the snow falls before the ground is frozen, and is blown into deep drifts, so that the frost cannot penetrate, we find as it melts off in the spring, spots of varying size, that turn brown and die, and are said to be "smothered." Early sown grain is more often thus affected, and as a preventive it is recommended to allow calves to feed it off just as the ground freezes. We have never seen this effect, except when the snow was very deep, and then in the parts of the field where the soil was the richest, and the grain the largest.

When the snow is trod down by the passage of men or teams and a thaw and frost succeed, the paths are often marked next spring by the deadness of the vegetation. Ice formed from water flowing over or standing upon a field sometimes kills the grass beneath it, and at others no injurious effect is visible. Did the same effect always follow the same apparent cause, we might be better able to determine the reason and provide a remedy. More careful observation continued through a series of years will alone accomplish this object, for each one has noticed some facts bearing upon these points; and we propose the following interesting questions, and many more of a similar character will suggest themselves.

When the grain or grass have been killed during the winter, what were the circumstances of soil, exposure, &c., attending it? What the kinds of grain and grass? The time of sowing and state of forwardness? What vegetation, if any, survived?

CRAB APPLE AND PLUM FOR HEDGES.

In the April number of the *Farmer*, is an article from our esteemed correspondent, S. R. Ward, upon *Crab Apple Hedges*. We like the suggestion very much; but would, with our friend's permission, make an additional suggestion, which can do no harm, if it does no good. We would recommend planting the crab apple tree and the common wild plum together, for a hedge. We have no doubt but they would make the cheapest and best fence that could be made on our prairies. We would not, however plant both in the same drill. They may, and, ought, as we think, to be placed about one foot apart. We would suggest the plan of breaking a furrow across your prairie, where you want your fence, then drop the crab apple along the edge of the furrow upon them, then drop the plum stones in the same manner, and turn a furrow over them, and your hedge is planted. Either kind of seed we have mentioned will come through the sod. You need take no trouble in watching it, only to keep the fires out. The cattle will not browse it. Although the growth is slow, it is sure; and when once grown a few feet in height, it would puzzle Satan himself to get through it. Unless his skin is tougher than that of most other *domestic animals* But, farmers will recollect, that this kind of hedge would not only answer for a fence, but it would be a source of revenue, Every year one part or the other of it would bear fruit, not such fruit as would be highly prized in an extensive fruit-growing region; but such as will answer an excellent purpose in a new country. The apples and the plums make good preserves; but they require a good share of sugar. We expect, however, to obtain that article cheaper hereafter, if the Chinese sugar cane succeeds in this climate, as we have no doubt it will. The plums also make excellent jelly. Then, only think of the novelty of *picking fruit from your fences!* They can do no better than that in the East. And, just consider what a fine protection you will have for your cattle in cold weather! And, in the spring, how fragrant would be your fields and meadows with the odor of your fruit blossoms!—And, what is a consideration of vast importance, both the apple and plum are perfectly hardy, and will endure any degree of cold. Such a hedge would add twenty-five per cent to the appearance of a farm, to say nothing of its utility. Then try it, farmers, either with or without the additional suggestion which we have made. Recollect, it will soon be time to gather the seed.—*N. W. Farmer*

WHEAT AND ITS PREPARATION FOR BREAD-MAKING.

Of all the bread stuffs, wheat is the most important, and is that to the preparation of which, the attention of millers is chiefly devoted. It is to the amount of gluten contained in it, and the large per centage (as compared with the other bread-stuffs) of flour obtained, that wheat owes its value as a bread maker. But it so happens that fashion has dictated that the whitest flour is the best, and that the best loaf is that which is purest in color. This, unfortunately, has an evil effect of a two-fold character—namely driving the baker to use sundry compounds, to obtain this fictitious appearance, which pure wheat-flour, be noted, does not possess; and the makers to get rid of that portion of the wheat which happens to be more nutritious than that which is retained; this riddance being effected at considerable cost, through the agency of expensive machinery, which to a certain extent enhances the cost of the flour. The result of ordinary grinding is two fold—flour and bran. The former is that which is retained; the latter that got rid of, given to the pigs, or used in some way or other, but not in conjunction with the flour. This bran, which forms a large per-centage of the wheat, is, according to Professor Johnston, (see "Chemistry of Common Life," vol. i. p. 99,) "somewhat more nutritive than either the grain as a whole, or the whiter part of the flour. * * * The whole meal by simply grinding the grain, is equally nutritious with the grain itself. By sifting out the bran, we render the meal less nutritious, weight for weight; and when we consider that the bran is rarely less, and is sometimes unavoidably more than one-fourth of the whole weight of the grain we must see that the total separation of the covering of the grain, causes much waste of wholesome human food." The same authority gives a series of illustrations showing the structure of a grain of rye, which in constituents very closely resembles that of wheat; from which it may be observed that the gluten of the husk, or that which forms the bran is found in the interior covering, the exterior covering containing little of this essential. By removing this outer covering, the grain will yield purer and whiter flour than when it is left. Hence the attempts which have been made to effect this, previous to the grinding, or the preparation of the corn or grain in such a way that the process in grinding detaches only the worthless and coloring, and leaves the nutritive part. It is to the description of a plan on the latter principle, that we propose to devote a few remarks. The plan alluded to forms the subject of a patent granted recently to Nicholas Auguste Eugene Millon, and Leopold Moulin, of Algiers, Africa, for "certain improvements in the treatment of corn and other grains, and more especially in all that concerns washing drying, grinding, curing, and preserving them." The remarks by M. Moulin, both in the specification of the above patent, and in a pamphlet published by him, are so pregnant with hints and suggestions on the above important subjects, that we trust no excuse is necessary for here offering a digest or resumé of them. It may also add to their interest when it is stated that the process is peculiarly applicable to the grinding of "hard wheat,"—a variety of wheat containing a large proportion of gluten or nitrogenous principle than soft, but which our millers have not been able to treat with the same degree of success which is obtained on the Continent, where, be it observed, the flour obtained from it is of a finer quality, and brings a higher price, than that obtained from soft wheat.

In the preparation of good sound flour, the cleaning of the wheat from all extraneous particles forms an important part of the process. On this point the patentee remarks—"The mechanical cleansing of wheat, if performed as it has been up to the present time, leaves much to be desired. The foreign matters which the atmosphere contains incrust the surface of the grain, and deposit destructive germs on it. In certain countries the corn, which is trodden upon the ground under the feet of horses or mules, gives a grain much less clean and pure; and if to these alterations in the grain all those which develop themselves during its preparation and its transport be added, sieves and ventilation will be greatly wanting. On the other hand, in consequence of the mechanical cleansing, the skin of the grain is not thoroughly detached in grinding and the large pellicles of bran which it produces carry away the visible parts of the nutritive matter of the grain. In In view of this, washing the grain has been recommended; this, however, is attended with dangerous results, if not properly managed, and the thorough-drying immediately carried out. But this drying of the grain is, even under the most favourable circumstances—with good and economical arrangements—a most expensive and tedious process. The rapid clearing of the moisture from the surface of the grain, for under no under no circumstances should it remain long enough in the water to allow it to penetrate the interior—is effected by the patentees by the use of the "hydro-extractor," or "centrifugal

machine." A short description of this machine, and its mode of operation, will be found in the article on "Grain Drying." but the geain is not thoroughly dried; it still remains to a certain extent damp. This, however, is no disadvantage, but, on the contrary, brings about a condition of the grain of the utmost value in the after-grinding processes.

In the treatment of *hard* wheats, it is necessary to damp or moisten the grain previous to grinding, the object being to soften the outer integuments, which in the grinding becomes detached; if this is not attended to, its adherence results in a large portion of the nutritive portion of the husk coming away with it. In the damping, the grain receives at its exit from the hopper a small jet of water, which raises its weight some one or two per cent. This wetting however, does not cleanse the grain from all extraneous matters, as is desirable; on the contrary, it rather tends to make them more adherent. Again, the damping is very irregular; and to enable the moisture to spread from the parts of the surface well wetted to those dry, or comparatively so, the grain is allowed to remain for a certain period in sacks until a uniformity of dampness is obtained. All this is, as will be obvious, very uncertain; and the result frequently is that the wet penetrates to the interior and makes damp flour. Where the dampness or moisture reaches to, or exceeds, 20 per cent., the grinding cannot be carried on. Now, by washing the grain in properly arranged apparatus, and immediately putting it into the "hydro-extractor," not only is it thoroughly freed from all extraneous and deteriorating particles, but the amount of necessary moisture required is regulated to a considerable degree of nicety. Nor is this all; the most important results remain to be described. "When the grain which has been in the cylinder (hydro-extractor) in the condition which we have defined is taken to the mill, its products present the following modification:—The water which has principally damped the external and woody pellicle of the skin, detaches it, and makes the ordinary bran; the grinding allows the small light transparent scales to escape, and of a lightness never attained hitherto; this is the entirely woody and cortical portion of the skin. The principal azotes so abundant in ordinary bran, exist here only in a very reduced proportion. It is the same with the aromatic and sappy matters. This bran retains no trace of farina; by a microscope even some nutritive grains can hardly be discovered. For the same reason that the results are so perfectly accomplished, the proportion of the superior products of the grinding is increased also; besides, the bran which acquires a greater elasticity does not break; the flour and the groats become free from impurities; the double result is obtained of having the products finer and more abundant." But another valuable result is obtained by the principle of "essorage," as it is termed by the inventors (from *essoureuse*, the French name of the centrifugal machine.) On washing the wheat till the water runs off clear it may be considered free from impurities; but on being subjected to the action of the hydro-extractor, "a thick and colored liquid is expressed, which on evaporation yields a considerable residue." This extraction of coloring matter shews that a purifying effect is due to the centrifugal force, detaching from the surface of the grain, matter which escapes the longest washing. Even the coloring matter which lodges under the epidermis of the integuments is carried off; how much more likely, then, are the obnoxious particles on the surface of the grain to be removed! This purification the inventor thinks of great importance in the preservation of grain; as he has observed that grain essoraged, even although damped with the water, has kept longer and better in bags and close vessels, than grain not subjected to the process. This is in itself a most important result. It is also applicable to the restoration of unsound grain. M. Millon mentions that barley refused by horses, has been eaten by them with avidity after a small cold washing and passing through the essoreus.

We have already shown that the bran, the product of grinding on the ordinary plan contains a large proportion of gluten. M. Million in a table in his pamphlet, gives some interesting details respecting the value of the bran, the result of essoraged and non-essoraged wheats. Thus, the large bran of hard wheat, watered, winnowed, and ground on the ordinary plan, gives a per-centage of 12·32 of gluten; the same essoraged, only 6·17.

The grinding must follow the essorage immediately, or it loses its peculiar properties, we have discovered in hot weather fifteen to twenty minutes will be sufficient for the skin to become again adherent; it must then be submitted to the action of the drying cylinder and the grinding.

In the application of the process to soft wheats M. Millon is inclined to believe from the sponginess of their inter-integuments, that their absorbing powers will be greater than hard, and that a preliminary drying will be necessary. When the wheat, whether hard, semi-hard, or soft, contains a large per-centage of water, drying will be necessary before the essorage can be effected. Again, where it contains insects, mouldiness, or

other deleterious matter, they should be got rid of by repeated washing, and the extra water reduced four or five per cent. by passing through a drying apparatus.

We do not consider it necessary to describe the washing apparatus, or the hydro-extractor used by the inventors: our subject has been to direct the attention of our readers interested in the matter, to a principle which we consider contains much that is valuable both as regards the *preparation* and the *preservation* of grain.—*Farmer's Magazine.*

THE WHEAT MIDGE—HOW TO RAISE WHEAT AND BARLEY WHERE IT PREVAILS.

Eds. Rural:—I have noticed in some of the late numbers of your paper inquiries from different individuals in the western part of this State, just now so severely afflicted with that scourge of the farmer, the Wheat Midge, how they may avoid or rid themselves of its devastating and ruinous warfare upon their prospects and hopes. Having had and still experiencing our full share of the evil in the vicinity, on its onward march westward.—and for some years before it reached the granary of the State,—you will perhaps permit me to speak from experience for the benefit and instruction of many farmers, who, the past and present seasons, have had and are having "hopes deferred and hearts sick" with the result of their year's labor on the farm. As your pages are amply filled I will be brief.

In this vicinity we still raise some wheat, and some very good crops of white wheat too; and have learned that in order successfully to compete with the midge, our land must be in *high condition, well manured, and sown early*;—say the first week in September. The earliest varieties—the Mediterranean and Soule's—have alone withstood the ravages of the midge. Several other kinds which were raised here when the midge first appeared —such as the Hutchison, Garden and Flint varieties—have not been heard of since the first and second year of its prevalence, and are now among the things that were.

The Mediterranean wheat cannot be said to be a favorite among the farmers, but is raised rather as a necessity, where they do not consider their land strong enough to bring good white wheat.—It is more exempt from the midge than any other kind, but does not give a large yield to the acre—so that it has become something of a proverb that a half crop of white or Soule's wheat is better than a full crop of Mediterranean.

In a receipt number of the *Rural* I noticed a complaint that the midge was taking somebody's barely also. They have done the same here, until we have learned at least to *try* and dodge them by sowing either *early* or *late*, say the first of March or first of April, or not until after the first of May. Fair crops of barley are raised hear this year which, were sowed at or about both of these periods.

Such, Mr. Editor, has been the experience of myself and others in this vicinity since the appearance of the midge among us. Should you deem it worth publishing, and it should prove of benefit to any one, I shall feel amply compensated.

Yours, H. Willard.

Cayuga, N Y. Aug. 8, 1857.

Remarks.—The views of our correspondent, founded as they are upon experience, are valuable and suggestive. His suggestion as to good culture, manuring and early sowing —so that the plant may attain a strong, healthy growth in the fall—is undoubtedly correct, and worthy of adoption by all who would raise winter wheat in sections where the midge prevails. The plan has been successfully practised for years by some of the best farmers in Seneca, Cayuga, &c., and we advise our friends in other counties to give it a trial. The remark relative to varieties is also suggestive, and confirmatory of the testimony of good farmers in this section—some of whom aver that the Mediterranean yields so poorly that its culture is unprofitable. The hint as to the periods of sowing barley in order to escape the midge will attract attention, as the barley crop has become more important of late years, in many localities, than wheat.—Ed. *Rural N. Yorker.*

Very Gallant.—Fontenelle, at the age of 97, after saying many able and gallant things to the young and beautiful Madame Helvitius, passed her once without perceiving her. "See," said she, stopping and addressing him, "how I ought to value your gallantries. You pass me without even looking at me." "Madame," said the old man, "If I had looked at you I could not have passed."

Flowers that beautify the earth with colour and delight the passer-by with their fragrance are everywhere; the poison berry and the deadly nightshade are found only in the noisome marshes and untrodden swamps.

ASTONISHING FEAT OF A HOUSE SPIDER.

It would seem that there is no living thing so obnoxious as not to find admirers. What creatures so repulsive as rats and spiders? Yet the *London Quarterly* finds some things beautiful and even loveable in the former, and Dr. Asa Fitch, in *Harpers Monthly* labors to show that the latter "delicate little objects" are worthy of esteem and admiration. He denies that their bites are fatal to any insect, and extols their agility, cunning, adroitness, sagacity and heroism, as worthy of all praise.

In support of these views he tells us the following curious story, concerning a heroic spider who captured a snake. The affair came off last summer, in the store of Charles Cook, in Havana, Chemung County, New York, and is attested by the Hon. A. B. Dickinson, of Corning; "who himself witnessed the phenomenon, as did more than a hundred others."

An ordinary looking spider of a dark color, its body not larger than that of a common house fly had taken up its residence it appears, on the under side of a shelf beneath the counter of Mr. Cook's store. What may we suppose was the consternation and surprise of this little animal on discovering a snake about a foot long, selecting for its abode the floor underneath, only two or three spans distant from its nest.

It was a common silk snake, which, perhaps, had been brought into the store unseen, in a quantity of sawdust, with which the floor had been recently "carpeted." The spider was well aware no doubt, that it would inevitably fall a prey to this horrid monster, the first time it would incautiously venture within its reach. We should expect that to avoid such a frightful doom, it would forsake its present abode, and seek a more secure retreat elsewhere, But it is not improbable that a brood of its eggs or its young was secreted near the spot, which the parent foresaw would fall a prey to this monster if they were abandoned by their natural guardian and protector. We can conceive of no other motive which should have induced the spider so pertinaciously to remain and defend that particular spot, at the imminent risk of her own life, when she could so easily have escaped and established herself in some secure corner elsewhere.

But how, we may well ask, was it possible for such a weak, tender little creature, to combat such a powerful mail clad giant? What power had she to do anything that would subject the monster to even the slightest inconvenience or molestation? Her ordinary resort, that of fettering and binding her victim by throwing her threads of cobweb around it, it is plain, would be of no more avail here than the cords upon the limbs of the unshorn Samson. Aware that her accustomed mode of the attack was useless, how did she acquire the knowledge and sagacity requisite for devising another—adapted so exactly to the case in hand— one depending upon the structure and habits of the serpent to aid in rendering it successful?

How was she able to perceive that it was in her power to wind a loop of her threads around the creatures throat—a loop of sufficient strength to hold him securely, notwithstanding his struggles and writhings, until, by her tackle-like-power, she could gradually hoist him up from the floor, thus literally "hanging him by the neck until he was dead!" For this was the feat which this adroit little heroine actually performed—a feat beside which all the fabled exploits of Hercules in overpowering lions and serpents and dragons, sink into utter insignificance.

And who can say that in the planning and execution of this stupendous achievement, there was not forethought, reasoning, a careful weighing of all the difficulties and dangers and a clear perception in the mind of this little creature, that she possessed the ability to accomplish what she undertook; in short an exercise of faculties of a much higher order than the mere instinct which is commonly supposed to guide and govern these lower animals in their movements.

By what artifice the spider was able in the first of its attack to accomplish what it did we can only conjecture, as its work was not discovered until the most difficult and daring part of its feat had been performed. When first seen, it had placed a loop around the head of the serpent, from the top of which a single thread was carried upward, and attached to the under side of the shelf, whereby the head of the serpent was drawn up about two inches from the floor. The snake was moving around and around incessantly in a circle as large as its tether would allow—wholly unable to get its head down to the floor, or to withdraw it from the noose; while the little heroic spider, exulting no doubt in the success of its exploit, which was now sure beyond peradventure, was ever and anon passing down to the loop and up to the shelf, adding thereby an additional strand

to the thread, each of which new strands being tightly drawn, elevated the head of the snake gradually more and more.

But the most curious and skilful part of the performance is yet to be told. When it was in the act of running down the thread to the loop, the reader will perceive it was possible for the snake, by turning his head veritically upwards to snap at and seize the spider in his mouth. This had, no doubt, been repeatedly attempted in the earlier part of the conflict, but, instead of catching the spider, his snakeship had only caught himself in an additional trap. The spider, probably by watching each opportunity when the mouth of the snake had been turned towards her, adroitly with her hind legs, as when throwing a thread around a fly, had thrown one thread after another over the mouth of the snake, so that he was now perfectly muzzled, by a series of threads placed over it vertically, and these were held from being pushed asunder by another series of threads placed horizontally, as my informant states he particularly observed. No muzzle or wicker work for the mouths of animals could be woven with more artistic regularity and perfection; and the snake occasionally making a desperate attempt to open his mouth, would merely put these threads upon a stretch.

The snake continued his girations, his gait becoming more slow, however, from weakness and fatigue; and the spider continued to move down and up to the cord, gradually shortening it, until at last, when drawn up so far that only two or three inches of his tail touched the floor, the snake expired, about six days after he was first discovered.

A more heroic feat than that which this little spider performed, is probably no where upon record—a snake a foot in length hung by a common house spider! Truly the race is not to the swift, nor the battle to the strong. And this phenomenon may serve to indicate to us that the intelligence with which the Creator has endowed the humblest, feeblest of his creatures, is ample for enabling them to triumph in any emergency in which he places them if they but exercise the faculties he has given them. It is only the slothful, cowardly, timorous, that fail, and they fail not so much before their enemies as before their own supineness.

The Benefits of Machinery.—The *British Workman*, a periodical devoted to literature as connected with mechanical pursuits, contains in its number for the present month a very able article on the improvements in the "pottery art," in which it very graphically sets forth the benefits conferred upon workmen by improved machinery. It says:—

"Time works many changes both in men and things, and the last thirty years have shewn not a few instances which at the time were regarded by the working classes as *injurious*, have, in the course of time, been found to be 'blessings in disguise.' Within the recollection of many persons, horses and even hand power were in use at the Lambeth potteries for crushing the clay; and the potters all used wheels, called 'kickers,' which were turned by the foot. When Mr. Green determined to introduce the new wheel into his manufactory, *the whole of the workmen struck*. All the men left, except one man, who was allowed to continue at his kicker until his death, a period of fifteen years. He earned 30s. a-week, while the man with the improved lathe, who sat next to him, earned double that sum. So much quicker could the man work at the new wheel than the potter at the kicker, that he could make as many stoneware ink bottles for 6d., as the other could throw off by his machine for 1s. 3d. Since the day of the kicker the number of men and boys employed at Mr. Green's pottery alone has increased five-fold. What strikes and riots were witnessed in Lancashire and Yorkshire in bygone years on the introduction of power looms and other machinery. Short-sighted policy said—'these will injure the working classes and reduce the number of hands employed.' The result, however, has been very different from what the desponding and faint-hearted dreamed of. Those very inventions which were regarded with such bitter hostility, have, in the providence of God, been the means of extending the commerce of our nation to an extent previously unknown.

The old kickers could not possibly have supplied the present demand for pottery, neither could the old hand-looms have produced one-half the cloth now required for the clothing of the people. Men and women are now employed by tens of thousands in the weaving mills throughout the manufacturing districts, and they can produce far more work and earn better wages than under the old system. What was thought to be a national evil, has proved a national good.

The whole number of newspapers published in the United States is 3,634; some 941 of which are in the State of New York.

WOLF TEETH IN HORSES.

A correspondent of the *Country Gentlemen*, says, in reference to wolf teeth in horses:

Why such teeth affect the eyes I know not; neither did I see any one who pretended to give any reason, though I have asked the most experienced and skilful dental surgeons. But that two small, sharp teeth, called in common parlance wolf teeth, frequently grow one on each side of the upper jaw of the horse, just in front of the molars, is a fact known to all conversant with young horses; and that such teeth do injure the eyes I have no question. My father raised some blood horses, and I can remember when quite a boy, seeing them knocking out these teeth from the colts. Although the eyes recovered soon after the teeth were out, I could see no reason for it and thought it an absurd custom. When old enough to take a more practical interest, I thought it must be the bleeding occasioned by extracting the teeth that was beneficial; but I soon found by practical experience, that bleeding would not cure the eyes while these teeth remained in. I have known, I should think, as many as thirty cases. I never knew them come in colts younger than two or more than six years old. Horses more frequently, though mares sometimes have them. I have noticed one eye of my young horses becoming sore, and found quite a large tooth on that side of the mouth, while the tooth on the other side would be but just making his appearance, and the eye on that side quite clear. I have known some cases where but one tooth ever came, but in most instances where one appears, the other will come shortly. I have had three cases among my own horses last spring, all of which recovered soon after the teeth were out. And I do not now recollect an instance where the teeth were extracted soon after the eyes became sore, that they did not recover. They are best extracted with forceps.

DIOSCOREA BATATAS.

Révue Horticole, PARIS *June*, 1857.

EXHIBITION AT VERSAILLES.—Fine specimens of the Dioscorea Batatas were exhibited by *Mons. Rémont*, of Versailles, whose practical zeal in cultivating has been rewarded by receiving from the hand of the Empress, the Grand Prize of Honor (being her gift).

Bulletin De La Société Imperiale Zoolozique D'Acclimatation, June, 1857

MONS. CHEVET, Chairman of the Committee on the subject, Reports that the cultivation of the Dioscorea Batatas in our market gardens is *sure*, both on account of its abundant crop, and its excellent quality. Its culture is easy; it requires but little care; its hardihood proved; it keeps perfectly in the earth; no cold hurts it, it is very readily multiplied by the seed or by the little balls—"Bulbilles"—and by cuttings, &c. It should be planted in rows from forty to fifty centimetres apart—(about from sixteen to twenty inches.) I have demonstrated the excellence of this tuber for our tables—for plain dishes, and for luxurious dishes. It cooks in *half the time required by the potato*, in the pot, in the oven, or under hot ashes.—*The poor will profit more by it than the rich!* I come to the society to ask for votes of thanks to our Consul, Mons. Montigny, who sent it to us from china—and to the members of this society who have carefully cultivated this precious plant in their respective departments.

HOW TO EXTINGUISH A FIRE IN A CHIMNEY.—So many serious fires have been caused by chimneys catching fire, and not been quickly extinguished, that the following method of doing this should be made as generally known as possible: Throw some powdered brimstone on the fire in the grate, or ignite some on the hob, and then put a board or something in the front of the fireplace, to prevent the fumes descending into the room. The vapor of the brimstone ascending the chimney, will then effectually extinguish the soot on fire.

TANSEY FOR PEACH TREES.—A few years ago I experimented with planting a root of tansey with some young peach trees, as a preventive of the worm at the root, which I thought had a good effect. Nearly all the trees were blown up by the roots during the storm we had four years ago, but one or two were left, which continuing flourishing, The tansey grows round the tree, and seems to act as a mulching.—*Cor. Ohio Cultivator.*

RAISING NEW FRUITS FROM SEED.

The raising of new varieties of fruits from seed is a very interesting department of horticulture. Indeed we know of nothing more pleasing. To save the seed of some promising variety, plant, cultivate, and watch and wait for the realisation of our hopes, is a work of the most pleasurable excitement. Failure succeeds failure—not one variety in a hundred proves superior, yet the undaunted cultivator pursues his experiments, until success rewards his zealous labors. Most of our finest fruits are of recent origin, and many of them natives of our country. Prof. Kirtland's cherries, Dr. Brinckle's raspberries, and the strawberries of Hoxey and others, and several of our best pears, do our country honor throughout the civilized world. On examing an English nursery catalogue recently, we noticed that nearly all the fruits advertised as new varieties, were American seedlings. To all who are engaged in this work we say perserve,

"Give new endeavors to the mystic art,
Try every scheme and riper views impart;
Who knows what meed thy labors may await?
What glorious fruits thy conquests may create?"

"These peaceful triumphs," Mr. Wilder truthfully remarks," are worthy of the highest ambition, conquests which leave no wound on the heart of memory, no stain on the wing of time.—He who only adds one really valuable variety to our list of fruits in a public benefactor. I had rather be the man who planted that umbrageous tree, from whose bending branches future generations shall pluck the luscious fruit, when I am sleeping beneath the clods of the valley, than he who has conquered armies. I would prefer the honor of introducing the Baldwin apple, the Seckel pear, Hovey's Seedling strawberry, aye, or the Black Tartarian cherry from the Crimea, to the proudest victory which has been won upon that blood-stained soil."

We have noticed this season several very promising seedling currants, that bid fair to excel the best English sorts, which we hope to make a good report of next summer.

We have just received from the New Lebanon Society of Shakers, a box of Gooseberries, of a dark purplish color, good flavor, and rather less than medium size, though larger than Houghton's seedling. It must be very productive, as the branches were loaded with fruit, and as it is a native and not subject to mildew, is a desirable acquisition Accompanying the fruit, was the following note:—"I send you a small box of gooseberries, the *Mountain Seedling*, not so much for their size, as for their superior flavor and productiveness. The bush grows from six to seven feet high, and loaded all the way up, as you see the branches I send you, are with fruit. It is perfectly hardy and free from blight It was discovered growing wild some ten years since, and has been proved side by side with other varieties, both foreign and domestic, and we have found that while other varieties mildew and cast their fruit, the Mountain Seedling has improved year by year."

Much discussion has been had on the best method of producing improved varieties of fruit from seed, and the most eminent Pomologists disagree on this subject. Our advice, however, is to plant the best seeds of the finest varieties, take good care of the plants, and trust to Providence for the result.

We caution all persons against purchasing any new varieties of fruit sent out with flourish of trumpets, at high prices, as by doing so, they will most assuredly get cheated. Whenever a new claimant for the public favor appears, its merits should be canvassed thoroughly and carefully by disinterested and competent persons, and whenever practicable, it should be presented to some Horticultural Society, and if deemed of sufficient importance, a committee should be appointed to examine the fruit, the habit, growth and productiveness of the plant or tree, the nature of the soil, manner of cultivation, and such other things as they may deem important. This committee should publish their report for the benefit of the public. If after full investigation, they should deem it an important acquisition, planters would buy with confidence; if they considered it unworthy of general cultivation, it would prevent the reading public from being cheated. If they should think another trial neccessary, it would be for the true interest of both buyer and seller to have this trial made before the plant or tree was offered for sale. We protest most decidely against the patent medicine system of puffing a new fruit or flower.—*Rural New Yorker.*

To KEEP FLOWERS.—To preserve flowers in water, mix a little carbonate of soda in it and it will keep them a fortnight.

CAKE RECIPES

Sponge Cake.—One and one-third cup sugar, 1 ⅓ cup flour ½ cup sweet cream, and 3 eggs —whites and yokes beaten separately —1 teaspoonful cream of tartar, ½ teaspoonful lemon extract. Bake quick.

Hickory Nut or Jackson Cake.—Two cups white sugar, 1 cup butter, ½ cup milk, 1 cup chopped hickory nuts, 1 cup raisins, 2 cups sifted flour, 4 eggs—the whites and yolks beaten separately—½ teaspoonful soda, 1 teaspoonful lemon.—The whole to be well beaten and baked in a quick oven, in square tins. Is much nicer to be frosted and cut in squares for the table.

Delicate Cake.—Two cups sugar, 1 cup butter, 1½ cups flour, whites of 8 eggs, 1 spoonful lemon extract; using the yolks with the same measure of ingredients make a *Gold* Cake. Using the two in thin alternate layers spread with jelly, makes an excellent cake for tea or evening parties.

Cure for Warts.—*Inquiry.*—Can you or any of your subscribers give an effectual remedy for Warts?—E. C. H.

Remarks.—A paste made of the ashes of Willow bark and vinegar, and put on the warts once or twice a day for a week, or so, will cure them. A very little nitric acid put on a wart once a day, for a few days, is a sure cure in every case, without soreness or pain, unless the acid is used too freely. Whittle out a stick about as large as a knitting needle, dip this into the acid, and just touch the top of the wart with it. It is better to get on too little than too much. The cure is certain, but the danger is in getting on so much as to cause pain.

KEEP FRUIT TREES STRAIGHT.

Trees in an open exposure often acquire a leaning position from the prevailing winds. This should not be suffered beyond a certain stage of the tree. When as large as one's wrist, they should be set up erect, and, indeed, thrown into the wind at an angle of ten or fifteen degrees; in order to bring them ultimately into a straight position. This is best done by obtaining crotched limbs from the woods, eight to twelve feet long, and placing the butt end, which should be sharpened, in the ground, and the crotch end either against the trunk, immediately beneath the branching point, or against a large outer limb, if more convenient, securing it from chafling in the crotch by a padding of straw or litter, and setting the tree at once up to the desired angle or elevation. Loosen also the ground on the windward side of the root so that it will not bind, and the work is accomplished. Let this be done when the tree begins to make its summer growth, or soon after leaving out.

One season, if the tree is thrifty, will be all that is required. If, however, it be obstinate, repeat the trial another year. The remedy is sure. Even large trees, which have acquired a permanent lean, may be thrown into an erect posture, by loosening the earth, at the root, and occasionally cutting off an obstinate large root, without injury to its growth, and thus be made sightly. An erect tree will be longer lived, and more fruitful than a leaning one, and not half so subject to casualty as if left to its own guidance.

Value of Clover Hay.—H. Capron of Illionis, who has been largely concerned in the dairy business, (having sold $6,000 worth of milk in a single year,) informs us that he made accurate experiments to test the comparative value of timothy and clover hay. These experiments extended through a period of two years, were accompanied with accurate weighing and measuring, and the food was changed from timothy to clover, and vice versa, once a month, and results were that the clover hay uniformly yielded ten per cent. more milk than the timothy. It will be observed that this was not a single experiment, but a *series* of experiments extending for a long period. It is also proper to state that the clover was well cured.

A Wash for Trees.—Heat one pound of sal soda to redness in an iron pot, and dissolve it in a gallon of water. This wash will take off all the moss and dead bark, and kill all insects on all fruit trees or grape vines, and make them as smooth as though polished, and make old trees bear anew.—*Exchange.*

Manufacturing Steel by Electricty.—The *London Mining Journal* describes the new and interesting process of converting iron into steel by a current of electricity, passed through the iron when placed in a furnace, and imbedded in charcoal, whereby an immense saving of labor, time and fuel, is the immediate result. By this method it is found that iron can be made, even from ores, equal in purity to the finest of iron at present imported. It also secures a greater power of governance to the operators, inasmuch as the application of the battery for a certain time will insure a certain amount of carbon being taken, absorbed or concentrated, amalgamated with the iron, and thereby increasing or diminishing the action of the battery, different qualities of steel will be produced with a certainty, regularity and efficacy which hitherto, under the ordinary process of manufacture, has been the object wanting—the great desideratum sought after, as well as the end desired to be attained. The Journal thinks that if, on a more extended scale, the electric process should be found practicable, we may yet have cast iron mortars, guns and ordinance at once carbonized into steel, and lowered in rigidity, toughness and ductility, as well as in the tensible properties, to any degree or amount of temper.

Mechanical Genius.—The Paris *Patrie* contains the following:—"A youth, aged eighteen, belonging to a respectable family of Paris, had, about a year ago, been condemned for theft to five year's imprisonment. His conduct in prison being quite exemplary, he gained the good opinion of the Director, who soon remarked in him a peculiar aptness for mechanical contrivances. A few days ago he begged the Director to tell him what o'clock it was, that he might set his watch. 'You have a watch, then?' asked the Director. 'Only since yesterday, sir,' said the prisoner; and to the astonishment of the Director, produced one made of straw! The little masterpiece is two and a half inches in diameter, about half an inch thick, and will go for three hours without winding up. The dial-plate is of paper, and a pretty straw chain is attached to the whole. The instruments the prisoner had at his command were two needles, a pin, a little straw, and thread. Several persons of distinction, moved by the surprising genius for mechanics, are now endeavouring to obtain his liberation."

EDITOR'S TABLE.

Notice to Canvassers.—Those persons who consider themselves entitled to prizes for obtaining subscribers for the present volume, will please send in their applications, stating number of subscriptions sent, and how the books, and other prizes (as the case may be) are to be disposed of. By reference to the advertisement in the January, and two or three subsequent numbers, canvassers will see whether they are entitled to a prize, and what kind.

Wade's Sale of Short Horns.—This great sale came off with much success pursuant to advertisement. The prices ranged from $100. to $100 for thorough-breds, and in proportion for grades. Sheep sold at fair prices also, notwithstanding the hard times. The attendance was good, and of the right sort of people. We are glad to state that nearly all the herd remains in Canada. We have not space for a further notice this month, but may find room for details in our next issue.

We request the attention of our readers to the advertisement on another page, in reference to agricultural instruction in University College. No young man of ordinary attainments and perseverance but might spend four or five months during the winter season, with very great advantage, both as respects his general education, and his special improvement in a knowledge of the scientific principles and most approved practices of agriculture. Such students may enter without being subjected to any previous examination, and have the privilege of attending as many of the collegiate classes as they may think convenient or desirable, at an expense that is merely nominal. Surely there must be many among our farmers' sons, who only require to be made aware of these advantages, that they may avail themselves of [illegible].