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THE

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INSECTS, WIREWORM, &c.

It is in the larva state that the ravages of insects are most felt, and this requires a word or two of explanation.

BUTTERFLIES, MOTHS, and many other insects, undergo a succession of changes or transformations, prior to their assuming their last and frequently gorgeous form under which we see them fluttering from flower to flower. Of course I speak now more particularly of the butterfly. The moths are usually, though, no doubt, many of them are extremely beautiful much more sober in their movements, and less gaudy in their plumage. They are, also, principally of nocturnal habits, and consequently come less frequently, and less strikingly, under our notice.

The female moth or butterfly deposits an egg, which gradually ripening to maturity, becomes a maggot, grub, or caterpillar. This is called the larvæ and it is in this stage that the insects prove most noxious to the farmer's crops. These larvæ are excessively voracious, and their ravages terminate only with their next transformation into the state of *pupa* or *chrysalis* Prior to assuming this state, the caterpillar forsakes its food, and seeks some retired and safe retreat, usually burying itself for this purpose underground. The head then gradually bends forward, and the face is embraced by the upper or thoracic feet; the body likewise becomes contracted in its dimensions, more particularly in its length, and also gradually becomes covered with a firm and shell like coat or case. This is a thickening and induration of the skin of the grub, not of the *epidermis* or *cuticle;* for that is gradually cast as a slough, in proportion as the work of transformation proceeds The chrysalis is soon formed; some insects envelop themselves in a web, as the silkworm, &c; others do not. During this stage, the insect is, of course, perfectly harmless. In course of time, the perfect insect is formed within its shelly sheath; it now commences the work of breaking open its prison, having effected which, it emerges in all the beauty of insect perfection.

CATERPILLARS do not prey indiscriminately on all sorts of herbage or farming produce. Each species has its favorite plant, or plants; and not even starvation will induce it to transgress these limits that instinct has assigned to its appetite, or eat of a plant of another sort.

One of the most destructive grubs which infests the fields of the agriculturist, or renders futile the care and skill of the gardeners, is, perhaps, that well known larvæ—the WIREWORM. I may here observe that the general name of wireworm is given to the larvæ of many species of beetle, all, however, very similar in habits and appearance. and so equally gifted as to their destructive powers, that it would be difficult, indeed, to draw any distinction in this respect between them.

Scarcely any land is free from the ravages of some one or other of the wireworms; and there is scarcely any description of crop upon which they will not prey with equal greediness Wherever grass or any sort of herbage will grow, there will the greedy wireworm be found. The beetles, of which the wireworms are the larvæ, are those called the ELATERS; also spring-beetles, skipjacks, and click or snipbeetles. from the power they possess of springing up with a click or snap-like noise when placed upon their backs. The eggs of the wireworm are very minute and are deposited in the earth at the roots of the young plants. When first hatched they are invisible to the naked eye, but attain nearly the length of an inch when full grown, and in this state of larvæ they remain for nearly five years. No wonder, therefore, that, between their *longevity* and rapacity, they should be deemed by farmers so very pestilent a scourge. During the continuance of their larvæ state, these worms cast their outer skin several times, being white in color, and very tender for a short period after each sloughing; at other times they are covered with a hard and solid coat of a horny consistence, so firm and impenetrable as to render them proof against most of the ordinary remedies that might be used for their destruction.

Wire worms are somewhat more than half an inch in length, and resemble the meal worm in appearance but are more angular, less perfectly cylindrical, more flattened above and below. Their head is horny and formed for perforation, and the mouth, though small, is furnished with a most effective pair of very powerful jaws There are six feet on the upper portion of the thorax, and one at the extremity or tail. The former are called pectoral or thoracic, the latter, anal.

When full-grown, the wireworm buries itself in the ground, where it forms a cell, in which it becomes a chrysalis or pupa; this change takes place early in autumn, and in two or three weeks at farthest it becomes a beetle. The beetles are harmless, feeding only on flowers; they can fly well, and when on the ground can run very fast, with their heads down, and drop when approached. The mouth is not the same in appearance with that which existed in the worm, but will, on examination, be found to be formed of the same organs, only perfected.

There are two species of beetle that produce the wireworm, more common in grain fields than the rest, and therefore the more to be dreaded. These are: the elater appressifrons, and the elater obesus.

The bug parent is familiarly known as the snapping bug. As before said, the worm continues five years before his transmutation to the perfect insect state, during which time it feeds on the roots of wheat, barley, oats, corn and grass. Its ravages are sometimes extensive and desolating.

The wireworms usually eat into the stalks just about the roots, and sometimes separate it from the root altogether; they seldom, however, remain so long engaged upon the one spot or portion of stalk When they attack potatoes, they penetrate into their very hearts, and thus frequently have wholly destroyed the seed potatoes when newly planted; to obviate which it has been recommended to plant whole potatoes

Amongst the green crops, turnips may be regarded as the greatest sufferers, and the tender young plants are, of course, most victimized in autumn Multitudes of these ravenous grubs may then be found gnawing at the roots of the young turnips, and even biting off their extremities. They also frequently attack the stalk, bite it across, and when the stems fall, attack the leaves. This is, however one of the least formidable of the robberies of this persevering pest, and if the wireworms were satisfied with the leaves alone, they would not be so injurious.

We should possess some acquaintance with the natural history of such animals as we desire to destroy. Such knowledge facilitates our operations, by informing us of their haunts and habits, of their dispositions and predilections, and consequently, not only of where we are to seek for the pests, but of how we can best set to work to accomplish their destruction. Recollect, I may remark, in passing that the beetles, whence the wireworms are produced, are, although not necessarily mischievous themselves to be regarded as the grand source of your annoyances Let it be your care, therefore, to have these caught and destroyed; they will be chiefly, found, during spring and summer, upon nettles, hemlocks, fool's parsley, and other such herbs. Let this be one of your cares.

The eggs are chiefly deposited in pastures where the surface has been undisturbed, and in clover layers and fallows. Where, therefore, they make their appearance, you will find it a good plan to have your pastures eaten close by the sheep Rolling, in early spring, is also recommended, and is, in my opinion, very likely to prove serviceable, having been preceded by a top-dressing of lime. I recommend a top dressing of lime, salt, and soot. The proportions recommended are as follow:—Lime, 2 parts; soot, 3 parts; salt, 1 part. The salt may be purchased from salt works, or extensive dealers in this article, as spoiled salt—there being accidents which will render it unfit for market as salt, without at all militating against its value as manure, or a top-dressing. The lime should be quicklime pounded, and the mixture should be applied to the land as speedily as possible after having been compounded: be it also remembered that this composition will be found a valuable fertilizer as well as a foe to insects of all sorts. Wood, sweet gale, the refuse of gas-works, sprits of tar, chloride of lime, nitrate of soda, mixed with the manure, will be found very serviceable; at all events, effecting a sensible diminution in the *numbers* of the wireworm, and of course a *diminution* in their ravages in an equal ratio.

The wire worm is found in great numbers, generally on newly cultivated grounds, or meadows, which have been long in repose; they can be conquered, and should not be suffered to revel on the plants of industrious farmers. Exposures to the frosts of winter will destroy them; therefore, autumn plowing is essential; and the course or remedy suggested to destroy the cutworm, is equally effective on the wireworm.

It has been tried to destroy the wireworm by flooding, but this is only a useless attempt, it being almost impossible to drown this creature, which will be found as lively as ever after a total immersion for three, or even four, days; still, however, such flooding, though it will not destroy the worms, interferes with the laying of the beetles which produce them, and will consequently, in this point of view, be occasionally found useful.

Soda has been used with success. I have known soda tried by practical men, who were most unwilling, unless actually coerced into it, to listen to any novelty, and they have unanimously asserted the success of their experiments with soda.

Let frogs and toads be encouraged on your lands; their entire food consists of insects; of such creatures as you are most anxious to destroy. Call them in, therefore to your assistance—protect them, regard them as your friends and laborers, and they will aid you most extensively. The robin, blackbird, wagtail thrush, together with poultry, and crows, &c., feed on these insects.—*Harris on Insects.*

REMEDY FOR BOTS IN HORSES.—For many years past I have used a simple remedy for bots, and am almost disposed to call it "an infallible remedy," sure enough. But I can say, with truth, that I have never known it fail if administered at the commencement of the attack. Drench freely with sweet milk and molasses, (sugar or honey will do) well shaken together. Continue it, a bottle full every fifteen or twenty minutes, according to the severity of the attack, until the animal becomes easy; then give a quart bottle full of strong salt and water, followed soon after with a quart bottle of Castor oil. It is worse than idle to give anything with the view of killing the bots in a horse. The only plan is to convey them off; a sweet drench is the thing; they seize upon it with avidity, and in a little while will fill themselves, increasing at least one-third in size. In salt and water they will lie perfectly dormant for days together, hence the advantage in its preceding the oil. Whenever the bots attack a horse they will always be found at the neck of the throat, where a sweet drench is thrown immediately amongst them the moment it is swallowed by the horse. It is a great mistake to suppose that they are hid in some secret recess where medicine cannot reach them, and quite as great a one to suppose that a sweet drench will not divert their attention from the horse.—*Southern Cultivator*

Preservation of Cheeses.—Accidents to which they are Subject.

(Translated from the Maison Rustique, Paris.)

The preservation of cheeses is a most important point to those engaged in their manufacture, especially when they are intended for export—Their consistence and their state of fermentation more or less advanced in the store-houses or cheese rooms, should serve as a guide. The method of manufacture also affects largely their preservation. Those cheeses which have received pressure in a too fresh state, and from which the whey is not entirely separated, are liable to raise and have their centres, holes or reservoirs of air, which give to the paste a spongy and disagreeable look. When this accident arises during the manufacture, and if the fermentation is considerable, they place the cheese in a cool and dry place, and pierce it with skewers of iron in the places where it rises the most; the air or the gas escape by these openings, the cheese subsides, and the interior presents fewer cavities. To prevent this accident, the English make use of a powder, which is sold under the name of cheese-powder; it is composed of a pound of nitre and one ounce powder d Armenian bole, intimately mixed. Before salting the cheese, and while it is about being placed in the press, they rub it with an ounce of this mixture; a stronger dose would produce a bad effect.

The part that the salt plays is very important. We have seen, indeed, that the casein in the dry state exists in an indefinite condition; but it then possesses only a weak flavor, and not agreeable. The addition of the salt on the one hand, and the preparation or perfection in the store house on the other operations which require the greatest care and vigilance—succeed in procuring a gentle fermentation, or a gradual reaction between the elementary substances of the cheese. This reaction proceeds so much the more rapidly, as the cheese is softer and as the place is warmer and more moist. In proportion as the fermentation has been gentle, so much the more is the flavor of the cheese sweet and agreeable. It is at this precise moment when the reaction between the elements has produced combinations agreeable to the taste, that it is necessary to perfect the cheese--sooner than this it is not finished; later it is in a state of decomposition more or less advanced. When the cheese is in the right condition, it is put in a cool place and not too moist, in a good cellar which does not contain any liquor in fermentation; those where wine will keep well, are equally good for cheese but the two together in the same cellar will mutually exercise a bad influence.

Some cheeses with soft and fine paste, as those of Epoisse, of Langres, of Brie, and of Gerome, are put in boxes tightly, and giving them a coat or two of paint, the cheeses will be preserved for a longer time and in a better condition CHAPTAL and others claim that cheese after transportation is never so good as when it is just taken from the cellars. The fact is, it decomposes during its transportation, and it is for this reason that in a tight varnished box the cheese will retain those qualities which constitute its excellence.

The cheese of Holland are usually covered with a coating of linseed oil varnish: this preparation is doubtless one of the principal causes of their preservation on long voyages; their small bulk may also be adduced as a reason In making the Gruyere cheeses of a small size, and in covering them with this same varnish, they will be entirely impervious, even if thrown into the sea. The varnish forms an united, coat solid and dry, which prevents the access of air and moisture, the most active agents of fermentation. As to the action of heat, one can secure himself against that by a coating of powdered charcoal.

The insects which attack cheeses are, 1st the flesh-worm or cheese mite, (*Acarus siro*) which devour them when partly dried. These animals are so much the more dangerous, because they hatch beneath the crust, whence they spread throughout the interior, causing great injury. When one is careful to brush the cheese frequently, to wipe them with a cloth, to wash with boiling water the shelves on which they lie, one can protect himself against these mites. But the most certain way is, after having rubbed the cheeses with a brine, to let them dry, and smear them over with sweet oil. It is in this way that they treat Gruyere cheese when it is attacked by this destructive insect.

2d. The larvæ of the gilded green fly, (*Musca cæsar,*) of the common fly [*Musca domestica,*] and above all of the fly of putrefaction, (*Musca putris*). These larvæ introduce themselves into the cheese and make great ravages. The presence of these vermicular insects which denote an advanced state of putrefaction, excite much repugnance with the great number of consumers; some persons, on the contrary, prefer the cheese in this state, because it is then stronger and of a more pungent flavor.

They destroy all these animals by vinegar, the vapor of burning sulphur, or by washes of chloride of lime. When the store-house contains these insects in abundance, they take up the cheese and scrape and wash the shelves with water holding in solution chloride of lime; they scrub at the same time the floor, and apply to the walls a coating of whitewash When the cheese room is dry, they replace the cheeses, which have been previously washed with a weak solution of chloride of lime, dried, wiped with a cloth, or scraped, if they need it, and finally rubbed, as has been said, with a cloth soaked in oil.

If the cheeses have arrived at an advanced state of decomposition, they are put in powdered charcoal, mixed with a small quantity of chloride of soda, which destroys their offensive odor, and haste must be made to finish their manufacture before they become entirely putrid. As to mould, this can be prevented by scraping the cheese, by brushing it, and by rubbing it with the oil

To give the new Gloucester cheese the taste and appearance of old cheese, with a probe they take from the two sides and centre—penetrating as far as the middle in each case cylenders of the paste, which they replace by similar ones from an old and fine cheese. After keeping the cheeses thus prepared for a few days, they will have acquired all the agreeable qualities of old Gloucester.

CLAY FOR SANDY SOILS.—Clay as a constituent of soil is not sufficiently appreciated. Its affinity for moisture, when thoroughly pulverized, is very great. It also absorbs ammonia to a greater extent than ordinary soils, and should therefore, form a part of every garden soil, sufficiently mixed with sand to be easily pulverized A few loads of sand applied to a strong clay soil, or a few loads of clay applied to a sandy soil, makes the best of manure. Sufficient attention is not paid to the right composition of soil. Nature will takeoffence if we undertake to correct her mistakes, and we can well afford to do it, especially in our gardens, or where we bestow a good deal as on root crops.

THE CHEST OF THE HORSE.

The following remarks from a paper lately read before the High and Agricultural Society of Scotland, by Professor Barlow, of the Edinburgh Veterinary College are well worthy the attention of every one who has anything to do with horses:

The chest, as every one knows, is the great cavity containing and protecting those essential organs of circulation and respiration—the heart and lungs It is also much more concerned in insuring speed, good action, and endurance, than is sometimes remembered. In illustration of this last statement, let me remind you that a spacious and well formed, in other words, a *good chest*, is always associated with a strongly developed muscular system; again, a small and badly-formed chest always involves deficiency of muscle, and often deficiency of bone also. This is true in men, horses, oxen and dogs alike. In a man whose breast is narrow, the shoulders droop forward, and are rounded instead of square; he is often round in the back also; he has slender arms, thighs, and legs, and a weak body; he may be tall enough, and too tall, but is certain to want breadth, muscular power, and strenth of bone in proportion. So a horse with flat short ribs, and of course a contracted chest, has the fore legs standing near together, is slender in limb, and defective in those masses of muscle which are required to combine great strength with easy rapid, and lasting powers of locomotion. On the other hand a good chested horse is the one for active endurance, and good-chested cattle are most to be prized for milking, feeding, or labor; a man, too having his shoulders well apart and showing a good front, is best adapted for great physical exertion, and possesses best health; truly athletic men, as every one knows, are not narrow-breasted, but broad-chested.

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Now it is a well-known fact, because attested by daily experience, that when a man or animal becomes distressed for breath, he is unable to undergo any prolonged exertion. On the other hand, when bodily labor is performed by means of comparatively easy and slow breathing, such labor can be continued far longer and far more efficiently than when respiration is highly excited or oppressed. We can, indeed, predict a horse's capacity for enduring throughout a long and laborious day, by watching his breathing under the first half-hour's exertion. If he should blow, purge, perspire much, and become flat in the sides, he is not trustworthy; but if he should keep round in the flanks and breathe freely, without perspiring unduly, he is worthy of dependence, so far as endurance is concerned. Some horses can go at a satisfactory speed without betraying unusual distress during a long day's work in the fields or in harness, and appear as lively at night as they were in the morning. They feed well on coming to the stable, and will be little the worse to morrow for what they have done to day. Other horses go freely for an hour or two, but lose energy, and accomplish their work under symptoms of increasing fatigue. They refuse to feed on coming home, and for days after this are unfit for any active exertion. It is too easy to work some horses beyond their appetite; other horses again perform any amount of labor, yet feed hearty, and seldom appear tired.

Let us endeavor to explain what the chest and its contents have to do with this ability for endurance in one case, and inability for endurance in the other. Active exertion induces a great amount of wear and tear in the system, for every motion necessitates more or less destruction of muscular tissue. If the muscles then, are not continually supplied with adequate nutrition, or if their exhausted and worn-out products are not restored by new substances, they become incapable of action. Their supply of actual nutrition comes through arterial blood from the food; blood enriched by good food, must therefore be supplied in proportion to the demand established by exertion. Venous blood however, is continually taking away exhausted tissue, and carries it to the lungs, whence it is expired; if the lungs, chest, and heart are capable and efficient in action, the supply of good blood is sufficient to maintain the physical powers in full integrity. Large lungs, a powerful heart and a good chest make and circulate abundance of good blood; or rather, good food makes rich blood, good respiratory powers keep the blood pure and a strong heart keeps the stream in motion. In a horse where such a state of things exists, there is a power of digestion which work can rarely impair, and a muscular development which exertion can only improve If, again, the lungs and chest are small in size and ineffective in action, the blood becomes highly charged with noxious matter; this, like a poison, destroys the appetite, and muscular power will certainly fail when muscular nutrition is not maintained.

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The capacity of a horse's chest depends of course upon its *breadth depth and length*. *Breadth* of chest is due to the amount of divergence, or arching outward and backward, of the ribs from the spine. *Depth* of chest is determined by the length or prolongation of the ribs in a direction downwards. The anterior (fore) limbs are required to aid in supporting the body in a horizontal position, and also serve as important organs of progression; they become, in fact, reduced to pillars of support and levers of propulsion only. Hence, so far as their osseous framework is concerned, we find them resolved into comparatively simple columns of bone, comprised chiefly of long pieces piled one upon another, and tipped or protected below by a tough, thick, horny box or hoof. Their motions are chiefly those of bending in two directions, forward and backward; the shoulder does certainly possess considerable rotary movement, but the joints below it act like ordinary doors or hinges. Now to bring these limbs sufficiently beneath or within the weight they have to sustain, each side of the chest is much flattened before. This flattened surface is most complete over the four or five ribs first in order, and is covered by muscle, tendon, and elastic tissue, which join the shoulder bones to the chest. * * * The flattening of which we have spoken is greatest, as a general rule, in animals which are specially fitted for rapid action. It is more obvious in the greyhound than in the bulldog or mastiff; is more evident in the wild boar than in the prize swine of our cattle-shows; and as everyone knows, it is far more determined in the racer than in the dray-horse. A very broad chest between the shoulders and elbows is incompatible with great powers of speed. Horses, for instance, such as those gigantic creatures seen in London drays, make a poor business of a trot, and mere burlesque of galloping; no more can a bulldog walk or trot like a greyhound.

In trotting, one fore foot is on the ground at once; whilst each foot descends and becomes placed, it approaches the middle vertical longitudinal place of the body; it is brought, in fact, below the centre of gravity, in order to balance the weight above; and the corresponding shoulder is thrown outward. This bringing of the feet inward, so as to place them

more directly underneath the superincumbent weight with the accompanying outward or balancing shoulder motion occupies a portion of time, and occasions a rolling or swinging gate, which is more perceptible in the fore than in the hind limbs. The same rolling action is also seen in walking. A wide chested horse trots much like a bulldog, and for the same reason, viz., a new centre of gravity has to be found for every step, a new balance for every stride, and side motion attends the motion in a forward direction. In galloping, the two fore feet are together on the ground at one moment, and the two hind feet at another; in this action do not require to be brought so much inward, because, being placed one on each side, they restrain the weight without. Owing, however, to the distance at which they stand apart, the action is wide, loose, and jarring. We assume, then, from what we have seen in animals adapted for most rapid action, that this flattening inside the shoulder-blades, and corresponding approximation of the fore legs, are necessary conditions of form. It is, however, quite apparent that such flattening will greatly reduce the chest in size, and thus lessen the lungs within. A remedy, however, is ready for such a seeming evil. It is this: the chest of a well-formed horse is increased in depth, in order to compensate for apparent want of width. When the chest is thus narrowed from side to side before, the fore-legs approach in like proportion. If near enough, and not too near, they perform straight or direct motion only After being raised from the ground, as in walking or trotting, and during their descent in the act of stepping they need not describe any rotation inward in order to be brought underneath the centre of gravity, for they are already sufficiently below the superincumbent weight, nor do the shoulders and chest require to be thrown outward; the step is consequently smooth, the body is never off its balance, and all rolling action is thus avoided. In the gallop, too, where the chest is narrow, there is neither loss of time, nor useless expenditure of muscular power connected with width and looseness of action, but the limbs play evenly in parallel planes or lines of direct onward motion, and, so far as speed is concerned great advantage is gained.

A too-narrow chest, however, is about the greatest of evils; it is sometimes so unduly contracted, and involves other defects so slightly counterbalanced by any advantages, as to render many horses of light and even of heavy breeds completely worthless. How many horses accounted well-bred, [i. e. partaking largely of the blood of the race-horse,] after proving useless for other purposes, find their way, while yet young, into our street coaches! We see the poor creatures, with broken, tottering knees, bruised inside the shank and fetlock, occupying all city cab stands, and hanging their heads to the ground as if broken-hearted. When a very narrow chest is also very shallow in depth from above to below, the fore-legs come too closely in contact, or, as a popular expression is, "they seem to grow out of one hole." There is also another serious defect in a narrow chested horse; owing to the ribs not descending sufficiently between the elbows, and a deficiency of muscle over the breast-bone, the elbows turn inward, and sometimes stand under the breast. This causes the toe to turn outward; every time a fore-limb is lifted from the ground, the foot and flank bend inward, but the knee outward; and as the foot approaches the ground again it is apt to strike the opposite fetlock. By standing some distance before a horse with this kind of action, so as to watch his gait when walked or trotted towards us, the fore-legs and feet seems actually jostled or folded over one another at every step. In a rapid trot this involved action becomes confused, the animal is apt to strike the foot of one leg against the foot, fetlock, or shank of the leg opposite and may come down at any moment. More or less turning out of the toes is often seen in race horses, especially among second class animals; when the turning out is not very marked, and the fore-legs are not too close, it is usually accounted no great defect, when speed is the only object, and where little weight is to be carried. On the other hand, where the fore legs are almost close together, and the toes are widely everted, we may be sure the chest is narrow and shallow to an injurious degree. In making these observations I may remind you that many cases of everted toes and interfering limbs depend upon malformation of the fore-legs, and not upon defective formation of the chest.

GEOLOGICAL FEATURES AND SOIL OF CANADA.

(From Hogan's Prize Essay.)

The general features of Canada exhibit a granitic country, with occasional calcareous rocks, of a soft texture, and in horizontal strata. The calcareous region extends in a line north-west beyond Lake Michigan, as far as the sources of the Missi-sippi, and thence to the great range of the Rocky Mountains.

All the great lakes are placed in the line of contact between two vast chains of granite and limestone. At the narrowest part of Lake Winnipeg, where it is not more than two miles broad, the western shore is skirted by calcareous rocks, while on the opposite shore there are still higher rocks, of a dull grey granite. In the Lower Province, particularly, the granite prevails, with clay and limestone occasionally. The north shore of the St. Lawrence offers a rich field for the mineralogist, and at the Falls of Montmorenci there is a dense bed of limestone, exhibiting deep fissures, which appear to confirm the account of the earthquake in 1663, of which so many traces are visible.

The granite is invariably found in strata more or less inclined to the horizon, but never parallel with it. From Quebec to Niagara the red slate is perhaps the prevailing rock. The subsoil around Lake Ontario is limestone on granite, real granite being seldom seen. On Lake Erie the strata are limestone, slate and sandstone; and at Niagara the stratum of slate is nearly forty feet thick, and almost as fragile as shale,—so much so, indeed, as to sink the superincumbent limestone, and thus verifying, to some extent, the opinion that a retrocession of the falls has been going on for ages. On Lake Huron limestone is found with detached blocks of granite and other primitive rocks. On the south shore of Lake Superior are sandstone, resting on granite, chalcedony, cornelion, jasper, opal, agate cardonyx, zeolith, and serpentine, with iron, lead, and copper imbedded. The north shore is of older formation, with vast beds of granite, and mines of copper.

An elaborate and highly interesting report recently presented by Mr. Logan, the Provincial Geologist, to his Excellency the Governor General, furnishes much valuable descriptive detail of the country between Montreal and Cap Tourmente, thirty miles below Quebec, having a length of about two hundred miles, gradually widening from Cap Tourmente, and having an area of about 3000 square miles.

"It presents a general flat surface, rising in many places by abrupt steps, (the marks of ancient

"sea margins,) into successive terraces, some of which "are from 200 to 300 feet above the level of the ri "ver, and the whole have a general parallellism "with it. These terraces are occupied by extensive "beds of clay and sand." The economic materials of this district, traversed by the St. Maurice and other large rivers, appear to be those of *bog iron ore*, of which the largest fields appear in the country between St. Maurice and Batiscan; and in the same localities, especially in the St. Nicholas range of Pointe du Lac, *iron ochre* is extensively found, occupying, it is said, an area of about 400 acres, with a depth ranging from four to six feet, and affording eight varieties in colour. *Iron sand*, *wad*, and *bog manganese* are also found, and *clay* for pottery, bricks, and roofing tiles, to an extent which enables them to be manufactured in almost any locality where wanted; and the *white sandstone*, although harder than most building stone, possesses, as Mr. Logan remarks, the valuable property of resisting fire. This, with limestone and the yellow calcareous stone, called the "Deschambault's one," and the *millstones* over the Potsdam beds, fit for flagging, are in beds from one to two feet thick. *Marble* of various colours, and susceptible of the highest polish, is found, and *peat* has been turned by the *habitants* to excellent account; when burned and combined with the surface beneath, it becomes a very fruitful soil.

The conflagrations which have destroyed so large a portion of the two principal cities in Canada have naturally called public attention to the roofing of the houses, and several slate quarries in the Townships of Kingsey and Elzear are now in operation. Their specific gravity and chemical composition are said to resemble the finest Welsh slate. In the Eastern Townships of Lower Canada clay states have been extensively discovered.

Sir Charles Lyell and Mr. Logan have declared—and it is feared with too much truth—that from the geological structure of Canada coal cannot exist.

If Canada, however, has not coal she is conveniently situated to it: on the north-west are the immense coal fields of the Michigan Territory, and on the south-east is the still greater coal field of Appalachia, the one with a supposed surface of 12 000, and the other of 60,000 square miles, and said to be the largest known carboniferous tracts in the world.

But little copper has been found in Lower Canada. On the River L'Assomption and other places where it has been discovered the lode is said to be of trifling value.

Mr Logan has devoted much attention to the discovery and distribution of gold. The auriferous tract is clearly shown to exist over 10,000 square miles on the south side of the St Lawrence, especially in the Eastern Townships, in the valley of the St. Francis, from Richmond to Salmon River, and on the Magog River above Sherbrooke; but he remarks "that the deposit will not, in general, remunerate unskilled labour, and that agriculturists, "artisans, and others engaged in the ordinary occupations of the country, would only lose their labour by turning gold hunters."

The report of Mr. Logan on the Upper Province is accompanied by one by Mr. Murray, the Assistant Geologist, who especially refers to the district between Kingston and the River Severn, connecting Lake Simcoe with the Georgian Bay. The economic material met with in this district are *magnetic and specular iron ore*, which exists chiefly in the Township of Bedford in the County of Frontenac, Madoc and Marmora in Hastings, Belmont in Victoria, and Seymour in Northumberland; and of these Mr Murray thinks the deposits in Madoc, Marmora and Belmont will become of great commercial importance. The Marmora mines are now worked by an English Company with large capital, and every modern improvement in machinery. They are situated on a rocky flat, and the iron ore is said to be rich in the extreme, yielding sometimes ninety per cent. It is found chiefly on the surface or in its immediate vicinity The Company owning them also possess extensive beds of marble and lithographic stone. In the same district are found galena and plumbago; and the Potsdam formation yields grindstones and flagging stones; clay producing the red and white brick is also abundant.

The copper on Lakes Superior and Huron is becoming an important article of national wealth, and is found occasionally in masses of 2000 pounds weight in a pure and malleable state.

Canada abounds in mineral springs, and the Caxton Plantagenet, St Leon and St. Catherines waters have acquired great celebrity

The soil of Canada is generally extremely fertile, and consists principally of yellow loam on a substratum of limestone It greatly improves to the westward, and its quality, when uncultivated, is easily ascertained by the timber it produces, the larger and heavier kinds growing on the best soil. In Upper Canada the brown clay and loam, intermingled with marl, predominates in the district between the St Lawrence, and the Ottawa; but further west, and north of Lakes Ontario and Erie, the soil becomes more clayey and far more productive The virgin soil is rich beyond measure, and the deposit of vegetable matter for ages improved by the ashes of the fires which sometimes sweep the forest, render it abundantly productive for several years without extraneous help.

WHEAT.

The following is from J. Payne Lowe's forthcoming book on Wheat.—[Ed.

Meteorological Influences.—It is a well established fact that in England wheat cannot be cultivated at a height of 1000 feet above the sea, while in the South of France it may be grown at an elevation of 1500 feet. This, of course, is due to difference of temperature.

It is also well understood that the hygrometric condition of the atmosphere influences the composition of wheat; for in moist climates, such as that of Ireland, it will contain a larger per centage of water.

Now, for the reason that a great amount of fertilizing material is received from the atmosphere during a rainy season, the necessity of proper mechanical and chemical condition of the soil becomes still more apparent, for thus the effects of the rain will materially be governed If proper under-drains exist in soils that need them, all excess of moisture will pass away, thus permitting the free circulation of air to exercise its beneficial efforts both in increasing the fertility of the soil, and enabling the wheat plant to withstand the various diseases to which it is liable.

As already stated, the per centage of gluten is invariably greater in warm climates.

MARKHAM'S FAREWELL TO HUSBANDRY.

We give below two or three extracts from an old book called *Markham's Farewell to Husbandry.* The part of the work from which we quote treats of the orchard and garden, and is printed in the old English black letter. The first extract we make is of the "distance of trees," and the second, from the *poetry* of the work, in relation to the honey bee.

DISTANCE OF TREES.

I know not to what end you should provide good ground, well fenced, and plant good sets; and when your trees should come to profit, have all your labours lost, for want of due regard to the distance of placing your trees. I have seene many trees stand so thicke, that one could not thrive for the throng of his neighbours. If you doe marke it, you shall see the tops of trees rubd off, their sides galled like a galled horse's backe, and many trees have more stump than boughs, and most trees no well thriving, but short, stumpish, and evil thriving boughs: like a corne field over-feeded, or a towne over-peopled, or a pasture over-laid, which the gardiner must either let grow, or leave the tree very few boughs to beare fruit. Hence small thrift, galls, wounds, diseases, and short life to the trees: and while they live greene, little, hard, worme-eaten, and evil thriving fruit arise, to the discomfort of the owners.

To prevent which discommoditie, one of the best remedies is, the sufficient and fit distance of trees. Therefore at the set ing of your plan·s you must have such a respea, that the distance of them be such that every tree be not annoiance, but an helpe to his fellowes: for trees (as all other things of the same kinde) should shrowd, and not hurt one another. And assure your selfe that every touch of trees (as well under as above the earthe) is hurtful. Therefore this must be a general rule in this art: That no tree in an Orchard well ordered, nor bough, nor Cyon, drop upon, or touch his fellowes. Let no man thinke this impossible, but looke into eleventh chapter of dressing of trees. If they touch, the winds will cause a forcible rub. Young twigs are tender, if boughs or armes touch and rub, if they are strong, they make great galls. No kinde of touch therefore in trees can be good.

COMMONWEALTH OF BEES.

When I had view'd this Common wealth of Bees,
Obseru'd their Lines, their Art, and their Degrees:
As; how, beside their painefull Vulgar ones,
They haue their Prince, their Captaines, and their Drones:
How they Agree; how temp'ratly they Feed;
How curiously they Build; how chastly Breed:
How seriously their Bus'nesse they intend;
How stoutly they their Common-good defend;
How timely their Prouision are prouided;
How orderly their Labors are diuided;
What Vertues patterns, and what grounds of Art,
What Pleasures, and what Profits they impart:
When these, with all those other things I minde
Which in this Booke, concerning Bees, I finde:
Me thinkes, there is not halfe that worth in Mee,
Which I haue apprehended in a Bee,
And that the Pismere, and these Honey-flies,
Instruct vs better to Philosophize,
Than all those tedious Volumes, which, as yet,
Are leaft vnto vs by meere Humane-wit.
For, whereas those but only Rules doe giue:
These by Examples teach vs how to liue.

FARMING.

If one half the zeal energy and expense that blots so many gazettes with low and coarse abuse, setting the whole community by the ears for the vain and paltry purpose of a few demagogues and officeseekers, were bestowed on the advancement of agriculture; if the people were half as ambitious to improve and beautify their fields, as they are to settle the affairs of the nation; and half as angry with thistles, thorns and poor fences, as they are with their political opponents, who probably wish as well to the country as they, we should have more productive fields, less complaints of poverty, more ability to be charitable and munificent, and abundantly more good feelings. From Pittsburg to New Orleans the son plows as his father did before him, and the great mass of farmers are as stationary in theory as they are in practice. Nine in ten believe at this moment, that book farming is the mere useless, visionary dreaming of men that know nothing about practical agriculture.

We would tell them that England is the garden of Europe simply because almost every acre of the ground is cultivated scientifically and on principles which have been brought to the test of the most rigid and exact experiment. We would tell them that New England, of whose soil and climate they are accustomed to think as consigned, by Providence, to sterility and inclemency, is the garden of the United States, only because the industrious and calculating people do not throw away their efforts in the exertion of mere brute strength—but bring, mind, brain, system and experience to bear upon their naturally hard and thankless soil

On every side the passing traveller sees verdure, grass and orchards in the small and frequent enclosures of imperishable rock, and remarks fertility won from the opposition of the elements and nature. After an absence of ten years, on our return to our country, we were struck with this proud and noble triumph conspicuous over the whole region.

The real benefactors of mankind, as St, Pierre so beautifully said, are those who cause two blades of wheat to mature where one did before. The fields ought to be the morning and evening theme of Americans that love their country. To fertilize and improve his farm, ought to be the main object of the owner of the substantial soil. All national aggrandizement, power and wealth may be traced to agriculture, as its ultimate source. Commerce and manufactures are only subordinate results of this main spring.

We consider agriculture as very subsidiary not only to abundance, industry, comfort and health, but to good morals and ultimately even to religion We shall always say and sing, "Speed the plow."—*Rev. T. Flint.*

BEAUTY—HOW OBTAINED AND HOW PRESERVED—The true foundation of beauty in woman is exercise in the fresh air. No cosmetic is equal to this. English ladies of rank are celebrated all over the world, for their splendid persons and their brilliant complexions; and they are proverbial for their attention to walking and riding. The sallow cheeks, stooping figures, susceptibility to cold, and almost constant ill-health, which prevail among the American wives generally, are to be attributed almost entirely to their sedentary life. A woman can no more become beautiful, or remain so without healthful exercise in the open air, than a plant can thrive without light.

WHEAT CROP, AND THE PRICE OF IT.

A common way in speculating in flour is this: one merchant agrees to sell to another, say, five thousand barrels of flour, sixty days from date, at seven dollars per barrel; and when the day comes for delivery he never hands over a single barrel, but pays or receives the difference between seven dollars per barrel, and the actual price of the flour at the day. If flour, for instance, has fallen one dollar, he pays over five thousand dollars; if it has risen he receives it from the other party to the contract. In reality, it is not a sale, but a bet; and as soon as it is closed, each party, like jobbers in stocks, turns out to bend the market to his views, so as to win the stakes

The same thing may just as easily take place in wheat, only still more adversely to the interest of the producer; and when there is a disposition to speculate in grain we see the result in the conflicting accounts of the presses which each party has secured, as to the actual production of wheat, and in the fluctation of the market. Such reports and such fluctiations are but part of the game played. We mean to cast no imputation on the press, or to insinuate that their opinions are paid for. They may, and no doubt in most cases, do, very honestly entertain the opinions they have derived from those parties to whom they look for information the dealers in grain —and which opinions it is their duty to give. We only mean to let the farmers know, that, even with the best intentions, newspapers cannot always get access to disinterested authorities, but must give the views of others, and of buyers, in most cases

We, therefore, think it safer to judge by the past, by the history of food consumption for a recent period, and by the weather that we have had, than by any such statements as papers sometimes parade of the number of bushels which the world will bring into the market. The wide discrepancy in recent estimates of the New York Herald and the Cincinnati Price Current, one putting down the present crop at 168.575 000 the other at 114,500 000, a difference of 54,075,000 bushels, proves that all such estimates are mere stuff. As we said before, no man can estimate the wheat crop of Virginia, because its delivery takes place at so many different outlets. The same is true of all other States, and cannot be otherwise.

Of the crop of Virginia, as affected by weather and other disasters, we have spoken before. Every day confirms our opinion of the correctness of the views then expressed, and we have received numerous letters assuring us that we were right as far as the particular crop of each writer's section was concerned. In fact we merely took ground that a hard winter, an unexampled spring drought extending far into June, and a superabundance of insects, could not yield their disastrous effects to a few late rains and a fine ripening season. This was true of nearly all the United States, whilst the same drought embraced England and France, and must have operated to injure crops there.

Our private advices, as far as we have them, bear us out in this opinion as to the rest of the Union. A friend, for instance, whose veracity and judgment and disinterestedness we avouch, writes in a letter to another gentleman, and not intended for us, that in four thousand miles of travel over parts of the North and West with which he was familiar, he did not see one single good wheat crop. A neighbour of his, going over the same country an equal distance but by a different route, gives the same account. Both are farmers of the county of London, and by profession and from locality know what good crops are. And though the crops are much better everywhere than was expected from the early prospect, they cannot be good anywhere.

England last year made the finest crop she ever made, and has eaten it up clean. This year her harvest will be late and farmers know that here the chances are always against wheat's yielding well in a late harvest, whilst there is liability to disaster in securing the grain is greatly increased. Meanwhile her consumption is increasing, her armies will need more than she can spare; and after last winter's experience in the Crimea, where they are very likely to winter again, they will supply it with grain in waste. But they can only get what they want from us. Her northern sources of supply are cut off, her others are more or less insignificant. The whole of continental Europe, now on a full military establishment and prepared for active movements at short notice, must consume more whilst it makes less, because she has a larger army and fewer producers; and France, from whatever cause, has her ports opened until the 31st of December, by decree of the Emperor—a thing never known before.

With this state of things we cannot see what is to pull down the market.

We know that at $2 50 per bushel our wheat did not bear export the past season, but was all consumed at home. But the case may be very different, if England, who generally goes into one harvest with a surplus from the other, shall commence the present with an empty belly, and find her neighbours no better off in that particular than herself.

Still, wheat has receded some fifty to seventy cents since the new crop began to come in. Why? Because there is more than enough now on hand for the present supply, which still feels the influence of an unusually high price, whereas six weeks ago there was a great scarcity, and because the time when wheat will be wanted in any quantity for shipment at high prices, has not yet arrived and may not come for three months, or even a longer period; there is no reason, therefore, for its keeping up just this time But to force it on the market now, in a panic, would only make it still lower. A few weeks since, money, in New York, was not with six per cent., at call but nobody witnessed the spectacle of capitalists forcing loans on the community in consequence. On the contrary they were rather inclined to hold up. As little do we think should the farmer feel incited to send his wheat forward now merely because it has been taking a tumble of five or ten or even twenty cents in the bushel.—*Southern Virginia Planter.*

FACTS FOR THE CURIOUS.—If a tallow candle be placed in a gun and shot at a door, it will go through without sustaining any injury; and if a musket ball be fired into water it will not only rebound, but be flattened as if fired against a solid substance. A musket ball may be fired through a pane of glass, making a hole the size of the ball, without cracking the glass; if the glass be suspended by a thread, it will make no difference, and the thread will not even vibrate. Cork, if sunk 200 feet in the ocean, will not rise on account of the pressure of the water. In the Arctic regions, when the thermometer is below zero persons can converse more than a mile distant. Dr. Jamieson asserts that he heard every word of a sermon at the distance of two miles The writer heard across water a mile wide, on a still day, with perfect distinctness, every word of a mother talking to her child.

THE PLOUGHMAN.

BY "XENETTE" OF CANADA WEST.

Tearing up the stubborn soil—
Trudging, drudging, toiling, moiling,
Hands and feet and garments soiling—
Who would grudge the ploughman's toil?
Yet there's lustre in his eye,
Borrowed from yon glowing sky,
And there's something in his glances
That bespeaks no dreamer's fancies—
For his mind has precious lore,
Gleaned from nature's sacred store.

Toiling up yon weary hill,
He has worked since early morning,
Ease and rest, and pleasure scorning,
And he's at his labor still—
Though the slanting western beam,
Quivering on the grassy stream,
And yon old elm's lengthened shadow
Flung athwart the verdant meadow,
Tell that shadowy twilight gray
Cannot now be far away.

See he stops and wipes his brow—
Marks the rapid sun's descending—
Marks his shadow far extending—
Deems it time to quit the plough.
Weary man and weary steed
Welcome food and respite need;
'Tis the hour when bird and bee
Seek repose—and why not he?
Nature loves the twilight blest,
Let the toil-worn ploughman rest?

Ye who nursed upon the breast
Of ease and pleasure enervating,
Ever new delights creating,
Which not long retain their zest—
Ere upon your taste they pall,
What avail your pleasures all?
In his hard, but pleasant labor,
He, your useful, healthful neighbor,
Finds enjoyment, real, true—
Vainly sought by such as you.

Nature's open volume lies,
Richly tinted, brightly beaming,
With its various lessons teeming,
All outspread before his eyes,
Dewy blades and opening flowers,
Emerald meadows, vernal bowers,
Sun and shade and bird and bee,
Fount and forest hill and lea—
All things beautiful and fair,
His benignant teachers are.

Tearing up the stubborn soil—
Trudging, drudging, toiling, moiling,
Hands and feet, and garments soiling—
Who would grudge the ploughman's toil?
Yet 'tis health and wealth to him,
Strength of nerve and strength of limb,
Light and fervor in his glances,
Life and beauty in his fancies;
Learned and happy, brave and free,
Who so proud and blest as he?

TEA AT HALF PRICE.—Laysel, a French Chemist, asserts that if tea is ground like coffee, before hot water is poured upon it, it will yield nearly double the amount of its exhilirating qualities.

THE TURNIP FLY.

A correspondent of the *North British Agriculturist*, gives the following as a remedy against this troublesome insect:

Let the seed be put into a glazed pan, or any open vessel and put to it as much rapeoil as will, when stirred together with a stick, be sufficient to make the seed moist. Next add sulphur as will, when again stirred together, cause the seed to separate. When properly mixed, all the seeds will have a coat of sulphur adhering to it: and it will be found that the ingredients, in addition to keeping off the insects in question, will be a great stimulant to the growth of the crop. The seed thus managed may be sown or drilled with the same convenience as if it were clean. Should more seed be prepared than is found necessary to be sown at one time, it will keep well and not germinate for twelve months to come. This simple remedy I have never known to fail, and has only to be tried to be appreciated.

STANDARD WEIGHT OF GRAINS IN CANADA.—The following table shows the weight of a bushel of the different grains, &c., as fixed by Parliament:

Wheat,	60 pounds
Indian Corn,	56 pounds
Rye,	56 pounds
Peas,	60 pounds
Barley,	48 pounds
Oats,	34 pounds
Beans,	60 pounds
Clover Seed	60 pounds
Timothy Seed,	48 pounds
Buckwheat,	48 pounds

AN ENGLISHMAN'S APPROVAL OF THE MICHIGAN DOUBLE PLOUGH.—A correspondent of the *Mark Lane Express*, residing in Canada West, says:—We would recommend to the attention of English farmers an American plough, which we here now use to great advantage. It is wide on the sole, and has, preceding the ordinary mould board, a smaller one mortised into the beam and regulated in hold by a screw; this turns a thin paring of say two to three inches from the surface into the bottom of the furrow, and is invaluable in clover leys or dirty stubble. In spring, after it, you will see no grassy, stubbly strip marking each furrow; but all is a clean fallow-like surface, ready to work with the cultivator or grubber into a most beautiful seed-bed for peas or spring grain, giving the seed the advantage of the frost-mellowed surface soil, without danger of a foul tillage. A pair of stout horses work this plough readily, and where the land has been previously subsoiled can go to a great depth."

Manures and Fertilizers, and their application to the soil, are topics upon which the progressive farmer is generally well informed. His maxim is to so *feed the soil* that, notwithstanding the large crops produced, its strength and fertility shall annually be increased rather than diminished. Knowing it requires the same elements to produce a bushel of wheat in the middle of the nineteenth century that it did when Joseph was sold into Egypt, he takes especial pains to return to the soil the items requisite to the growth and perfection of the cereal and other crops taken therefrom. Hence he always makes compost before constructing a granary—knowing that, unless his is a rich, virgin soil, there will be little or no use for the latter without first applying the former liberally to the land cultivated.

THE HESSIAN FLY AND THE MIDGE.

[The following brief but comprehensive article (which we find in the *Rural New Yorker*), by Professor Dewey, embraces a very succinct account of these insects. As the subject is one of great interest to thousands of our readers, we give the article the prominence to which it is entitled.]

Both these insects have attracted much interest for a few weeks past, as they are voracious destroyers of wheat. Much effort has been necessary to ascertain satisfactorily the history of these depredators on one great necessary of life. It seems to be proved that they are old and well-known insects of Europe, and have the same character there and here.

The Hessian Fly was introduced into our country in 1776, by the Hessian troops who were landed on Long Island. In a few years their depredations on wheat fields were obvious, and have been well known since, till the insect has spread far and wide over the land. The Hessian Fly lays its eggs near the root of the wheat in the autumn, and the maggot, which soon is hatched, takes its residence just above the lower joint of the stalk, causing it to enlarge and yield its nutritious juice to the animal. Though the stalk grows in the spring, it is sickly, becomes weak and wrinkles down, and bears no fruit. In due time the maggot becomes a chrysalis, like a flax-seed, and changes into a fly, whose body is about one tenth of an inch long, and whose wings expand about a fourth of an inch. So small and insignificant is the animal, which is produced in such multitudes as to blast the harvest hopes of the husbandman entirely, and expose him to the desolation of a famine. Several destroyers of the maggot are provided by a kind Providence, by which the creature is destroyed, and the field of wheat is left uninjured. It is said that two crops of this insect are produced in a year.

The Hessian Fly belongs to the order *Diptera*, or two-winged, and has the very musical and expressive name of *Cecidomyia destructor*—the *destructive gall-fly*. The common name, Hessian Fly, is its accepted designation.

The *Midge*, or Wheat Gnat, is another insect, destructive to wheat. It has the name of *Cecidomyia tritici*, meaning *gall-fly of wheat*. This also is a small insect, about the size of the Hessian Fly, and often appears in great numbers on the heads of wheat. Its object there is to lay its eggs at and upon the young seed or wheat. These they soon hatch into a maggot, which devours the seed and cuts off the crop. In due time, the maggot becomes transformed into a yellow chrysalis, falls to the ground and lies until the next season, and then the shell is burst, and the midge or gall-gnat flies forth to its work of propagation. The destruction falls directly on the seed in the head of wheat, and the yellow chrysalis or pupa is to be seen at and before harvesting in the wheat heads. The maggot is not able to eat through the hard covering of the wheat seed, and cannot attack ripe wheat; and hence its destructive power operates before the milk changes into a solid form.

The Midge is often called the "Weevil," but this is an improper meaning. The weevil belongs to another family of insects, of *beetle kind*, and is able to eat ripe and hard grains. The "rice-weevil" is one of the kind, named *Calandra oryzæ*, which eats the ripened and hard rice, and also devours "stored" Indian corn. It is said that a similar weevil has been found to eat the hard seed of wheat; but too little is known of it or its ravages to be of importance now. At any rate, these are very different from the Midge now in the heads of wheat. It is desirable to use as definite names in common language as is possible. Hence the names above. To call one the wheat fly, marks no difference, for both are flies or gnats, and both destroy wheat. The Hessian Fly might be named "Wheat-stalk Fly," and the Midge "Wheat-head Fly," to designate an important fact and difference

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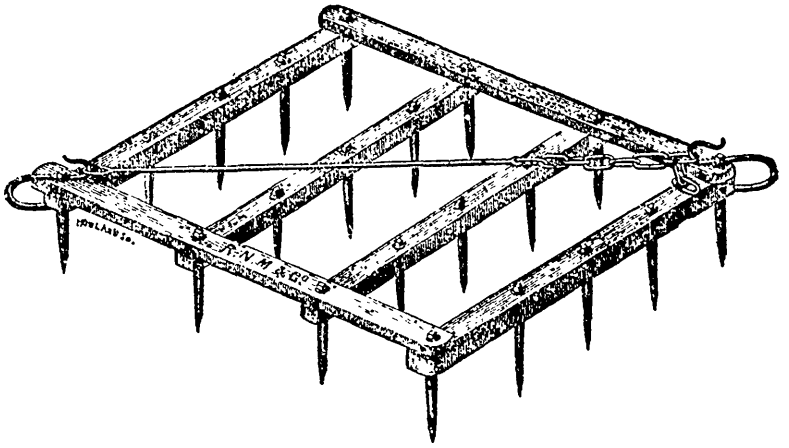
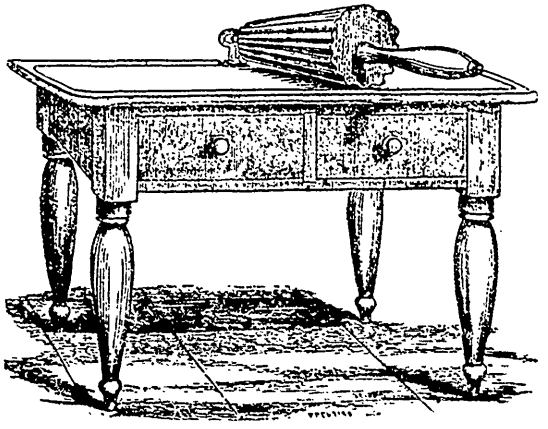
GREEN FOOD FOR FEEDING.—On the feeding of cattle which has been so much discussed of late, Mr. Lawrence of Cirencester has an article in the *Journal of the English Agricultural Society*. He says:—When I commenced feeding bullocks, some years ago, I depended mainly on the experience of others, and was in the habit of noting down the allowances of the different kinds of food recommended in the agricultural periodicals, and otherwise, by men of reputed authority in such matters. The quantity of roots usually recommended I have observed to be from 1 to 1½ cwt. per diem, and for large bullocks even up to 2 cwt., and that without admixture. Now, what is the object we propose to accomplish? It may be assumed for our present purpose we are dealing with animals at maturity in point of growth, that the skeleton is fully developed, and that we have only to accumulate flesh and fat. It must ever be borne in mind that it is not the quantity of food put in the stomach of the animal which accomplishes the object in view, but that which is thoroughly digested and assimilated by the healthy action of the viscera. The setting before a bullock half a cwt. of neat roots the first thing in the morning, some hours afterwards its allowance of more solid and nutritious food, and repeating the feed of roots in the evening, appeared to me an irrational proceeding; and, on the other hand, that a due mixture of the solid and fluid foods would probably aid the proper digestion of each. I resolved therefore to diminish the quantity of roots which I had generally heard recommended one half viz., from 70lbs. to 80lbs. per diem, according to the size of the animal, and to give a portion of these with each feed, as intimately incorporated as might be practicable with the more solid food. With this view I obtained Moody's cutter, which cuts the roots into thin ribands: these we turn over amongst the chaff, so that the animals cannot avoid eating them together. I observed that the animals under the change to which I have adverted throve faster, and were kept equally clean with one third less litter, by weight than we had found necessary on the former mode of feeding.

YELLOW BIRDS AND THE WEEVIL.—The Binghamton *Republican* says that a farmer in that vicinity, who supposed that yellow birds destroy the wheat, commenced shooting them, and out of curiosity opened the crop of one of them. He found that, instead of eating the wheat, the birds destroy the weevil. He discovered as many as two hundred weevil in the crop, and but four grains of wheat, which had the weevil in them.



EXPANDING AND REVERSABLE HARROW.

There are various kinds of harrows in use in this country, but we do not remember to have seen any of the kind represented in the above cut. It may be worth the attention of those readers who delight in "improvement." As will be inferrred from the cut, the two bars on top of the frame work, are so connected with the teeth as to allow the under bars to swivel or turn, and thus the harrow contracts or expands in width. This is done by shortening or lengthening the chain. The harrow may be drawn either end forward. The teeth may thus be kept sharp without trouble or expense. Another advantage is, that it may be folded together for transportation. The first cost will be a little more than the common harrow as the teeth are shouldered and fitted with screws, but it may still prove economical. They may be ordered through McIntosh and Walton, of this city. The price will be from $12 to $16.



CYLINDRICAL BUTTER WORKER.

The advantages of this arrangement of the butter table are, that the butter can be kept cool in working and the application of the hands (often not remarkable for cleanliness) is avoided. The milk is more thoroughly worked from the butter, and the salt more evenly mixed than in the common way. This table and roller can be constructed by any tolerable mechanic, and should recommend itself to butter workers.

CABBAGES FOR COWS.—The editor of the *Agricultural Gazette* [Eng.] estimates one acre of cabbages to be worth three acres of turnips for cows. He recommends sowing seeds in beds, either in autumn or spring, and transplanting toward the end of May, at the rate of 8 000 plants to the acre. One pound of seed will produce about 2,400 plants.

AGRICULTURE IN FRANCE.—A letter writer says: "A trip of six hundred and fifty miles, from the northern to the southern extremity of France, justifies me in the expression of my opinion that the sun does not shed its rays on so fair a land, or one so thoroughly cultivated. The whole country is literally a garden."

THE MONTHS.—SEPTEMBER.

"Next him September marched eke on foot,
Yet was he heavy laden with the spoyle
Of harvest riches, which he made his boot,
And him enriched with bounty of the soyle:
In his own hand, as fit for harvest's toil,
He held a knife-hook; and in th' other hand
A pair of weights, with which he did assoyle
Both more and lesse, where it in doubt did stand,
And equal gave to each as justice duly scanned."

SPENSER.

The name of this month has not changed its orthography since the time of the Romans, who designated it September, as being the seventh month from March. By the Anglo-Saxons it was called *Gerstmonath*, *Haligemonath*. Verstegan informs us that the first name originated from the circumstance "that barley, which that month commonly yielded, was anciently called *gerst*, the name of barley being given unto it by reason of the drink therewith made, called *beer;* and from bealegh it came to be *berlegh*, and from that to *barley*. So, in like manner, *beerheym*,—to wit, the overdecking or covering of beer,—came to be called *berham*, and afterwards *barm*, having gotten I wot not how many names besides."

The name of *Haligemonath* that is *holy month*, was given to it, according to a Saxon menology in Wanley's addition to Hicks, "for that our forefathers, the while they heathens were, in this month celebrated their *devil-gild*." These *devil-gilds* (deofol-gild) were the sacrificed gilds of heathenism, and to them, according to Wilda and Lappenberg, may be traced the origin of the municipal system of the Saxons, for they seem to have combined the double character of a feast and of a court-day for settling disputes and trying offences, the priests exercising the criminal jurisdiction, and lending it the consecration of religion. Hence the Christians condemned them under the name of devil-gilds, and ould fain have forbidden the people from feasting in honour of the demons, as they chose to term it; but amongst the German race it was a difficult matter to put them down altogether.

Holy-Rood Day, September 14.—A custom peculiar to this day seems to have been the going into the woods a-nutting. Thus, in the old lay of Grim, the collier of Croydon:—

"This day, they say, is called Holy-Rood Day,
And our youth are all a-nutting gone;
Here are a crew of younkers in this wood
Well sorted, for each lad hath got his lass!"

"Oh (observes Miss Mitford), what an enjoyment this nutting is! They are in such abundance, that it seems as if there were not a boy in this parish, nor a young man, nor a young woman,—for a basket of nuts is the universal tribute of gallantry;—our pretty damsel Harriet, has had at least half-a-dozen this season; but no one has found out these. And they are so full, too, we lose half of them from over-ripeness; they drop from the socket at the slightest motion."

St. Michael and all the Holy Angels,—commonly called *Michaelmas Day*,—occurs on the 29th of this month, and is regarded as a festival both by the Roman and Anglican churches. This ancient practice of eating geese on Michaelmas-day is still retained in most old settled communities, although its origin is not easily traced. Young geese are now getting into high season, and this circumstance will, to some extent at least, account for the custom.

Time, and its attendant changes, has wonderfully altered the mode of observing Michaelmas in England and other countries. It being a legal quarter-day, people are reminded of the sometimes unpleasant duty of paying their bills and rents. It was not so once in "merrie" England. William Howitt, one of our most justly popular writers, well observes:—

"There have been merry times at Michaelmas—who would believe it? Yet there *have* been merry times at Michaelmas. Mayors and aldermen were then elected, and made their bows to each other; and be sure there were merry doings where mayors and aldermen were in the case. Stubble geese, like the aldermen, were now in prime condition; but being the weaker, according to the proverb, went to the wall, and thence to the kitchen, and twirled upon the spit. It was a jolly day in old Mother Church; she ordered everybody that could get it, to eat a goose in honour of St. Michael and all his angels. So in church and corporation, in abbey and town-hall, in farm and cottage, there

was an universal eating of fat geese; and nobody that I ever heard of complained of the injunction. Queen Elizabeth was eating her goose at the time that the news of the defeat of the Spanish Armada was brought to her, and no doubt she thought the Spaniards great and very green geese for having come there, and that they would be much greater if ever they came there again. Ever after, Queen Bess most assiduously ate her goose at Michaelmas, and, probably, with Spanish chesnuts, as people on the continent do now; or, if she did not, she would not have repented it if she had, for it is a princely addition. Queen Bess ate her goose all the more assiduously because it was an old saying that, if you ate your goose at Michaelmas, you would have plenty of money all the year round,—a prescription that, if i s efficacy were at all proportioned to its agreeableness, people would be geese, indeed, not to comply with. How, indeed, could any one desire a pleasanter way of replenishing a purse? Queen Bess was always dreadfully in want of money; and as this came to be seen, and not the less to be felt by those who had the taxes to p y, an l as no more Armadas came to be defeated, people lost all faith in eating roas' goose, except the comfortable faith that Robert Southey had, when he addressed one in a sonnet, and asking the goose where it could have been so bravely fed, and, receiving no answer, added himself:—

'But this I know, that thou art very fine,
Season'd with sage, with onions, and port wine.'

"Jolly times, then, it is clear, there have been at Michaelmas. Into these, except in the City of London, there has been made a dreadful inroad by the Municipal Reform Act, which forbade all eating of Michaelmas goose in a corporate capacity. Driven out of convents and corporations, yet I imagine roast goose at Michaelmas finds a welcome reception in many a farm, gentlemen's and other private houses. Roast pigs no longer run about with oranges in their mouths, crying, 'Come eat me!" but stubble geese really do seem to meet you at every turn, and cackle out invitingly that pathetic request. * * * * *

"But I fear me much that there are many houses where this portly visitor finds the door too narrow to get in. Some way, Catholicism having so long gone out of fashion in England, we have forgotten many of its sensible customs. Michaelmas has ceased to be anything of a holiday, except to landlords. A holiday! mercy on us! why it is a rent-day! All might lighten their purses, but that is a process with thousands which does not lighten the heart. It is quarter-day:—

At length this jolly time begins
'Come neighbors, we must wag.'
The money chinks, down drops their chins,
Each lugging out his bag."

We may just add that the festival of St. Michael and all angels was instituted in the year 487, to commemorate the ministry of these holy angels, the messengers of *good will towards men.*

It is at this period, in many parts of England, when the old or off-going tenants give up possession of their farms, and the new or in-coming tenants enter; though the custom in some pla es is to take possession at Lady-day; while elsewhere it is usual to enter upon new farms at mid-April, May-day or even at Whitsuntide. Tusser, in his *September's Husbandry*, observes:—

"At Michaelms lightly new farmers come in,
New husbandry forceth him now to begin;
Old farmers still taking the time to him given,
Makes August to last until Michaelmas even.

"New farmers may enter (as champions say)
On all that is fallow at Lent Lady-day;
In woodland old farmer to that will not yield,
For losing his pasture and feed of his field."

In this month hops are gathered and cured for marl et. This forms an important portion of the husbandry of a few of the southern counties of England, and in Canada the cultivation of hops is gradually extending. The hop is a climbing plant, having long, strong roots and growing on poles to the height of fourteen or eighteen feet, according to the condition of the soil and the character of the season. The fruit consists of scaly seed-vessels of the female plants, and is gathered principally by women and children—the poles on which the vines grow being pulled up, and taken to large baskets or boxes constructed for the purpose. After the hops are gathered, or "picked," as it is commonly termed, they are taken to a building fitted up with grates and a hair-cloth for spreading them on, to be dried, and, when cooled, they are tightly packed in larger boxes or bales ready for market. This crop is perhaps the most precarious and uncertain of any within the range of field culture. Blights, arising from various causes, often injure the quality and dimimsh the quantity of this crop, and sometimes wholly frustrate the hope of the cultivator, and, in a few days, desolate the most promising plantations. No certain remedy has yet been found for these evils—high cultivation and manuring sometimes only tend to increase them, when they result from insect

depredations. The aphis or "fly is the most common and destructive form of blight.

"We cannot (says Howitt) boast of our vineyards; but we question whether Italy itself can show a more beautiful and picturesque scene than an English hop-garden in picking-time. The hops, which have luxuriantly climbed to the very tops of the poles, having on all sides their heavy heads of scaly flowers in festoons and garlands, and the groups of pickers, seated in the open air beneath the clear lustre of an autumnal sky,—age in its contentment, and youth in its joy,—and the boys and girls, which carry to them the poles, covered with all their nodding honours, may match, for objects of interest, the light forms and dark eyes of Italy." Tusser, who wrote in 1557, gives, in his *Five Hundreth Poyntes of Good Husbandrie*, the following rules for the choice of a

HOP GROUND.

"When fansie persuadeth, among other crops,
To have for his spe ding sufficient of hops,
Most willingly follow of choices to choose,
Su ch essons approved as skilful do use.

"Ground gravellie, sandie, and mix'd with claie,
Is naughtie for hops, and maner of waie;
Or if it be mingled with rubbish and stone,
For drieness and barrenness let it alone.

"Choose soile for the hop of the rottonest mould,
Well donged and wrought as a garden-plot should;
Not far from the water, but not overflown;
This lesson well noted is meete to be known.

"The sun in the south, or else southlie and west,
Is well to the hop, as a welcomed guest;
But wind in the north, or else northerlie east,
To the hop is as ill as a fraie in a feast.

"Meet plot for a hop-ground, once formed as is told,
Make thereof account as of jewel of gold;
Now dig it and leave it, the sunne for to burn,
And afterwards fence it to serve for that turne.

"The hop, for his profit, I thus do exalt,
It strengtheneth drink, and it favoureth malt;
And being well brewed, long kept it will last,
And drawing abide, if ye drawe not too fast.

B.

Communications.

BRANCH SOCIETIES.

[*To William McDougall, Esq*]

SIR,—I perceive in the last number of the *Agriculturist*, a letter to you from the Ingersoll Branch Society together with your answer; and as I do not wish, as a Director of the County of Oxford Agricultural Society, to let the management of that Society he under the cloud that letter casts upon it, will trouble you with a few lines to put the matter in its right shape.

That letter was written to ask your advice on a particular point of law, and all collateral circumstances were laid aside, together with some necessary parts, in coming to the point, a circumstance which I am sure the writer of it will, in a cooler moment, himself regret. The new act having been passed late in 1852, it could only come into operation after the annual meetings of 1853. (1.) In the year 1854, our Secretary refused to take the affidavit at the end of the act, as far as it concerned the Ingersoll Society, as it was not a township Society, nor one formed from a combination of townships, but took members from every part of the county, [2.] Now, the affidavit only provides for country and township societies; and if any one having read the affidavit, inspects the act, he will see that the Branch societies are invariably so mentioned in conjunction with the township societies that one is irresistibly led to conclude that the township societies, or those composed of a combination of townships, are the only legal branches [3.] This matter was brought up and fully canvassed at the annual meeting of 1854, and the Ingersall Society were requested to change their name, so that our Secretary might be able conscientiously to include that Society in his affidavit. Whether at the time theyrefused to do it, or neglected to answer the letter, I forget; I believe it was the latter. A resolution, however, was passed, that the report of that society should be forwarded to the Board of Agriculture, together with the others, stating the peculiar nature of the case. This was done and *their money paid over to them*, but they promised to forward to the Board the names of the townships of which their society was composed. This they now say, was done without the authority of the Board, and they refuse to recognize it, though it does seem singular that any member of the Direction should have taken such a step without the orders of his fellow officers. This year they repeated the proceedings of the previous one, and *again their report was forwarded, as before, to the Board;* (you will recollect that it was stated we refused to receive their reports, so as to keep them out of their share of the public grant;) and the answer of the Board was, that unless they changed their name, so as to bring themselves within the bounds of the statute, their portion of the public money would be withheld. (4.) You will perceive that it was the Board of Agriculture that in the first year requested them to change their name, and in the second threatened to withold the grant in case of a refusal to do so. The matter of a name may seem trifling enough, as indeed it did to all of us; but as we have to act under the leading

agricultural authority of the country, and have an act of Parliament to guide us. I think no one can deny that we would be unjustifiable were we to act in opposition to our interpretation of that law; and it seems to me that the *onus* of the unfortunate misunderstanding rests with those who will not obey it even when requested to do so, by the highest authority in that line we possess, rather than upon those who endeavour conscientiously to discharge the trusts they have undertaken. I hope this letter will serve to remove some of the misapprehension as to our motives and conduct, that seems to have taken possession of your mind; and also to clear our cause in the eyes of the public.

I remain, Sir,
Your faithful servant,
HAMILTON FARMER.

P. S. It is a pity the law cannot be made so plain on the subject that no one could misunderstand it; for if the framer reads it one way, and the expositors of it another, there evidently is room for a mistake,—which should not be. (5.)

East Zorra, July 18, 1855.

REMARKS BY MR. MCDOUGALL.

As Mr. Farmer has mentioned *names* and *places* which we did not desire to make public, we are compelled to follow his example. The dispute is an awkward one, and as important facts have apparently been lost sight of in the original statement of the question, it is probably better that the agricultural public should not now be left in the dark as to any part of it.

We have no interest in, or preference for, one side over the other, and, when appealed to, gave our opinion, *upon the case stated*, according to our conscientious judgment and belief. If Mr. Farmer's version is correct, it would appear that the whole case was not stated to us, and that the difficulty is more technical, or imaginary, than real. To save repetition, we shall notice the points of Mr Farmer's letter in the order he has stated them.

(1.) A slight error. The "New Act" was passed in August, 1851. It was "consolidated," with other acts, *in pari materia*, in 1852, and re-enacted. All existing societies were continued, and very few alterations were made in the text of the Act—none, we believe, that could affect the question in dispute at Oxford. It would therefore appear, as stated by the Ingersol Society, that they had received their share of public money without question until 1854; the illegality (if any) existing in full force at the time. This, however, is not material, as the County Society would be justified in acting upon the law when they discovered its meaning. We merely call attention to the point, as there is evidently misapprehension in regard to it.

(2.) This is a material fact, and we confess that Mr. Farmer's statement, if literally true, puts the Ingersol Society out of the Act. But is there not some misapprehension here also? A Society organized at Ingersol must be *in* North or South Oxford, or both. Are we to infer that *other* societies have been organized in these townships? If not, and the Ingersol Society has conformed to the law in all other respects, we do not see how its legitimacy can be questioned, merely because the word "Ingersol" is prefixed to its name. Taking members from "every part of the county" is no discredit—certainly not *mala prohibita*. The Act makes no restriction as to residence; any "fifty persons" may organize a County Society, and a "sufficient number of *persons*" to raise "ten pounds" may form a Township or Branch Society.

(3.) The form of affidavit given in the Act is only suggested as an example. The words are—"an affidavit which *may* be in the form," &c. (see sec. 37). It should be varied to suit the circumstances of the case and the conscience of the deponent. A Township Society, *i.e.*, a society organized "in a township," or in any "two or more together," is undoubtedly the only legal Branch. But does not the Society in question answer this description?

(4.) The contradiction as to facts we, of course, are unable to reconcile. The Board of Agriculture is as much bound by the statute as the societies. Its "duty" is to see that societies have "complied with the law;" but it has no power to impose conditions beyond the Act, or relieve from duties enjoined by it. The only "authorized" expositors of this, as well as other statutes, are the Courts of law. It appears that the Board, and not the County Society, is responsible for the "decision" that the Ingersol Branch has *not* complied with the law. This fact should put an end to the ill-feeling between the disputants in Oxford.

So far as we can understand the dispute—and we confess the *real* point has not yet been made clear to our vision—we think it is susceptible of adjustment without serious difficulty. We know nothing of the grounds of the Board's decision in this case beyond what is stated by Mr. Farmer; and we prefer to make our "deliverance" upon it—since it has gone so far—without communication with that body, or its secretary. The law, we

think, is sufficiently plain if properly examined. One question, in our opinion, will settle the whole matter—Has the Ingersol Society made the "Declaration" (schedule A) prescribed by the Act and transmitted it to the County Society? If yea, then it is within the Act, and can enforce its rights; if not, the County Society is justified in refusing to recognize it.

Mr. Farmer speaks of the "Affidavit" (to which we have already referred), but says nothing of the "Declaration." This is the legal *Charter* or *Constitution* of the Society—the evidence of its existence. It must be properly made, and a true copy filed with the County Society (sec. 33).

We *infer* from Mr. Farmer's statements that no township or townships are mentioned in this "Declaration." If this *fact* had been stated in the first communication, our reply would have been more to the point, and probably more satisfactory to Mr. Farmer. The "Declaration" *requires* the township or townships to be specified. It differs from the "Affidavit" in this—the latter "may' be followed (sec. 37); the former *must* be "in the form of the schedule A" (sec. 33). We do not think the addition of the word "Ingersol" to the name, provided the township or townships were mentioned, would be held to vitiate the Declaration. We state this from our recollection of legal decisions in analagous cases; but the form must be followed substantially; all material facts must be stated, and, as nearly as possible, *in hæc verba*. The *omission* of the township would, undoubtedly, be held a material omission.

(5.) The Act, we admit, is not perfect; but we believe it is as free from ambiguity as any similar act in the statute-book. We notice some misprints ("and," sec. 29, third line, was "be" in the draft), and two or three absurd "amendments" were made by M.P.P.'s who had not read the whole act; but if no more doubtful cases than the one in question—assuming that we have traced the difficulty to its true source—grow out of its operation, we shall feel satisfied as to our share in its enactment.

USEFUL ASSISTANCE OF CHEMISTRY TO THE FARMER.

(*To the Editor of the Canadian Agriculturist.*)

Sir,—Dr. Johnson has said that the cultivation of the soil is "the great art which every government ought to protect, every proprietor of land to practice, and every inquirer into nature to improve." Since his day, a more judicious system of cropping, and improved machinery for making the soil and altering its texture, have been gradually taking the place of the destructive husbandry and clumsy implements of our forefathers. The thorough drain has been fighting its way from county to county; the subsoil plough has been following it, giving a new surface to our worn out fields; and that important instrument which mechanical science has lately presented to the farmer, the clod crusher, is gradually coming into use. By such means much good has been effected, and more will yet be done to improve the mechanical condition of our fields.

But, within these few years, many of our intelligent farmers have felt that something more was required to place their occupation in its proper position. Since the time when Liebig presented to the British Association his celebrated report on the application of chemistry to agriculture, farmers have been more alive to the advantages that may be derived from that science. Though it is only the other day that it has been brought to the assistance of the farmer, it has given him useful information upon subjects respecting which formerly the greatest ignorance prevailed. For centuries he had applied to his fields lime and other chemical agents, without having the least idea of their composition or of the conditions required for the successful growth of his crops. By giving him information on these subjects, chemistry has contributed, in innumerable ways, to facilitate his labour, and has enabled him to bring into profitable cultivation districts which, in former times, were regarded as hopelessly unproductive.

It has been discovered that every plant that is cultivated by man, whether for food or clothing, derives the materials by which it increases in size and forms its stem, its leaves and its seed, from three sources—from the air which surrounds it, from the watery vapor which the air at all times contains, and from the soil in which it is fixed. The business of the farmer is to increase the development of plants, and to remove everything that tends to impede their healthful growth. It is evident, therefore, that, to conduct his work successfully, he should know something of the nature of the materials which the growing plant receives from the air and the soil for the formation of its parts; of the substances which enable three lbs. of turnip seed, when spread over the surface of his field, and covered over with a layer of earth, to expand into

a crop of nutritious bulbs weighing thirty tons, and of leaves weighing ten tons.

Now, as the manufacturer who desires to acquire the knowledge of the best means of conducting the processes of his art commences by making himself acquainted with the nature and properties of the materials which he employs; so must the farmer, the manufacturer of food, as the first step to the improvement of his far more important operations, endeavour to acquire a knowledge of the properties of the substances from which food is formed, and especially of those materials which, when not supplied by nature in sufficient quantities, must, by his exertions, be placed in the soil. Formerly men were content to speculate upon this subject; but now, in place of conjecturing, they make experiments; and by the refined processes and apparatus of modern chemistry, plants have been analyzed,—that is, separated into the parts of which they are composed,—so that we are enabled, as it were, to count the number and ascertain the weight of every brick which is employed in building up their beautiful structure. The first experiment which the chemist makes upon a plant shews him that it consists of two parts possessing very opposite characters. When he places in a vessel used for such purposes—a crucible, as it is termed—a portion of a plant, and exposes it to a strong heat, it takes fire and burns, and he discovers that a part of it is combustible and disappears into the air, and that another part of it is left in the vessel as incombustible ashes. From the mushroom to the oak, plants are found to consist of a part that is combustible and a part that cannot be consumed. The great bulk of every plant, that is, from 90 to 99 lbs. in every 100 lbs. that we consume, is dissipated by heat; or, in other words, is converted into gaseous, invisible substances, like the gas that illumines our streets.

We will, in the first place, inquire what is the nature of the large portion of the plant which disappears. That portion, which is frequently termed the organic portion of the plant, has been found, when examined, to be composed of not more than four substances, derived by the growing plant from air and water. The first of these, and that which forms the chief bulk of this part of the plant, is a hard, black, solid substance, a pure kind of charcoal, termed carbon. This is insoluble in water; but in every part of the world it is found forming a compound with a gas named oxygen, which is an ingredient of that great ocean of vapor that surrounds our planet, and which we call the atmosphere. The compound which the union of carbon and oxygen forms, is named carbonic acid, and constitutes about two gallons out of every five thousand gallons of the air we breathe. Carbon is an invariable constituent of plants, and wherever a fire burns, vegetable matter, as in the manure heap, decays, or an animal breathes, carbonic acid is produced. This compound is also locked up in immense quant ties in limestone rocks. It is a constituent of the bones of animals, and is also, in volcanic countries, given out in large quantities, in the gaseous state, from fissures in the earth. It is soluble in water, and therefore we find it in the waters of our springs and rivers. It is this gas that gives soda water and the various fermented drinks tl eir agreeable briskness. In the laboratory of the chemist and soda water manufacturer, it is prepared by the action of an acid upon some of its compounds.

When the chemist pours some vinegar or vitriol upon pieces of limestone, he produces a bubbling up, or effervescence, as when a soda powder is prepared. The cause of the disturbance in both cases is the same—the carbonic acid gas confined in the compound being set free, and escaping rapidly in its gaseous form. Carbonic acid gas is also driven off from limestone when it is burned in the kiln It is produced in large quantities in our bodies, and it is necessary to the continuance of health that we should constantly throw it off. This we do in breathing. The air that we draw into our lungs contains only two gallons of this gas in five thousand gallons, but when we expire it again, it is found to contain, in the same quantity, about two hundred gallons. Thus, what is injurious to our existence is thrown off from our bodies, and together with the carbonic acid produced by the fires burned over the earth, and which, if allowed to accumulate in the air, would render it as prejudicial to animal life as the fermenting vat of the brewer, is beautifully adapted for the support of the plants which are to afford us food, and which have their leaves furnished with innumerable pores to draw it into their structure, where its carbon is employed as one of the materials for building up our crops. Being soluble in water, it is also dissolved and carried down to the soil with every shower of rain, and thus its injurious accumulation in the air is prevented, and the health and harmony of creation preserved.

The next most important ingredient we find in the organic part of plants, is also one of the most portant and extensively diffused substances in na-

ture. It is a thin, elastic, and invisible air, named oxygen, which forms a fifth part of the atmosphere, and eight parts out of every nine of water, and is the principle in the air upon which the life of animals depends. Like carbonic acid it is contained in large quanties in the rocks and minerals which compose the crust of the earth; and by applying heat to some of these compounds, it can be driven off in the state of gas, in the same manner that carbonic acid gas is expelled in the operations of the lime burner. This gas forms about a third part of plants, when deprived of their water; therefore its properties must be interesting to the farmer. Like the air when pure, it has neither color, taste, nor smell. The vessel in which it has been collected seems to contain merely common air, and neither by taste nor smell, nor by our eyes can we detect any difference in its contents. But chemistry is able to assist our senses; it gives us new methods of interrogating nature, and enables us to understand the language of her replies. Thus if we place a piece of wood which has been ignited and just extinguished, into a vessel containing carbonic acid, it soon ceases to glow just as if held in the hand; but if we place it in a vessel containi g oxygen, instead of dying out, it will burst into flame, and burn with increased brilliancy. This is what chemists call an experiment, and it convinces us that the second vessel must contain something very different in its properties from the air in that first examined; that something is oxygen gas, which is not less distinguished by its power of supporting flame, than by sustaining animal life. It is certain that without its presence in the air no fire could burn, no animal could live. It is the agent which nature employs in some of her most important operations; by it she ploughs up the hardest rock, and reduces into their primitive dust both the vegetables that cover the earth, and the animals that feed upon them into forms fitted to support new races.

When a piece of coal, which is an impure kind of carbon, consumes in fire, it is the oxygen of the air that unites with it and carres away its carbon in the form of carbonic aci l gas; and when the myriad of leaves which fall upon the ground in autumn gradually disappear from our sight, the same thing occurs; the carbon which forms so large a portion of the substance of the leaf, unites with the oxygen of the air, and becomes an invisible gas. When a piece of iron rusts, and the dense metal is converted into a friable mass, it is oxygen also that produces the change. When so large a quantity of oxygen is withdrawn from the atmosphere in the respiration of animals, in the combustion of fuel, and in the decay of vegetable matters, it becomes an interesting inquiry how a sufficient supply of that gas, so essential to animal existence, can be maintained. It has been discovered that this is performed by the vegetable tribes. We will consider for a little this arangement, which is one of those beautiful provisions which nature so frequently exhibits. Plants hang out into the air that surrounds them, waving leaves furnished with innumerable mouths or pores to suck into their structure the carbonic acid which is to supply them with the carbon which they require. During the night season, the gas which is drawn in, passes away unaltered; but no sooner does the light of the sun play upon the green leaves of the plant, than carbonic ceases to be given out. It undergoes decomposition, it is broken up into its elements in the laboratory of the vegetable; its oxygen escapes into the air, while its other element, the carbonic, is retained and employed in the developement of the plant. The air we have seen, when thrown out of our lungs, has become incapable of sustaining animal life. Its composition has been altered, it has become poor in the vital air, the life and flame supporting oxygen, but loaded with the unwholesome principle, carbon. But vegetables, in the wonderful arrangements of creation are not only charged with the task of converting into food the raw materials around us, but their very exi tence is made to depend upon their acting upon the air, so as to withdraw from it the unwholesome carbon, and restore it the oxygen which animals consume.

Another of the substances which the combustible part of the plant is found to contain, is a gas named hydrogen, derived from the watery vapor of the atmosphere. It may appear strange to those unacquainted with the discoveries of chemistry, to be told that a gas is one of the constitutents of water; yet science has revealed to us that that pure substance, which is one of the first necessaries of life, is not, as the ancients imagined, a simple element composed (like iron) of only one kind of matter, but made up of two gases, one of them the gas oxygen, and the other a remarkable inflammable gas, which is one of the ingredients of the coal gas, which illuminates our streets. This gas is termed hydrogen, and though it is not met with in nature in its separate state yet we can readily procure it from its most important compound, water, when in preparing carbonic acid gas, vitriol is poured on limestone, the compound of that gas with lime, the vitriol seizes upon the lime, and and the gas escapes. If in the same way we could place in the water some

substance that would seize upon the oxygen, as with the limestone, the compound would be broken up, and the hydrogen being a gas, would escape. There is a substance which possesses that power. It is a curious metal termed potassium, which, whenever it is presented to oxygen in air or water, seizes upon and unites with it. If we throw a piece of it into water, it unites with some of its oxygen, and the other element of the compound, hydrogen, is disengaged as a gas and takes fire. The same decomposition of water can also be produced on a larger scale, and on the same principles. The atmosphere is continually charged with moisture which descends upon the growing crops in the soft dew, and the refreshing rain, and enters into the interior of the plant, where under the influence of that mysterious principle, life, which presides over the motions of the animal and the vegetable, it is decomposed as required, and thus made to contribute to their increase.

(*To be continued.*)

HOW IS STILTON CHEESE MADE?

Mr. Editor,—A gentlemen residing near Guelph, whose name frequently appears in your journal, has obtained some notoriety for making what he calls "Stilton Cheese". I am told he declines to explain the process of its manufacture, and I do not remember to have seen any account of this kind of Cheese in the *Agriculturist*. I should be glad to learn the mode of making this Cheese, and if you can discribe it in your next number, you will perhaps oblige more than one of your subscribers.

Yours respectfully,

W. D.

West Flamboro, Aug. 3rd 1855.

We have never made Stilton Cheese; and, therefore, have no practical knowledge of the manufacture; but we believe the *secret* of the process is simply to add the *cream* of the night's milk to the new milk of the morning. It is thus sometimes called Cream Cheese. The name is derived from its having been first made extensively at Stilton, in Leicestershire, Eng. It is now made in Cambridge, Rutland, Northampton, and other counties in England; and by Mr. Parsons, and probably others, in Canada.

One of the Agricultural Reports of the County of Leicestershire thus describes the process:—"The night's cream is put into the morning's new milk, with the rennet; but when the curd is come it is not broken, as is done with other cheeses; but is taken out with a soildish altogether, and placed in a sieve to drain gradually; and as it drains it is pressed till it becomes firm and dry; being then placed in a wooden hoop, and afterwards kept dry on boards It is turned frequently with cloth binders round it, which are tightened as occasion requires."

In Webster's Encyclopædia of Domestic Economy, it is stated that these cheeses are of "small size, from six to eight pounds weight; and are of a cylindrical form, made in a deep vat, and are not considered sufficiently mellow until they are two years old, nor ripe until they exhibit spots of blue in the interior, marking the commencement of decay."

We find the following in one of our American exchanges, contributed by a correspondent. The directions are substantially the same as those above quoted:—

"This cheese was first made, we are told, by a near relative of the landlord of the old Bell Inn, near Melton, Leicestershire, England, where its reputation was such that it sold for a long time for half a crown per pound. I am not aware that any attempts have has yet been made to produce Stilton Cheese in the United States; but Mr. Henry Parsons, of Guelph, Canada, has manufactured it of a quality said by good judges to be equal to that made in the mother land. There appears to be nothing very peculiar in the process as detailed by those who understand it, and considering the cheese really possesses the high superiority just claimed for it, the only thing surprising at all to me is, that its manufacture has not become not only common, but universal.

As some of your readers may have a curiosity to know the process, I will give a recapitulation recently given me by a dairyman from the "old country," who is perfectly familiar with the details, having lived many years on a farm where Stilton Cheese, of the first quality, was the principal dairy product. By way of premising, allow me to say that I am assured that the excellencies of this cheese have been by no means exaggerated. The entire product of the very extensive dairy of which he was honored with the general supervision, sold ordinarily for about double the price of other cheese, and the demand for it was such that the regular customers often bid upon each other, and not unfrequently took it in its immature state, or before it had become sufficiently ripe to cut. I will now proceed to give his directions in the fewest possible words:—

The night's cream, without any portion of the skimmed milk, is put to the milk of the next morning, and if cheese of superior description and richness is desired, an additional allowance of cream is afforded, mixed with a little fresh butter. The rennet without any coloring, is then put in, and when the curd has come, it is immediately removed without being broken, and put whole into a sieve o

drainer where it is pressed by means of weight until the whey is completely expelled. It is then put with a clean cloth into a hooped chessart, (mould,) and pressed, the outer coat being first salted. When sufficiently hard, it is removed, and placed on a clean dry board, bound closely in a cloth (which is changed daily) to prevent its cracking. When the cheese is tolerably well dried, the cloth is removed, and no further care is required, except turning it daily and occasionally brushing the surface.

The cheese is never large, seldom weighing more than ten or twelve pounds, yet requires two years to perfect iis excellencies, and bring it to complete maturity, for they are not supposed to be fit for use till they have begun to decay. To accelerate the process of ripening, and prepare them more speedily for the market and the table of the fashionable epicure, they are often placed in warm damp cellars, where the putrefactive process is often quite rapid, or they are even wrapped in strong paper and sunk in hot beds, which prepares them much quicker than they can be by the former process. The shape of these cheeses bears little resemblance to that of the common kinds, pressed in wide hoops—being that of a sugar loaf, though somewhat less in length and of larger diameter.

We hope "W. D." will be able, after reading the above, to make a genuine "Stilton." We shall expect to hear from him at the end of "two years,"—probably less, for in this climate we think such rich cheese will "begin to decay" a little sooner than in England. It is said that the "decay must not go beyond a certain point,"—a rather indefinite statement, but no doubt a true one. We remember that upon cutting one of Mr. Parson's Stiltons, three or four years ago—although it was not more than eighteen months old—we thought it had considerably passed the "certain point."

A FACT IN STRAWBERRY CULTURE.

Sir,—In the fall of 1853 a friend gave me four Strawberry plants of different varieties, one only survived the winter, and during the next summer, threw out runners and young plants abundantly, with these early in the spring of 1855, I planted a large border, many of the plants sent flowers, but no fruit, just so, the parent plant, although extremely luxuriant. They are all I suppose staminate flowers of the white wood variety. Is this natures law? Stamens to produce stamens, *only* unmixed with pistelates? If so, will any strawberry culturist, point out how the one can be distinguished from the other? In nothing I have read, has this simple fact been noticed, further than a portion of Staminates, were necessary to fructification.

Truly yours,

JAMES JONES.

Stamford, July, 8th 1855.

RAISING SEEDS.

(*To the Editor of the Agriculturist.*)

Sir:—The subject of raising seed has, of late, come under my notice more particularly; and as I am considerably interested in it, I would beg leave to refer the subject to you for information. I take the *Canadian Agriculturist*; but as I have not seen anything particular upon this subject, I hope that you, or some of your Correspondents, may have something that may instruct me. I am young and have not tested the matter by actual experiment, because of the loss of time and labour; but I hear that, if turnip seed is sown in the Summer, and the turnips standing there all Winter and run to seed in the Spring, the plants raised from that seed will not bottom, but will run to seed again; cabbages the same.

Also that Radishes, sown in the Spring, and left standing there to seed in the same summer, the plants raised from that seed will not bottom, but will run to seed again.

Also Carrots and Parsnips raised from the seed in the Spring, if these roots be left in the ground all Winter to run to seed the ensuing Summer, that the seed from these plants will not be good; and if left to do so three or four years will degenerate to a wild state, and so be destructive to life; and that, at no time, the Seed is good that is raised on the branching stalks, only the primary or leading stalk is good for seed to raise good healthy plants.

Now Sir, if this is true; if you can answer this by actual experiment or any scientific law or knowledge from any of your Correspondents, I shall feel satisfied.

Also Innoculation, or the mixing of one kind of seed with another, while growing is a mystery to me. I am convinced that it is so, but *how* and by *what means* it is effected I cannot tell. I wish to know, Sir, if you have anything upon this subject that will instruct me; and what arrangement to make in planting seeds to prevent this, if there is any?

I might just state now, that I am very much pleased and instructed by your numbers of the *Canadian Agriculturist*; this is the first year we have taken it; and we think that it is well calculated to improve the state of Canadian farming, if well read and studiously applied.

I remain your most teachable servant,

BENJAMIN GOTT.

Williams, July 14, 1855.

[Will some of our readers having practical experience in these matters, give our Correspondent the benefit of their knowledge?—Editor.]

Miscellaneous.

ON THE MANAGEMENT OF CIRCULAR SAWS.

The subject of circular saws is one of particular interest to almost every portion of our country.—Reciprocating saws were at one time almost exclusively used in preparing the lumber, but the obvious disadvantages arising from their intermittent motion, notwithstanding many improvements made on them, as led to their partial abandonment, and the substitution of circular saws in their place. The day cannot be far distant when (except for scroll work,) straight saws will be numbered among the the things that were, for circular saws possess many advantages over them, especially as it regards the greater speed at which it can be driven, and the greater quantity of work they can turn out in a given time—as much time is lost with the straight saws in getting ready to work.

The greatest difficulty experienced in managing circular saws lies in their tendency to heat. Wherever there is much friction experienced in one, it will get hot and expand, and in that condition will not make good lumber, and sometimes, indeed, it will buckle, and thus become materially injured.—If the heating of the saw be uniform throughout, no further harm will be done than its becoming "limber," and unable to sustain itself under a strong feed, but whenever it is reduced in temperature, it assumes its original form. It is very seldom, however that the expansion of a circular saw, when heated is uniform, as the friction is always greatest on the side nearest the log, owing to the plank yielding. Friction is caused by a two small kref being cut in the log, and by the springing of the timber. In the latter case, when a line is cut, each portion of the log has a tendency to assume the form of an arch with the bark turned inwards; this presses that portion of the log between the head blocks against the saw, while at the same time the opposite side of the saw is entirely relieved, thus causing unequal friction and expansion.

In adjusting a circular saw to timber, the blade is not placed parallel to the log, but has what is termed "rake," that is, the cutting edge of the saw comes nearer the log than the opposite edge. This is done for the purpose of allowing the saw teeth to ascend without scratching the face of the log, and also to relieve the center of the saw where the tendency to heat is the greatest. If, however, too much *rake* be given the saw, it will cause undue friction, and the inner part of the saw will heat and expand.

The arbor of the saw should be well lubricated, and not allowed to get hot, as it transfers the heat to the center of the saw. Whenever the center of a circular saw becomes heated, it has a tendency to cup. The side of the saw which expands most by heat becomes convex, and if run too long, it will not return to its former shape when coolled, but will require hammering on the edge to straighten it. This is a job which requires the utmost skill, and besides, few who use such saws have suitable anvils to straighten them upon. To such the following would be useful information:—Prepare a suitable number of annular papers with their inside diameter about one inch less than that of the hub, and place them on the shaft adjoining the concave of the saw. Prepare a lot of similiar papers with their inside diameter equal to that of the hole in the center of the saw, and their outside diameter about one inch greater, and place these on the saw shaft adjoining the convex side of the saw. A sufficient number of these being so placed in they are tightened in the hub, and the saw brought up true in the face. Care must be exercised to put in no more papers than will straighten the saw. It is not, however, *absolutely* necessary to take the *cup* out of a saw until it becomes of a considerable size, for a saw will do good work even when cupped a quarter of an inch; the increased difficulty, however, of managing it in this condition, renders it advisable not to work it in such a state. In working cupped saws, the teeth should be made to fill a wider guage on the convex than on the concave side; and if the tendency to heat on the center continues, it should have more rake, if cupped towards it. The teeth of a cupped saw in ascending, in all likelihood, will scratch either the face of the log or the plank. This is another and a sufficient reason to straighten it at once.

The edge of the saw is guided by a pair of rollers or wooden pins placed just below the log and near the front edge. Pins are preferable to rollers, for they do not pack a ring of sawdust on the saw when it passes between them, as rollers do. The proper position of these guides relative to the saw, varies under different circumstances, but in no one case should both press against the saw at the same time, as they would be sure to heat it. When a saw heats on the edge, it is far more difficult to manage than if heated in the center, for a "cupped" saw still presents a straight line on the edge, while a buckled saw, (one stretched on the edge,) does not.

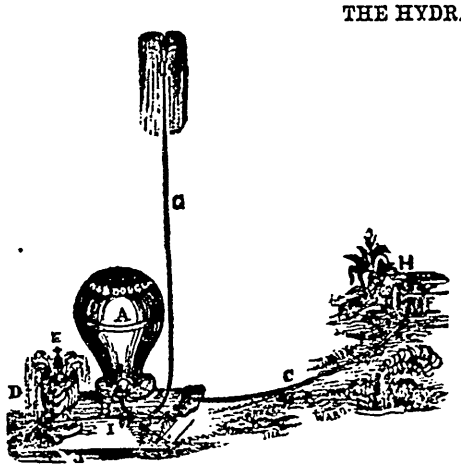
The edge of a saw may become heated on account of the teeth not being in proper shape. If any part of a tooth, except the edge, rubs on the log, the friction at that part will heat it. If sufficient depth of tooth is not preserved, there will not be sufficient room to free itself from saw-dust, which will crowd in the kref, causing undue friction on the sides of the teeth. If a saw cuts out of a straight line, it will press hard against one of the guides, and aiso cause undue friction. It should never be forgotten that the heating of a circular saw causing cupping or buckling, is always the result of undue friction; to avoid this, therefore, every effort should be exercised. A saw sometimes gets buckled from other causes than heating. Its roller guides are sometimes placed to bear too *hard* against it, and when this is the case the sawdust is pressed between them with a force sufficient to thrust the rollers out of place. Or if the rollers be so rigidly fixed as not to be moved by such pressure, they tend to stretch the saw at the point where it passes between them. Gumming machines also tend to stretch the edge of the saw.

It is not necessary at all times to straighten a buckled saw on an anvil, especially if only a narrow ring near the edge of the saw is stretched, as it may

be remedied by cutting through it, either by drilling a hole at the root of each tooth, or filing towards the center of the saw until the stretched part is cut through.

Water is sometimes used to cool a saw; it also enables a saw to work in a smaller kref, thus saving power; and it also acts as a partial lubricator. It should be directed in jets on each side of the saw near the center. Its use, however, should be avoided in cold freezing weather. Allowing the saw shaft to play endwise, is one of the most effectual means of keeping the saw cool. When the timber springs against the saw, tending to heat it at the center, the end play of the shaft allows the center of the saw to yield; at the same time, the guide pins at its periphery keep it in line and the friction is therefore reduced, and liability to heat diminished in a corresponding degree.—*Scientific American.*

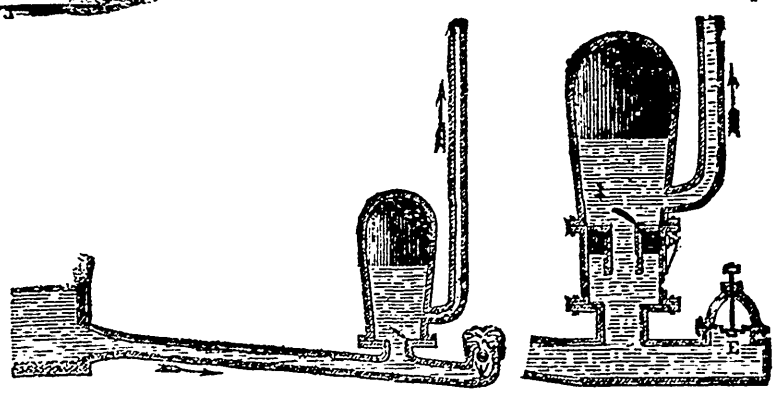
THE HYDRAULIC RAM.



The Hydraulic, or Water Ram, is a very ingenious modern invention; and as economical and useful as it is ingenious. Of course, it is necessary that there should be a running stream within a reasonable distance of the spot where the water is required to be delivered. The principle on which it acts, may be understood from the accompanying cuts and description:—

EXPLANATION.

H, is the brook, spring, or fountain: C, the drive pipe: G, the pipe which conveys a part of the water from the drive pipe to the place where wanted: A, the air chamber of the ram: E, top of brass valve:



D, water wasting through the valve, by which the power of the ram is secured. A fall of at least 18 inches is necessary: three or four feet is better. The greater the fall, the higher can the water be delivered. Ordinary rams raise 20 gallons per minute: they are made to raise 50 gallons. With a fall of five or six feet, a portion of the stream can be raised upwards of 100 feet. For the purpose of irrigation, and for conveying the indispensable element to the farm house, barn, &c., this ram is well worthy the attention of Canadian farmers who need its aid. The following explanation of the *modus operandi* is copied for the benefit of those who may be curious in such matters:—

The hydraulic ram is a simple mechanical apparatus, constructed upon philosophical principles, and is used very effectively in raising a portion of the water from a spring or running brook above the level of its fountain head. The following description, it is believed, will be easily understood. Suppose a water pipe is laid along down the course of the stream through which the water is required to pass. The lower end of the pipe is closed, and near that extremity is an orifice on the upper side which is opened and closed on the inside by a puppet valve shaped something like an inverted barrel bung. There is also another similar orifice and valve opening outward from the main pipe, and into an air vessel. Now let both valves be closed. As there is then no means of escape for the water in the pipe leading from the spring, it is brought to a state of rest. The valve opening inward is loaded, so that its gravity is greater than the pressure of the water at rest in the pipe; it consequently falls into the pipe, leaving the orifice open, through which the water immediately begins to rush with increasing velocity, until its momentum becomes such as to push up the valve to its place in the orifice. The momentum of the water suddenly stopped in its course, is such as to lift up the other valve opening outward into the air vessel, through which the water rushes, compressing the air into a smaller compass, until the re-

action of the air is in equilibrium with the action of the water, when the valve No. 2 falls back to its place and prevents the water in the air vessel going back again into the main pipe The water in the main pipe then having no escape, is again brought to rest, whereupon valve No. 1 falls down again by its own weight, and the process is again repeated. From the air vessel a discharging pipe leads off to the upper story of a house, or any other place where the water is wanted, to which point it is driven by the elasticity of the compressed air in the vessel. Of course the amount of water raised, compared to the whole, will be in inverse ratio to the elevation of the discharging point above the fountain-head. The momentum of the blow forcing the water into the air vessel when the valve closes, was well illustrated at the time the fountain was first put in action on Boston Common, where, it will be recollected, the momentum of water was so great at the sudden stoppage of the jet, as to burst the pipes and deluge the Common.

THE TELEGRAPH.

It is surprising to contemplate the rapidity with which, in the last few years, magnetic telegraph lines have extended over Europe. For instance, we see it stated that, whereas France, at the close of 1852, possessed lines covering only 1.200 miles, they will have, at the close of the present year, over 8.000 miles in operation. Europe contains some 35,000 miles of telegraph, the United States 42.000 miles—But the triumphs of the past few years in that respect appear small and contemptible, in contrast with those which are reserved for the remainder of this decade. We need only indicate the gigantic works that are projected, and which a few years will see realized, to cast into the shade the fabulous exploits of the gods and giants of antiquity.

First there is the contemplated enterprise of connecting London with Canton, or one of the other commercial ports of China. Then there is the other project of establishing a similar telegraph connection with Australia. It would hardly be believed at the first blush that neither of these undertakings would necessitate the laying of more than four hundred miles of submarine cable in any one continuous stretch; but a careful examination of the globe will remove all scepticism on that point. The Architect of the universe has, it would seem for this purpose, placed islands in the ocean at such intervals as to serve as stepping stones and halting places for the telegraph. There is no doubt whatever as to the feasibility of laying down four hundred miles of submarine cable in one stretch, as it has been already tested to the extent of 350 miles in the line across Black Sea from Varna to Balaklava. Then, again, there is that other gigantic enterprise in contemplation, of connecting the American and European continents by a sub-marine telegraph extending from St. John's, Newfoundland, to Cork, in Ireland, a distance of over sixteen hundred miles. And even the magnitude of that undertaking is eclipsed by another proposition: to stretch a line around the world, commencing, say, at Petersburg, stretching through Siberia to the confines of Russian America, and traversing the whole breadth of North America to its most easterly limit, and then crossing the Atlantic, either by an independent line or by connection with that which we have just mentioned, and which is to be in operation in January, 1858, a little more than two years hence. By the same time we may have San Francisco bound to New York.—*Herald.*

A GREAT STEAMER.

Messrs. Napier & Sons, of Glasgow, Scotland, have just launched upon the Clyde, the largest steamer afloat. She is named the Persia, was constructed for the Cunard Company, and designed to ply between Liverpool and New York, taking her place in the line in October. The Persia far exceeds in length, strength, tonnage, and steam power the Great Britain or the Himalaya, and exceeds also by no less than 1,200 tons, the internal capacity of the largest of the present Cunard liners.

Her chief proportions are these: Length from figure-head to taffrail, 390 feet; length in the water, 360 feet breadth of the hull, 46 feet; breadth over all, 71 feet; depth, 32 feet; burden 3.600 tons. According to the strict government rule of measurement, her power is equal to that of 900 horses, according to the plan laid down in Earl Hardwicke's bill, her power is equal to that of 1.200 horses: and according to Jas. Watt's old established rule, she is expected to work up to the pitch of between 4,000 and 5,000 horses. The keel consists of several bars of iron about 35 feet in length each, joined together by long scarfs, and, as a whole, 13 inches deep by 1½ inches thick. The framing is constructed in a manner at once peculiar and securing the greatest possible amount of strength. The framing of the ship is very heavy.

The hull is composed of several water-tight compartments, so arranged that if one should by any means be stove, the others will remain in act., and thus the possibility of such a terrible catastrophe as that which happened to the Arctic is rendered impossible. The weight of the iron in the Persia is 2,200 tons. When the engines are on board, and she is fully laden, the weight of the immense mass will be 5,400 tons, at which time she will draw 23 feet of water. Her coal cellars are constructed to receive 1,400 tons of coal. She has accommodation for about 1,200 tons measurement of goods. Steam is the grand agent, and accordingly the Persia is only lightly rigged with three masts. Hitherto the largest steamer belonging to the Cunard Company is the Asia, but she is only 2,393 tons.

Collins far surpassed the Cunarders when he established the American line, but father John, over the water, was not to be thus outdone by his ambitious young son; and therefore, in the construction of the Persia, he has taken another stride onward with his seven leagued boots. We shall expect to hear from Jonathan again ere long. This peaceful and honorable rivalry between nations is one of the most powerful incentives to improvement. If the *Collins* steamers had never been built, the original Cunarders would have been the ultimatum of steam naval architecture.

Loss of Life in the Crimea.—The Paris Presse quotes Lord Grey's estimates of the loss of life, putting it at 500,000 men in all— 250.000 on the side of the Russains, and 250.000 on the side of the Allies It then gives the Turkish loss at 120,002, leaving, by a very simple process of subtraction, 130,000 for England and France. 50,000 for the former, add 80,000 for the latter, are the conclusions of this estimate of human slaughter.

Men of great genius, but little heart, are they not like the aurora borealis, whose magnificence awes the arctic voyager to silence? But for what are they good? With all their splendor they cause no flower to bloom; in all their light there is no life.

HONEY BEES.

From an interesting article on honey bees, from the pen of a distinguished professor, we quote the following paragraph: 'Many—nearly everybody—suppose that the bee culls honey from the nectar of the flowers, and simply carries it to its cell in the hive. This is not correct. The nectar it collects from the flower is a portion of its food or drink; the honey it deposits in its cell is a secretion from its mellific or honey secreting glands, (analogus to the milk-secreting gland of the cow and other animals.) If they were the mere collectors and transporters of honey from the flowers to the honey comb, then we would have the comb frequently filled with molasses, and when ever the bees have fed at the molasses hogshead. The honey bag in the bee performs the same functions as the cow's bag or udder, merely receiving the honey from the secreting glands, and retaining it until a proper opportunity presents for its being deposited in its appropriate storehouse, the honey-comb. Another error is, that the bee collects pollen from the flowers accidentally, while it is in search of honey. Quite the contrary is the fact. The bee, while in search of nectar, or honey, as it is improperly called, does not collect pollen. It goes in search of pollen specially, and also for nectar. When the pollen of the flower is ripe, and fit for the use of the bee, there is no nectar; when there is nectar, there is no pollen fit for its use in the flower. It is generally supposed, also, that the bee collects the wax from which it constructs its comb from some vegetable substance. This is also an error. The wax is a *secretion* from its body, as the honey is; and it makes its appearance in small scales or flakes, or under the rings of the belly, and is taken thence by other bees, rendered plastic by mixture with the saliva of the bees' mouths, and laid on the walls of the cell with the tongue, very much in the way a plasterer uses a trowel."

Milk for the Parisians.—A most rigid surveillance is being now kept up not only in Paris and the Banlieue but in all parts of the country from whence the capital is supplied, over the milk which is forwarded for the consumption of its inhabitants. Thirteen farmers have just been condemned to fines of 100f. and under and one to eight days' imprisonment for sending milk mixed with water. The milk undergoes a rigorous examination at the railway stations, and also at the shops of the retail dealers.

A Hint.—Many large limbs have fallen from the trees in the woodlot. If you have a spare day before snow falls to cover them, go through your lots and pick up what is worth saving, and which if left till covered with snow would be lost. If you cannot do it yourself, invite your poor neighbor to do it for himself. Better it made his family comfortable in the cold winter approaching, than that it rotted on your land.

A Geologist Nonplussed.—An old bachelor geologist was boasting that every rock was as familiar to him as the alphabet. A lady present declared she knew of one of which he was wholly ignorant. "name it, madam," cried Cœlebs, in a rage. "It is rock the cradle, sir," replied the lady *Cœlebs evaporated.*

Hermetically Sealed.—We often find this expression used to indicate an air-tight stuffing box; but it should never be employed except for expressing a closed joint made by melting the material of which the joint is composed, such as a glass tube being melted and then closed.—[Scientific American.

Sit Upright.—"Sit upright! sit upright, my son!" said a lady to her son George, who had formed a wretched habit of bending whenever he sat down to read. His mother told him that he could not breathe rightly unless he sat upright. But it was no use; bend over he would in spite of all his mother could say. "Sit upright, Master George!" cried his teacher, as George bent over his copy-book at school. "If you don't sit upright like Master Charles, you will ruin your health, and possibly die of consumption." This stated Master George: He did not want to die, and he felt alarmed. So after school, he said to his teacher, "Please, sir, explain to me how bending over when I sit, can cause me to have the consumption?"

'That I will, George," replied his teacher, with a cordial smile. "There is an element in the air called oxygen, which is necessary to make your blood circulate, and to help it purify itself by throwing off what is called its carbon. When you stoop you cannot take a sufficient quantity of air to accomplish these purposes; hence the blood remains bad, and the air cells in your lungs become irritated. Presently the lungs inflame. The cough comes on. Next, the lungs ulcerate, and then you die. Give the lungs room to inspire plenty of fresh air, and you will not be injured by study. Do you understand the matter now, George?"

'I think I do, sir; and I will try to sit upright hereafter," said George. He was right in this resolution. Will all the boys and girls who read my magazine imitate him? They will, I know, if they wish to live healthy lives. Make it your motto, therefore my little reader, to sit upright, whether you sit to eat, to sew, to read, or to converse. Now don't forget it. You must sit upright.—*Forrester's Magazine.*

Future Housekeepers.—We sometimes catch ourselves wondering how many of the young women we meet with, are to perform the part of housekeepers when the young men who eye them so admiringly have persuaded them to become their wives. We listen to those young ladies of whom we speak, and hear them not only acknowledge, ling but boasting of their ignorance of all household duties, as if nothing would so lower them in the esteem of their friends as the confession of an ability to bake bread and pies, or cook a piece of meat, or a disposition to engage in any useful employment. Speaking from our youthful recollection, we are free to say that taper fingers, and lilly white hands are very pretty to look at with a young man's eyes, and we have known the artless innocence of practical knowledge displayed by a young Miss to appear rather interesting than otherwise. But we have lived long enough to learn that life is full of rugged experiences, that the most loving, romantic and delicate people must live on cooked or otherwise prepared food, and in homes kept clean and tidy by industrious hands. And for all the practical purposes of married life, it is generally found that for the husband to sit and gaze at a wife's taper fingers, or for a wife to be looked at and admired, does not make the pot boil or put the smallest piece of food in the pot.

Warts.—The oil from the outside shell of walnuts or butternuts will cure warts by a few applications.

INFORMATION RELATING TO STEAM ENGINES.—We oftentimes receive letters from correspondents requesting us to tell them the horse-power of their engines; this we can easily do when the diameter of piston, the pressure of steam, and the velocity of piston are given; but unless this is done we cannot give the the required answer. To such enquirers the following would be useful information:—The unit of a "horse power" is 32,000 lbs lifted one foot in a minute. To calculate the horse power of any engine, multiply the area of piston in square inches by the pressure of steam in pounds on the square inch, and by the velocity of the piston and divide the product by 33,000; the result is the nominal horse-power of the engine. It is the common practice, however, to deduct the fourth of this as being expended on the engine itself, that is absorbed by friction, and not given out to the machinery which the engine may be driving. For this reason some engineers use the divisor 44,000 in estimating the horse power of their engines. This is the case with the Clyde engineers, (the builders of the Cunard steamers,) the engines of which are rated lower than the American ones of the same power.—*Scientific American.*

THE BASIN OF THE ATLANTIC OCEAN.—The basin of the Atlantic Ocean is a long trough, separating the Old World from the New, and extending probably from pole to pole. This ocean furrow was probably scored into the solid crust of our planet by the Almighty hand, there the waters which he called seas might be gathered together so as to let the dry land appear and fit the earth to the habitation of man. From the top of Chimborazo to the bottom of the Atlantic at the deepest place yet reached by plummet in the Northern Atlantic the distance in a vertical line is nine miles. Could the waters of the Atlantic be drawn off so as to expose to view this great sea-gash, which separates continents and extends from the Arctic to the Antartic, it would present a scene the most rugged grand and imposing. The very ribs of the solid earth, with the foundations of the sea, would be brought to light, and we should have presented to use at one view in the empty cradle of the ocean, "a thousand fearful wrecks" with that dread array of dead men's skulls, great anchors, heaps of pearl and inestimable stones, which in the poet's eye, lie scattered in the bottom of the sea, making it hideous with sights of ugly death. The deepest part of the North Atlantic is probably somewhere between the Bermudas and the Grand Banks. The waters of the Gulf of Mexico are held in a basin about a mile deep in the deepest part. There is at the bottom of the sea between Cape Race, in Newfoundland, and Cape Clear in Ireland a remarkable steppe, which is already known as the telegraphic plateau. A company is now engaged with the project of a submarine telegraph across the Atlantic. It is proposed to carry the wires along this plateau from the eastern shores of Newfoundland to the western shores of Ireland. The great circle distance between these two shore lines is 1600 miles, and the sea along this route is probably nowhere more than 10,000 feet deep.—[Prof. Maury.

HOW TO HAVE NO WEEDS TO PULL.—Stir the ground often and they will never get big enough to pull. A loose top soil can be stirred up a half dozen times with a hoe in the time required to go over it once in the pulling process. The growth of all plants will also be greatly promoted by frequent stirring of the soil.

PRESERVATION OF MILK.—The following method is recommended for the preservation of milk, either at sea or in warm climates: "Provide pint or quart bottles, which must be perfectly clean, sweet, and dry; draw the milk from the cow into the bottles, and as they are filled, immediately cork them well up, and fasten the corks with packthread or wire; then spread a little straw on the bottom of a boiler, on which place the bottles with straw between them, until the boiler contains a sufficient quantity. Fill it up with cold water; heat the water, and, as soon as it begins to boil, draw the fire, and let the water cool gradually. When quite cold, take the bottles and pack them with straw or sawdust in hampers, and stow them in the coolest part of the ship, or in a cool place. Some years since there was a Swedish or Danish vessel at Liverpool, having milk on board, preserved in this manner. It had been carried twice to the West Indies, and back to Denmark, and been above 18 months in the bottles; nevertheless, it was as sweet as when first taken from the cow." *New Monthly Magazine.* On this subject the Editor of the *Chemist*, in the May number remarks, "We lately tasted, at the Royal Institution, Milk preserved by M. Mabbru's process and which had been received by the Abbe Moigno to Mr Barlow who alluded to it in his lecture on preserved meats and vegetables. This milk was one year old, and was as sweet as when first drawn; a considerable quantity of cream had collected in the neck of the bottles."

RULES FOR THE PRESERVATION OF SIGHT.—The eye should never view an intense light. The light of a flame should never fall upon any part of the eye during use. Bodies of all colours, should be equally viewed, and, after regarding a bright or primary colour, repose should be sought by looking at a tertiary colour. An unsteady flame is hurtful during reading or writing. The eye is liable to damage from being employed on black objects by artificial light, because it is insufficient for the purpose. The observation of objects at the reflecting angle, is hurtful, from the intensity of the light. All coverings to lights are injurious, as the clearness of the flame is diminished; and ground glass shades are particularly detrimental. Reading during railway travelling is hurtful, because of the constant unsteady motion which is imparted to the book. The observation of close objects during rapid locomotion is trying and detrimental to vision. Glasses of neutral tint, blue or green colour, may be employed to protect the eyes from a bright sun in the middle of the day; but they are injurious when the light is not painfully intense. Rapid transitions from darkness to intense light is liable to be followed by blindness.—*Smee on the Eye.*

GENTEEL PROFESSIONS.—Now-a days, parents entertain a silly notion that their children must be instructed in a genteel profession; they repudiate the "vulgar" notion of bringing a boy up as a carpenter, cabinet maker, shipwright, or in fact any occupation that involves labor. He must be educated for the church, the bar, the law or for the post of civil engineer—hence those professions are overrun, and hundreds, nay, thousands of young men are a burthen upon their families, being unable to find anything to do. Copyists, as a class, are badly paid for their service; but as theirs is a mechanical occupation requiring little exercise of the mind it cannot reasonably be expected that they should receive the wages of a carpenter or any other skilful mechanic. Genteel professions in a few years, will not be sought after by fathers and mothers for their sons, as a good investment for the capital expended upon their education.

How Females should act in a Critical Case.—When the clothes of females take fire, as the fire generally begins at the lower parts of their dress, so long as they continue in an upright posture, the flames, naturally ascending, and meeting with additional fuel as they rise, become more powerful in proportion, whereby the neck, head, and other vital parts of the body are liable to be much injured; and by running from one part of the room to another, or from one apartment to another, as is most frequently the case, the air, which is the fuel of fire, gains free access to every part of their apparel, and feeds the increasing flame. In such cases, the sufferer should instantly throw her clothes over her head, and roll or lie upon them, in order to prevent the ascent of flames and fresh air. When this cannot conveniently be effected, she may still avoid great agony, and save her life, by throwing herself at full length on the floor and rolling herself thereon. Though this method may not in every case completely extinguish the flame, it will, to a certainty, retard its progress, and prevent fatal injury to the vital parts. When assistance is at hand, the bystanders should immediately wrap a carpet, a hearth-rug, a great-coat, or a blanket around the head and body of the sufferer, who should be laid in a recumbent position, which will prove a certain preventive from danger.

Worth Knowing.—One pound of green copperas (cost seven cents) dissolved in one quart of water and poured down a privy, will effectually concentrate and destroy the foulest smells. For water-closets on board ships and steamboats, about hotels and other places, there is nothing so nice to cleanse and purify those places, as simple green copperas, dissolved; and for sick rooms, it may be placed under the bed in any thing which will hold water, and thus render a hospital or other places of the sick free from unpleasant smells. For butchers' stalls, fish-markets, slaughter-houses, sinks, and wherever there are putrid and offensive gases, dissolve copperas and sprinkle it about, and in a few days the "bad smell" will pass away. If a cat, rat, or mouse dies about the house and sends forth an offensive gas, place some dissolved copperas in a cup or jar, anywhere within "smelling distance," and the cure is sure. I have known a stock of dry goods which were nearly spoiled by a "skunk" under a store, to be cleaned and restored simply by sprinkling dissolved copperas about the floor.—*Salem Gazette.*

How to move a Sullen ox.—"Did you never observe," said a plain man, a friend of ours, a few days since, as we were driving a dog out of the cow-pen, to prevent his taking refuge behind us—as the cows took it by turns to chase him over the lot—"did you never observe that a cow never will make *friends* with a dog?" "Often." "Well, the best way you ever tried to make steers rise when they get sullen, and lie down is just to bring a dog and drop him down on them. It will make them jump up when nothing else in the world will." We seized the hint at once for the benefit of our friends who owa such pests as obstinate ox en, and give it them now. We believe there is no antipathy so universal and invetrate as that of cattle against dogs, and it strikes us that when all other means fail, that will answer.—*Southern Planter.*

Cure for Wasp Stings.—Some unfortunate, last year, while picking peaches, was stung in the finger by a yellow wasp. The wound caused effusion of blood, and inflamed the arm to the shoulder. Saleratus, made into a *paste* with water, was soon applied as a poultice, and in half an hour had so completely neutralized the acid poison, that the swelling had entirely gone down, and nothing remained but the soreness occasioned by the puncture. This application has proved better than liquid ammonia, so far as a limited trial has proved, and is probably the best remedy for stings generally. It is important that the nearest alkaline substance at hand should be applied till a better can be found, whether it be ammonia or even paste of fresh ashes. In the absence of all these, a mud poultice is an excellent remedy.—*Buffalo Democracy.*

Avoid Rashness in Swimming.—In youth every person should learn to swim, as a part of his or her education, as in many emergencies it may be the means of saving life. But we must caution good swimmers against being too rash in exposing themselves to needless danger. Many excellent swimmers have been drowned in overweening confidence in their aquatic qualities, and not a season passes away without some instance of this kind taking place. An old sailor told us once, that in his experience, he never saw a smart man who was fond of displaying feats of agility, and risking his life needlessly, but lost it foolishly. The case of Sam Patch is one of this kind. In cases of danger it is a sublime sight to see a man risk his life to save that of another, but it is worse than vanity or a man to risk his life when no good object is to be subserved by doing so.

Resources and Destiny of Turkey.—Our consul represents the resources of Turkey at Euren-keny, both in vegetable and mineral productions, as inexhaustable. He can get Turkish labourers for three pounds a-year wages besides their keep; but we find it more profitable to employ Greeks at ten pounds a year. This is the present history of the two races. He thinks, very decidedly, that it is the best thing for the Christian races themselves to preserve the existing state of things for the present, till their growth has secured its own results. A Turk himself had told him the other day that it was becoming inevitable that gradually all the chief employments and the army itself must be recruited from the Christian population; and then, some day, the Ministers would tell the Sultan that he must become a Christian, and he would do so. Will it, then, be a convert or a conqueror, a Constantine or a Ferdinand, who will be in St. Sophia?—*Earl of Carlisle's Diary in Turkish and Greek Waters.*

Heat without Fuel.—The problem of acquiring heat without fuel appears to have been solved by the invention of the machine of MM. Beaumont and Mayer, with which, by means of fricton alone, they can make water boil. The machine, which may be seen at work at their establishment on the Quai Valmy, contains 400 litres of water, which is made to boil in two hours. A cone of wood, which turns on a cylinder so as to produce the necessary friction, is covered with tow, in order that it may not catch fire is kept constantly moistened by a stream of oil which runs on it. The heat gradually increases, until at last steam is generated.—*Galignani.*

A New Preserve.—A correspondent sends us the following:—"I have lately been very busy making a new kind of preserve, which, I may say, is quite a discovery, to me at least, and which promises to insure me a plentiful supply of good, wholesome jam for my family during the winter, at a price below the usual cost of preserves. I was, the other day, making some ordinary apple jam, and before finishing it, I put in some blackberry juice, in order to give it a little colour, and I was surprised at finding how much the preserve was improved by the addition; so much so, that it might be mistaken for damson jam. As you will see by the following proportions, the cost must be very small, wherever apples and blackberries are to be got. I put two quarts of the juice of blackberries—that is, I bring the berries up to a simmer for five minutes, and then strain them through a coarse cloth—and about six pounds weight of cut-up apples, and one pound of crushed lump sugar, and stew it up in a usual way, till the apples are softened down, and the mass becomes of the usual thickness. It is wholesome and good, and I thought that what was within any one's reach ought to be known.—*Godey's Lady's Book.*

Summer Snowballs.—Simmer half a pound of rice until it is tender, then strain it. Take five or six apples, of middling size, pare them and take out the core with a small knife or apple scoop, but do not cut them into sections. Into the hollow made by cutting out the core, put sugar and a little allspice. Divide the rice into a portion for each apple, and tie them separately in a small cloth, and boil an hour. These dumplings, or snowballs, may be served with sweet sauce, or eaten with simple sugar or treacle.

Recipe for Tomato Figs.—Pour boiling water over the tomatoes, in order to remove the skin, then weigh them, and place in a stone jar with the same amount of sugar as tomatoes. Let them stand two days, and then pour off the syrup, and boil and skim it until no scum rises; pour this syrup over the tomatoes and let them stand two days as before, then boil and skim again; after the third time they are fit to dry. If the weather is good if not let them stand in the syrup until drying weather; then place on large earthern dishes or plates, and put them in the sun to dry, which will take about a week; after which pack them down in small wooden boxes, with fine white sugar between each layer. Tomatoes prepared in this way will keep for years. A few apples cut and boiled in the remainder of the syrup, makes a very nice sauce.—*Prairie Farmer.*

Ripe Tomato Pickles.—Select handsome sized tomatoes, wash them and prick them with a fork, lay them in dry salt 24 hours, then soak them in equal quantities of vinegar and water 24 hours; take them out and lay them down in a crock with sliced onions, first a layer of tomatoes, then onions, with cinnamon, cloves and brown sugar, and then cover the whole with cider vinegar.

Paste that is Paste.—Dissolve an ounce of alum in a quart of warm water; when cold, add as much flour as will make it the consistence of cream. Then stew into it as much rosin as will stand on a shilling, and two or three cloves; boil it to a consistence, stirring all the time. It will keep for twelve months, and when dry, may be softened with water.

Dried Apple Pies.—Wash the apples in two or three waters, and put them to soak in rather more water than will cover them, as they absorb a great deal. After soaking an hour or two, put them into a preserving kettle with the same water, and with the peel of one or two lemons, chopped fine. Boil tender; when they rise, press them down, but do not stir them. When tender, add sugar, and boil fifteen or twenty minutes longer. Dried apples, soaked over night, are made tasteless, and are mashed up by being stirred. When cooked, stir in butter, nutmeg or cloves.

To make fine Pan-cakes, fried Without Butter or Lard.—Take a pint of cream and six new-laid eggs; beat them well together; put in a quarter of a pound of sugar and one nutmeg or a little beaten mace—which you please, and as much flour as thicken—almost as much as ordinary pan-cake flour batter; your pan must be heated reasonably hot, and wiped with a clean cloth; this done, spread your batter thin over it, and fry.

Best Bread.—The best bread is that made of *unbolted wheat flour*. In some cases a small portion of white bread may be desirable, but the brown after a short time, will be found more palatable, and conducive to a more regular and healthy condition of the system. It has been ascertained that even dogs cannot live over fifty days if fed upon the fine flour bread and water; when fed upon such as contained the whole or a large portion of the bran they are found in no respect to suffer.—*Water Cure Journal.*

Bee sting and tooth ache.—The pain of bee-sting may at once be relieved, and the subsequent swelling prevented, by wetting the part with spirits of hartshorn (water of ammonia). The sting is hollow, and there is a little drop of poison at its root that is driven through it by the pressure of its insertion, and deposited in the wound. The poison is said to be of an acid nature, and to be destroyed by this volatile alkali. The pain of tooth ache, also, is relieved oftener by a few drops of hartshorn on a bit of lint inserted in the cavity of the tooth, than by any other application. Keep a vial of it well corked, in the house, and if you are fortunate enough to need it for nothing else, use it to restore the color destroyed by fruit stains.

Where to get Tallow.—Besides the bear, the beaver, the martin, and other creatures, whose furs alone are sought for, there are vast hordes of horned cattle subsisting on the open grass lands and wooded dells of the great central plains, lying between the base of the rocky mountains and the border of the forests that skirt Hudson's Bay. These creatures have been seen, not in hundreds, but in tens of thousands, wild and in fine condition. Their flesh has been tasted by travellers and reported to be excellent food. Tens of thousands of these wild herds perish yearly on Rupert's Land; and, by the simplest commercial arrangements, they might be made to yield tallow, hides, and horns for the benefit of this country.—*Dicken's Household Words.*

The Human Family.—The ties of family and of country were never intended to circumscribe the soul. Man is connected at birth with a few beings, that the spirit of humanity may be called by their tenderness; and whenever domestic or national attachments become exclusive engrossing, or clannish, so as to shut out the general claims of the human race, the highest ends of Providence is frustated, and instead of being the nursery, becomes the grave of the heart.

An Unfortunate Rooster.—There are objections to Shanghais, no doubt, but we had never thought of this. It is very curious but it is true. The way of it was this: Mr. S——, an old resident of Stillwater, on the upper Hudson, introduced among his family of hens a few Shanghais, including a rooster, of formidable dimensions, who had "run to legs" a good deal. His crow was peculiar and easily distinguished from that of other cocks. One morning he had waited to hear a repetition of the usual summons, after being aroused by the "shrill clarion" once sounded, but he heard it not again. The other roosters were doing their best, but the pre-eminent chanticleer was still. Mr S——— went out to see what had caused the silence. He found the rooster lying on his back, with both legs out of joint. After an examination, he set both legs; the cock walked off, and gave vent to his satisfaction in a lusty crow. In the very act he dropped as if he had been shot. He had crowed his legs out of joint again! He was kept three or four days, and then killed. "It was too much trouble," said Mr. S. "to set him up every time he crowed!"—*Knickerbocke Mag.*

A Horse Charmer.—On the voyage to England the *Simla* experienced some heavy weather in the Bay of Biscay, in which the horses suffered severely, and some, including a charger of General Scarlett, became unmanageable. A valuable mare was so bad that a pistol was got ready to shoot her to end her misery, when a Russian officer recommend a Cossack prisoner to be sent for, as he was a "jugg'er," and could, by charms, cure any malady in a horse He was sent for, and immediately said he could cure it at once. He was closely watched, but the only thing they could observe him to do was to take hissash off, and tie a knot in it three several times However, the mare in a few minutes got on her feet and began to eat heartily, and rapidly recovered.

How to Determine the Capacity of Cisterns.—Square the diameter in feet, multiply by the decimal .7854; multiply this product by the depth in feet of the cistern—this will give the number of cubic feet of water it is capable of containing. Multiply by 1828, and you have the cubic inches, which divide by 231, the number of cubic inches in a gallon, and the result will be the number of gallons. Suppose the diameter of a circular cistern be 10 feet, the square of this is 100; multiply it by the decimal .7854, which will give 78.54 ft., which multiplied by the depth of the cistern. 12 feet, gives 942.48 cubic feet as the whole contents, which of course may be brought into gallons by the rule above given.

Origin of the Honeymoon.—There is the honeymoon now, was there ever such a silly word as that? Minister said, the Dutch at New Amsterdam, as they used to call New York, brought out the word to America, for all the friends of the new married couple in Holland did nothing for a whole month, but smoke, drink metheglin (a tipple made of honey and gin), and they call that bender the honeymoon; since then the word has remained, though metheglin is forgotten for something better.—*Sam Slick's Nature and Human Nature.*

A means of impregnating silk with gold, silver, brass or iron, so that it can be woven with perfect flexibility, has recently been discovered by a chemmist in France.

Mr. Greeley, in his letters from Europe, says the silk manufacturers of France were never more busy or more prosperous than at the present time.

In London there are fifty "King" streets, fifty "Queen" streets, and sixty "John" streets.

Repeated Meltings of Cast Iron.—From careful experiments made by William Fairbrain, of Manchester, it was ascertained that the strength of iron increased with each successive melting, up to the twelfth or thirteenth trial, after which it diminished in strength. One ton of hotblast iron was experimented upon, and the quantities of coal and flux noted at each trial. Care was taken that the cooling and mode of pouring should be in each case alike, so as not to affect the result. The iron was run into bars of one inch square, and lengths of seven feet, were supported at each end and weights applied until the bar broke. The breaking weight at the commencement was 403 lbs.; at the 12th melting, 672 lbs.; at the 13th, 671 lbs.; at the 15th, 391 lbs.; at the 16th, 363 lbs.; and at the 17th melting, 330 lbs. In the fracture made after the 15th melting, there was a bright rim, like silver, surrounding the interior, which was of the usual crystaline structure This silvery fracture extended in the 16th and 17th specimens, until it pervaded the mass, which then resembled cast steel.

Endless Railway.—For some time past Boydell and Glasier's patent wheels have been undergoing the severest of experiment at Woolwich, and in every case with the greatest success. Also in the early part of Christmas week the above firm had the honour of experimenting with a horse and cart furnished with their wheels in Windsor Park before His Royal Highness Prince Albert, with equally satisfactory results. These trials having reference to military rather than agricultural affairs, we conceive it would be highly injudicious to enter upon the details of what we saw at Woolwich in the present exigencies of the country; suffice it to say, that the problem of an endless railway, at the slow pace of farm horses, has been practically solved. No landlord now need any longer complain of having his woods, ridings, park, and pleasure-grounds cut up, and teams destroyed, in the drawing of timber, or any thing.—*Mark Lane Express.*

Inn Signs.—The Bell was formerly the usual prize at races. A small gold bell was the prize at York races in 1807; and a bell was one of the prizes at Chester races down to the last century. "To bear away the bell" would then be synonymous "with wining the cup," in more modern times The Flowerpot was originally the lily vase, represented by the side of the angel Gabriel, in mediæval pictures of the Salutation of the Virgin. The Three Crowns were emblematical of the three kingdoms of England, Scotland, and Ireland. The "Three Balls" of the pawnbrokers were the arms of the Lombards who came from Italy, settled in Lombard street, and were the first money lenders or pawnbrokers—their trading sign being three bezants or Byzantine gold coins in currency about the time of the Crusades. Our modern pawnbrokers have taken these three obsolete gold coins, as painted on the plane surface, to be golden balls.—*Beaufoy.*

Youthful Neglect.—Walter Scott, in a narrative of his personal history, gives the following caution to youth:—"If it should ever fall to the lot of youth to peruse these pages, let such readers remember that it is with the deepest regret that I recollect in my manhood the opportunities of learning which I neglected in my youth; that through every part of my literary career I have felt pinched and hampered by my own ignorance; and I would at this moment give half the reputation I have had the good fortune to acquire, if by doing so, I could rest the remaining part upon a sound foundation of learning and science."

FEMALE WOMEN.—We respect admire and love a female woman. We admire her in the beauty of her person, her moral presence and position; and we respect her simple truthfulness and innocence, and we love her as the embodiment of the highest charms and sweetest attributes of humanity. But a male woman who can bear! We cannot read of monster meetings in which women perform the leading parts; of lectures on the subject of marriage to promiscuous audiences by female tongues, and of the perambulating female spouters, who go about the country, without an involuntary feeling of disgust. Many of these women are mothers who have families of tender age at home, and husbands who should have tender heads. Home duties forsaken, and the misguided mistresses go about teaching other people *their* duties! What comfortable wives they must be! What kind and assiduous mothers! How they must hallow a home that is too small to hold them! Gods of War! We would as soon live with a hyena or a steam engine. Don't come this way, we beg of you.—*Springfield Republican.*

"SEEING THE LIONS."—Formerly there was a menagerie in the Tower of London, in which lions were kept; it was discontinued about 40 years ago. During these times of comparative simplicity, when a stranger visited the metropolis for the first time, it was usual to take him to the Tower and show him the lions as one of the chief sights; and in the stranger's return to the country, it was usual to ask him whether he had seen the lions. Now-a days, when a Londoner visits the country for the first time he is taken by his friends to see the most remarkable objects of the place, which by analogy are called "the lions." One constantly hears the expression "we have been lionising," or "seeing the lions;" but thousands who make use of it are ignorant of its origin. It originated as above.—*Notes and Queries.*

SEVEN FOOLS.—The angry man—who sets his own house on fire, in order that he may burn his neighbor's. The envious man—who cannot enjoy life because others do. The robber—who, for the consideration of a few dollars, gives the world liberty to hang him. The hypochondriac—whose highest happiness consists in rendering himself miserable. The jealous man—who poisons his own banquet and then eats of it. The miser—who starves himself to death in order that his heir may feast. The slanderer—who tells tales for the sake of giving his enemy an opportunity of proving him a liar.

COST OF IGNORANCE.—Ignorance pays such a tax that we cannot imagine how anybody can afford to be a blockhead. Mr Cracken works for a dollar a day, while Spring, his neighbor, commands twenty shillings. A wide difference, and all caused by Spring's knowing how to read, write and cipher.—From these figures it will be seen that McCracken's want of knowledge costs him $400 a year,—more than his wife and children, house rent $120, inclusive. Who needs to be saddled with such a loss?

THE ART OF LEARNING.—"The chief art of learning" says Locke, "is to attempt but little at a time. The widest excursions of the mind are made by short flights, frequently repeated; the most lofty fabrics of science are formed by the continued accumulations of single propositions."

EARLY TEACHING.—Scratch the green rind of a sapling, or wantonly twist it in the soil, and a scarred or crooked oak will tell of the act for centuries to come. How forcibly does this figure teach the necessity of giving right tendencies to the minds and hearts of the young!

HORSE TAILS.—The tail of the horse is considered an emblem of dignity in Turkey, from the fact that a Turkish army once lost its standard in battle, when the leader, to inspire the drooping courage of his men, cut off the tail of a horse, hoisted it on the head of a spear, and rallied his forces to victory. As a reward he received military promotion, the emblem of which was a horse's tail. The rank of the owner is known by the number of tails he is allowed, the highest being three, and the officers are called "pashas of three tails."

ROOTS OF TREES IN PIPE DRAINS.—Where drains have to be laid near the roots of trees, it is important that they should be well bedded in cement, at those places, and every small opening effectually closed. Wherever the water can get in the roots will also find their way, and eventually cause much trouble in the stoppage of the drain.

Editorial Notices.

PROVINCIAL EXHIBITION.

We learn that the preparations for this great annual gathering, which is to come off at Cobourg, on the 9th, 10th, 11th, and 12th of next month, are in a state of great forwardness, and everything promises, if the weather proves favourable, a successful result. It is confidently expected that every department of our native industry will be liberally represented at the approaching show. The people of Cobourg and neighbouring towns and districts, are making every preparation for accommodating the visitors, who will, doubtless, flock in vast numbers to the scene of action.

Parties intending exhibiting are reminded that entries are required to be made on PRINTED FORMS, *which have been supplied in blank to the Secretaries of Agricultural Societies; which forms must be filled in and signed, and sent to the Secretary of the Association, at the Office of the Board of Agriculture, Toronto,* NOT LATER THAN THE 22nd SEPTEMBER, *after which time a charge of* $1 *will be imposed on each article.* The only exceptions to this rule are Horticulture, Foreign and Indian Products, and Ladies' work—entries of which will be taken up to Tuesday evening, the 9th October; but it is most desirable that persons intending to compete in these classes should enter their articles at the very earliest practicable opportunity, *and they must do so on printed forms.*

If parties should experience any difficulty in procuring the blank forms, they had better write at once to the Secretary, in Toronto, who will immediately forward them by post.

Horses and Cattle intended to compete in the Classes of Pure Breeds, *must have full and satisfactory pedigrees accompanying them.—B.*

CANADA AT THE PARIS EXHIBITION.

We had intended to give in this number a condensed account of the Canadian Department, and the prizes won at the Paris Exhibition; but we found the statements of correspondents so obviously incorrect, and unintelligible; and as the prizes are not yet officially declared; we concluded to postpone the subject until our next issue.

The Canadian Plough is said to have done well; and will take the second prize—Howard's English Plough taking the first. In the Geological department Canada takes a gold medal—a prize of the first class. Canada has also, if we may credit the statements of correspondents, taken the first prize for wheat. The sample was grown by Captain Shaw, whose farm lies adjacent to this city; and is we learn, Spring Wheat! It exceeded all other samples in weight, being over 65 lbs. to the bushel. The following is given as the result of the weighing test by the correspondent of a Montreal paper:—

		KILOGRAMMES.
1	Grown by Alex. Shaw, Toronto, -	83.920
2	" in Australia, - - -	83.010
3	" " Spain, - - - -	82.300
4	" by Mr. Coffin, in Gaspe, C. E.	82.162
5	" in Greece, - - - -	82.100
6	" " Portugal, - - - -	81.900
7	" " Algeria, - - - -	81.800
8	" by Rev. Mr. Villeneuve, Montreal, - - - -	80.810
9	" " Dr Tache, Rimouski, - -	79.740
10	" " Canada Company's prize, -	77 200

The wheat sent by the Canada Company was poor—weighing less than any other. It is well we were not left to their selection, or we should have stood at the bottom, instead of the top of the list.

The following notice of the Canadian department is from the "official" paper:—

(From the Paris Moniteur, 3rd August.)

Canada figures admirably at the Exhibition, and its products, and its specimen of grains, fruits, flour of all kinds, attract general attention. The care which the Commissioners and delegates from Canada have displayed, has merited the just eulogiums which have been addressed to them several times by Prince Napoleon.

BIRDS AND INSECTS.

Wilson Flagg, in a late number of Hovey's Magazine, makes five classes of insects, and as many of birds, acting as natural checks upon the increase of insects.

The swallows are the natural enemies of the swarming insect, living almost entirely upon them, taking their food upon the wing. The common martin devours great quantities of wasps, beetles and goldsmiths. A single bird will devour five thousand butterflies in a week. The moral of this is, that the husbandman should cultivate the society of swallows and martins about his land and outbuildings.

The sparrow and wrens feed upon the crawling insects that lurk within the buds, foliage and flowers of plants. The wrens are pugnacious, and a little box in a cherry tree will soon be appropriated by them, and they will drive away other birds that feed upon the fruit, a fact that cherry growers should remember in the spring and act upon.

The thrushes, blue-birds, jays and crows prey upon butterflies, grasshoppers, crickets, locusts and the larger beetles. A single family of jays will consume 20 000 of these in a season of three months.

The wood peckers are armed with a stout, long bill, to penetrate the wood of trees where the borers deposit their larvæ. They live almost entirely upon these worms.

ENGLISH CATTLE

IMPORTED ON COMMISSION,

BY

Messrs. THOMAS BETTS & BROTHERS,

OF LIVERPOOL AND HERTS, ENGLAND,

EMBRACING

Pure Blood Horses; Short Horned Cattle; North Devons, Herefords, Ayrshire and Alderney Cows; Pure Bred Southdown, Cotswold and Leicester Sheep; Suffolk, Essex and Berkshire Swine;

HADHAM HALL,

BISHOPS STORTFORD, HERTS, ENGLAND,

Residence of Messrs. Betts & Brothers,

Two Miles from Bishops Stortford Station, on the Eastern Counties Railway, and 32 Miles from London.

MANY of the best breeders of Stock reside within a few miles of Messrs. BETTS' residence, such as the celebrated breeder of South Down Sheep, and the gentleman who has taken the first prize the last two seasons at the Royal Agricultural Society, for the best entire Farm Horse; also several noblemen and gentlemen who keep the pure bred Short Horns.

Gentlemen will agree with us, that it is better to employ a professional agent in the purchase of stock, they being likely to know where and how to select the best cattle at the lowest price.

Messrs. Betts will always deliver with the cattte an authenticated pedigree.

As soon as they are purchased, information by the first mail will be given, stating the price, and the time they will leave England for America: also the receipt from the owners of the Cattle.

To secure importers against losses that are liable to occur to cattle on seabord, Messrs Betts beg to inform gentlemen they can be insured when desired, against all accidents and disease, from the day of purchase in England till the day of delivery in America, on application to our agent.

Commi sion Charged.

Horse,	each,	$80
Bulls or Cows,	"	6
Ram or Ewe,	"	3
Three Sheep from the same owner, each,		2
Ten do	"	11
Twenty Ewes,	"	8
Three Swine from the same owner, each,		22
Ten " " " " "		11

Expense of keep and attendance from the time of purchase up to the period of sailing from London or Liverpool, including Railway expenses, &c., as follows:

Horse,	each,	$40
Bull or Cow,	"	25
Sheep or Swine,	"	15

Expense by Sea on Board the Steamers.

Horse,	each,	$125
Bull or Cow,	"	105
Sheep or Swine,	"	25

Keep and attendance across the Atlantic on board the Steamer provision for 30 days.

Horse,	each,	$35
Bull or Cow,	"	25
Sheep or Swine,	"	8

Expense by Sailing Vessels.

Horse,	each,	$100
Bull or Cow,	"	80
Sheep or Swine,	"	18

Keep and attendance by Sailing Vessels. provision for 60 days

Horse,	each,	$70
Bull or Cow,	"	50
Sheep or Swine,	"	15

We have been permitted to refer to two of the largest importers of cattle into America, Geo. Vail, Esq., of Troy, and ol. Lewis G. Morris of Mount Fordham, N.Y.: as regards our rate of charges, both gentleman deem them very reasonable.

If gentlemen prefer, the stock will be selected and purchased by charging five per cent. and travelling expenses. All other bills, such as fitting up of the Ship, provender, passage and attendance, will be rendered on delivery of the stock in America.

A full and complete list of the best stock to be disposed of in England, will be kept with our Agent,

JAMES M. MILLER,
81, *Maiden Lane, New-York City.*

Parties favouring Messrs. Betts with orders, will please make use of the following Table of Specification:

Breed.	Horse.	No. of Bulls required.	No. of Cows required.	About the age required.	If to come by Steamer or Sailing Vessel.	If insured.
Horse,						
Short-Horned,						
North Devons,						
Herefords,						
Ayrshire,						
Alderney,						
	Rams.	Ewes.				
South Down Sheep,						
Cotswolds,						
Leicester,						
	Boars.	Sows.				
Suffolk Swine,						
Essex do.						
Berkshire,						

Short Horns, Devons, Herefords, Ayrshire, Alderney Cows, South Down Sheep, Cotswold, Leicester, Hampshire South Down Sheep, selected and imported on commission to any part of America, by Messrs THOS. BETTS & Co., Liverpool and Herts, England. Circulars, containing the prices of all kinds of Stock, and the expenses to America, also giving the weight and quantity of wool of all kinds of Sheep, can be received by applying personally or by letter to our agent J. M. Miller, 81, Maiden Lane, New York City.

N.B.—A Model of a Patent which, for future will prev ent all accidents occurring to Cattle, can be seen at 81, Maiden Lane, N.Y. and at Liverpool.

In answer to numerous enquiries respecting the prices of the best stock in England, such as should be imported to America, can be obtained at the following prices:

			£.	£.	£.
Thorough Bred Horses, from		-	1000 to	2000	12000
Short Horn or Durham Bull		-	400 "	1500	700
Do	Cows	-	200 "	800	400
Do	yearling Bull	-	200 "	1 00	500
Do	do Heifer	-	175 "	420	250
Herefords	Bull	-	300 "	8 0	5 00
Do	Cows	-	200 "	600	250
Devons	Bull	-	300 "	800	4 0
Do	Cows	-	200 "	500	250
Ayrshire	Bull	-	150 "	3 0	300
Do	Cows	-	100 "	250	2 0
Alderney	Bull	-	150 "	225	175
Do	Cows	-	100 "	150	125
				Will weigh when killed and dressed	Will shear of washed wool
Cotswold Sheep	Ram	-	100 to	3 0 13 lbs	125 12to15lbs
Do	Ewe	-	25 "	100	30
Leicester Sheep	Ram	-	100 "	2 00 120lbs	100
Do	Ewe	-	20 "	80	25
South Down Sheep	Ram	-	100 "	3 0 112lbs	125 6 to 9lbs
Do	Ewe	-	25 "	100	30
Hampshire do	Ram	-	75 "	125 12 lbs	100 6to10lbs
Do	Ewe	-	15 "	25	24
Swine	Boars	-	25 "	50	40
Do	Sows	-	15 "	40	25
Merino Sheep from Spain					
Mules from Spain.					5

GALLOWAY BULLS FOR SALE.

THE Subscriber will offer for sale at the Provincial Exhibition, to be held at Cobourg, 2 PURE BRED BULL CALVES, from imported Cows; also, 4 IMPORTED CHEVIOT RAMS, to be seen at the premises of the subscriber, near Cobourg.

WILLIAM RODDICK.

Cobourg, June, 1855. 7.

JUST PUBLISHED,

THE Journal and transactions of the Board of Agriculture of Upper Canada, No. 2, Vol 1st, pp 160 Toronto: printed and published by Thompson & Co, for the Board of Agricullure

This work is issued in quarterly parts, four of which will form a volume. The first part embodies the transactions of this Provincial Association from its institution in 1846, down to the commencement of the year 1851 The next number contains an account of the further proceedings of the Association and the Board of Agriculture, Prize Essays, Abstract of County Reports, &c., down to 1843.

The work will be sent free by post for 5s per annum. All communications and remittances to be addressed to the Secretary of the Board of Agriculture, Toronto.

TORONTO, May 1, 1855. 5.

UPPER CANADA STOCK REGISTRY.

To Owners and Breeders of Thorough Bred Horses and Cattle.

THE BOARD OF AGRICULTURE FOR UPPER CANADA, having determined to open a REGISTER, at their Office, in this city, for thorough Bred Horses and Cattle, Notice is hereby given, that any person desiring to avail himself of such register, can do so under the restrictions herein mentioned, furnishing duly certified particulars to this office; and can obtain a certificate of the same, which shall be held as officially correct in all future transactions relating to the stock so registered.

No Animal shall be registered, unless a clear and distinct connection be established, to the satisfaction of the Board, both on Sire and Dam, with the British or American Stud and Herd Books.

Where the Animal to be registered has been purchased by the person desiring to register, or has been imported for breeding purposes, a correct statement must be given of all particulars before a certificate can be issued.

It is desirable, in order facilitate the taking of entries for the Provincial Exhibition at Cobourg in October next, that persons desiring to register stock should do so at an early date, as all animals for which Register certificates shall have been given will be entered without further inquiry. Owners of stock are recommended to keep Duplicates of Pedigrees.

G. BUCKLAND, *Secretary.*

Office of the Board of Agriculture }
Toronto, March, 1855. }

DRAINAGE AND SEWERAGE PIPE MACHINE

CHARNOCK'S PATENT.

BY this Machine, Drainage and Sewerage Pipes of all descriptions, as well as perforated and other Brick, Flooring Tiles &c., are molded with the greatest facility and precision

A man and three boys can turn out from 5, 0 to 1', 00 feet of pipes per day, according to sizes; and if worked by horse, steam or water power, a proportionate increase will be obtained.

This Machine is in extensive operation in England, where, in addition to the testimony of numerous Tile Makers, as well as that of the first Machinists of the day, the following Prizes have been awarded to it.

By the Yorkshire Agricultural Society, at its annual meeting, 1845, as the first Tile Machine with a continuous motion, - £5 0 0
By the same Society, the following year as the best Machine of the day, - - - - - - - - - - - - - - - - - - - 10 0 0
By the Lancashire Agricultural Society, at its annual meeting, 1845, - Silver Medal.
By the Highland Agricultural Society, at its annual meeting in 1846, as the best machine - - - - - - - - - 5 0 0

At the meeting of the New York State Agricultural Society, at Saratoga (1853), a working model of this Machine was awarded the Silver Medal and Diploma; and at the Fall Exhibition the same year of Lower and Upper Canada, held respectively at Montreal and Hamilton, the same Model was awarded a Diploma from each Society. It was awarded the First Prize and Diploma at the recent Exhibition in London anada West.

The price of the Machine is £5', (half cash and remainder at six months), with five Dies for Pipes. Brick and other Dies at a moderate charge.

☞ The Patentee guarantees the effective working of the Machine.

☞ All orders to be addressed to

JOHN H CHARNOCK,

Drainage Engineer, Hamilton, C. W., the Patentee.

Hamilton, March, 1855.

SPRING STOCK OF IMPLEMENTS.

THE Subscribers beg to inform Agriculturists and Horticulturists, that they have received a large and varied assortment of

FARM AND GARDEN IMPLEMENTS

And would solicit a call from parties about to purchase, at No. 77, corner of Yonge and Adelaide streets, Toronto They have on hand a quantity of the most improved Lap Furrow Ploughs, which have of late been so much in demand Reaping and Mowing Machines on the most improved principles, will be for sale in their season

McINTOSH & WALTON.

TORONTO, 1st May, 1855.

TO BREEDERS.

THE Thorough Bred Short-horned Bull, "JOHN O'GAUNT," Second, Bred by John S. Tanqueray, Esq., Hendon, Middlesex., England, imported by Frederick Wm. Stone of Guelph, October last.

This very superior Young Bull will be kept at the Subscriber's Farm, Farnham, Puslinch, five miles from Guelph.

Terms for Service—Thorough bred, Five Pounds; if grade, 40s.

Parties wishing it, can have pasture at a reasonable rate. No risk by subscriber.

His sire, "John O'Gaunt" (1621 English Herd Book), was sold in 1853 for $4,000.

FREDERICK WM. STONE.

Guelph, April 24, 1855.

COMBINED REAPER AND MOWER.

Manny's Patent with Wood's Improvement.

THE Undersigned are now manufacturing the above Machinery which has been thoroughly tried through the United States, and have given entire satisfaction In the frequent trials made with every machine that has any claim to reputation it has proved the best in the following points, viz.:

Its perfect adaptation to uneven surfaces—its means of adjustability to various heights of cutting—its lightness of draught—the ease and facility with which it can be removed from field to field upon its own wheels, and changed from a reaper to a mower, and vice versa—the constructinn, for strength and durability—and its capacity for doing business.

By means of suspending the frame to the axle of the wheels the joint and lever, the driver is enabled at his will to elevate or depress the cutters from one to fifteen inches from the ground; and with the oblique platform the raker is enabled to discharge the grain in gazels, at a sufficient distance from the standing grain to allow the team to pass, so that the whole field may be cut without removing any of the grain.

Price, with two setts knives, $13 . We are also manufacturing Burall's Reaper, price $120; and Ketchum's Mower as improved. price, with two setts of knives, $110, warranted.

These machines are capable of mowing or reaping from ten to fifteen acres per day on smooth land, as well as can be done with scythe or cradle.

H. A. MASSEY & Co.

Newcastle, May 6, 1855.

THE CANADIAN AGRICULTURIST.

IS PUBLISHED MONTHLY, at TORONTO, Upper Canada, and devoted to the improvement of *Agriculture Horticulture Farm Mechanics*, and to the advancement of the *Farmers' interests generally* It commences its SEVENTH Volume this year, 1855. Each number contains 32 large octavo pages.

The *Agriculturist* is Illustrated with Engravings of Cattle, Implements, Farm Houses, Farm Buildings, &c., and is the *only* Agricultural paper printed and published in Upper Canada. Receiving as exchanges the leading Agricultural Journals of the United States and Great Britain, the Editors are able to select and lay before their readers every thing of value that may appear in these papers.

The *Agriculturist* contains, beside Editoral and Miscellaneous matter, Reports of Farmers' Clubs Essays, Proceedings of the Board of Agriculture, Prize List of the Agricultural Association, Information and Hints to Agricultural Societies, &c. &c. It is strictly a CANADIAN work, and should be taken in by every Farmer who desires to improve himself, or who feels any pride in the advancement of his country.

Professor BUCKLAND, of Toronto University, continues to assist as Editor.

Some of the most intelligent Practical Farmers in the Province are contributors to this journal.

The *Agriculturist* is not a second edition of the *Genesee Farmer*, nor of any other foreign publication. It is a *home production* and asks no man's support under a false name. It is a true not a spurious *Canada Farmer*.

TERMS

Twenty copies or upwards, each - - - - - 2s. 6d.
Single copy - - - - - - - - - - - - - 5s.

*** The *Agriculturist* is not liable to *Postage*.

☞ Newspapers inserting the above will do us a favour, and entitle themselves to a copy without exchange.

WM. McDOUGALL,
Publisher, Toronto.

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