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THE
Canadian Agriculturist.

VOL. VIII.

TORONTO, DECEMBER, 1856.

No. 12.

END OF VOLUME—NOTICE TO SUBSCRIBERS.

The present number completes the *Eighth* Volume of the *Agriculturist*. Although we confess to some shortcomings during the year, we think our subscribers will generally admit, that they have received value for their money. The Publishers promised some things at the beginning of the volume, which it was not found practicable to carry out in a desirable manner, and therefore they were not attempted. Among these was the promise to give wood-cut portraits of our most distinguished Agriculturists. It was soon found that, besides the difficulty of obtaining likenesses from which to copy, the selection would involve invidious distinctions, and probably provoke disagreeable comments. It was therefore determined not to make the attempt. It was also intended to illustrate other subjects more fully; but though Toronto is a large and enterprising city, it does not yet support a first-class wood-engraver. We were thus compelled to limit our illustrations to fewer subjects, which may have disappointed a certain class of readers. But, on looking over the volume, we notice upwards of twenty-five engravings, chiefly of new, or improved implements and machines.

As to the reading matter, letter-press, paper, &c., we believe we can safely aver, that the present volume is an improvement upon its predecessors. The last (11th) number was unfortunately sent to an office to be printed where they either do not know how, or do not care to execute their work properly, and a large part of the edition was very indistinct. The defect was not discovered in time to remedy it. Another evil, which we have found it impossible wholly to overcome, is the issue of the *Agriculturist* at irregular periods. We shall endeavour, next year, to put it to press early enough to secure its being mailed by the 1st of each month, even should it sometimes be a few days in advance.

We hope also that we shall be able to make an arrangement with the Board of Agriculture, by which their entire *Transactions* will appear in the *Agriculturist*, without unduly occupying the space now devoted to editorial remarks, correspondence, miscellaneous matter, &c. If the object of the Board be, to disseminate useful information among the *farmers* of the country, we are ready to aid them; but if it be only to make a costly book, with which to lumber up newspaper offices, the libraries of members of Parliament, and the dusty shelves of County officials, we must be content to pursue our own plans. The advantage we seek by the arrangement, is simply to be able to present our readers with the proceedings of the Board as so much *additional matter*, without enhancing the price of the *Agriculturist*, or lessening its usefulness and interest to the general reader. The advantage to the Board will be, that their matter will go into the hands of the agricultural public, and at a much less cost than by any other plan.

The next number (being the first of the Ninth Volume) will be issued on the first of January, 1857. A few copies will be sent, as usual, to the Secretaries of Agricultural Societies, merely as a specimen. Orders must be sent *expressly*, if the work is to be continued. The price will remain as at present, viz.—*Two* copies to one address for *One Dollar*. To Societies, Clubs, &c., 2s. 6d. each, *for any number*. Payment *always in advance*, except in the case of Societies, to whom short credit will be given, if required.

COLIC AND BOTS.

(Lecture Delivered before the Legislators of the State of Maine, by the Editor of the American Veterinary Journal.)

GENTLEMEN,—Those of you who honored me with your presence last evening, will remember I contended that veterinary science was to “brutes” just what human surgery is to our race, and that when practised with the same amount of skill and intelligence, as in the latter case, tended alike to the same desirable results; and, therefore, was worthy the consideration and support of a Great Nation of husbandmen.

I proved, I believe, beyond a reasonable doubt, that at the present time there exists a lack of informations regarding the fundamental principles of our science: its objects and tendencies; and I introduced evidence demonstrative of the barbarous follies that are continually practised under the guise of “Horse Doctoring,” to the great injury of some of the noblest specimens of creative power; that man has ever been permitted to hold in subjection, and to the disgrace of men, whom, in these enlightened times, are guilty of such glaring absurdities.

I advocated the cause of those whom, “bereft of speech,” are incapable of pleading for themselves, and in view of ameliorating their condition, and thus rescuing them from the curse of irrational medication, I recommended the endowment of veterinary schools, similar to those now in operation in Europe.

The subjects which I propose, this evening, to call your attention to, are:—

COLIC AND BOTS.

The term *colic* is used to designate a disease of very frequent occurrence, both among horses and their masters; those of my audience who have ever been the subjects of an attack of this character, and have experienced the excruciating torment attending it, can readily sympathise with a poor horse when in a similar condition. There is no disease with which I am acquainted that is so sudden in its attack, nor for the time being so distressingly painful, as colic. It is sometimes accompanied with delirium, so that the unfortunate creature will, in falling, or while on the floor, mutilate his body with reckless ferocity as if striving to find relief in his own destruction; and occasionally he does succeed in hastening death, either by rupture of the diaphragm or intestines, or inflammation of the latter.

Nature of the Disease.—There are two forms of colic to which horses are subject, one is termed *spasmodic*, and the other *flatulent*. The first form is recognized by horsemen as *spasms*, *gripes*, *cramp*, and *stoppage*. The term *stoppage* has been applied, from the fact, that in some cases the patient passes neither feces, flatus, nor urine, and thus the stablemen infer, and the inference in some cases is probably correct; that the bowels, as well as other parts, are spasmodically contracted, or else *intussusception* (a folding of one part of the bowel into another,) has taken place; although the latter feature is often associated with flatulency.

It is only necessary to know something of the anatomical structure of the intestines, to perceive how and by what means the spasmodic action takes place. The intestinal tube of the horse, which is about ninety feet in length, is composed of external, internal, and central coats. The central coat, or rather, layer, is composed of muscular fibres of two orders: one set are circular, the other longitudinal; should contraction occur in the longitudinal fibres, the bowel is proportionately shortened; when it occurs in the circular fibres, the calibre of the intestine is decreased, and sometimes in tonic spasm, complete stricture of the part takes place, so that it is almost impossible to pass even a small probe through the intestinal stricture. On examining horses that die in this state, the small intestines have a knotted appearance, from which feature some persons have compounded the term “gut-tie.”

Flatulent Colic, which is by far the most common affection, differs so essentially from the preceding that the one can easily be distinguished from the other; in the latter affection flatus, or “wind,” is always present, and if at the early stage, no perceptible abdominal distension occurs, it very soon shows itself. One way of satisfying ourselves of the presence of flatus is, to apply the ear to the abdominal region; within, a sort of active rumbling is heard often, accompanied by a tinkling or metallic sound. But while examining the case, we may, perhaps, perceive that the horse passes flatus by the anus, or eructates it from the mouth; in either case our doubts, if we have any, are immediately

set at rest; this feature, accompanied by others, which I shall allude to, complete the chain of evidence.

In some cases the gas goes on accumulating in the large intestines until the abdomen resembles that of an ox, said to be "*horen*," or "*blasted*;" this is a state called *tympanites*, (windy distension.) When the gas generates very suddenly, and the abdomen immediately acquires immense volume, the case is termed *meteorization*.*

It is very distressing to witness the sufferings of an animal in this condition; and the only chance of relieving him is by puncturing the colon, and unless this operation be performed early, it will prove fruitless.

Symptoms of Colic.—It may be well to bear in mind that whatever form of colic occurs, it is always sudden in its attack; and horses are liable to it at all times; in the stable, on the road, or at grass. In the early stage very little occurs to attract attention. The animal, all at once, becomes uneasy from pain, and commences to paw with his fore-feet; soon gets down, and if he be in space sufficient, will commence to roll from side to side, often remaining a few moments on his back, in which posture he seems to obtain temporary relief; sometimes, as quick as thought, he is on his legs again: gives his body a shake, anxiously regards the flanks by turning the head in that direction; when down, again, he goes to perform the same rolling feat. Now and then the patient remains quiet, in a crouching attitude; the limbs being gathered under the body until the distension is so great, or the pains so severe, that he must shift his position, when again we find him rolling, or else standing with the hind extremities stretched backwards, † the fore advanced; thus representing the attitude of a horse when urinating. Supposing at this period that there be no flatulency present, yet the respirations are hurried, the pulse wirey, the eyes glassy, and the patient excessively nervous and uncontrollable; the case is then of a spasmodic character.

Should the animal pass flatus, or the abdomen increase in volume, the case is one of flatulency. Then again, in spasmodic colic, the patient has periods of ease, which gradually grow shorter, until he either gets relief or becomes delirious, and soon dies. Either form of the disease may, however, terminate in inflammation of the bowels. The bladder often becomes sympathetically affected, and retention of urine is the result; this can be ascertained by introducing the hand into the *rectum*.

These are some of the principle features of colic. I might go on and describe the symptoms more fully, but time will not permit.

CAUSE OF COLIC.

I shall now offer some brief remarks on the *cause* of colic. If we could only stretch the imagination, so as to take for granted, all the popular causes assigned for the production of colic, then their name would be legion. Some writers inform us that a drink of cold water, when the animal is heated, is the most potent cause; then we must infer that the horses ridden by the Russian Cossacks, (fast fellows,) in a country where cold water is abundant, should be the subjects of colic; but the very reverse is the case; the disease is almost unknown among them.

Previous to the introduction of Cochituate water into the City of Boston, colic occurring among horses, was partly attributed to the *cold, well* water then used; but now they all drink the former, yet colic is just as prevalent, and indeed more so, than at the time referred to.

There are no people that pay more attention to the watering of horses than the English grooms, and it is customary when a horse is taken from his home to a distant race-course, to remain away only a few days, sufficient water is transported with him to last during his stay. Such a dread have English grooms of "*strange water*," as they term it. Now, it is a notorious fact, that the English horse is more subject to bowel affections than those of this country. From this circumstance I infer that bowel affections are hereditary, or in other words a predisposition to such is transmitted from parents to offspring.

I can well remember the time when physicians would not allow a fever patient to taste

* *Meteorization*—a windy state of the abdomen, which takes place suddenly and unexpectedly, as doth the appearance of a meteor in the Heavens.—*Percivall*.

† When a horse assumes this attitude, people are apt to conclude that the subject is laboring under suppression of urine, and then down goes the nitre, gin and rosin. But the fact is, he puts himself in this position for the purpose of pressing on the abdomen, and thus giving it support by means of the rectus muscles.

water; but now they act more in accordance with reason, and allow the sick just what they crave for.

It is not good policy, however, to allow a horse, when performing a journey, a bountiful supply of water, because active exercise somewhat suspends the digestive function, and therefore the water may remain in a portion of the large intestines without undergoing the usual transformation; it then occupies space, and being weighty, may, in the rapid movements of the animal, operate unfavorably in various ways, more particularly on the gut itself; it being pendulous from the spine.

A horse is often brought into the stable in a state of profuse perspiration, and, of course, is somewhat exhausted. Now, it would be decidedly wrong to either feed or water him, until he be rubbed dry, and has rested awhile; for at such times food is just as likely, and I think more so, than water, to operate unfavorably on an exhausted animal.

Many horses, however, even when in this exhausted state, will fill their stomachs with food and water, and yet enjoy immunity from colic. Therefore, should colic occur in a horse after he has had a hard drive, he having partaken of a draught of water, it is rather difficult to decide which of the two, if either, was the cause of the malady. One fact is certain, and that is, the stomach is deranged, and therefore fermentation precedes digestion, hence the gas.

Notwithstanding our best efforts to prevent it, colic will occasionally occur. Green grass, clover, carrots, and turnips, are said to occasion it. Then, again, it appears in stables, where nothing but corn, oats and hay are used. One horse is attacked immediately after a draught of cold water, another has the chill taken off his, yet he is often found in the same predicament. Warm water is the most insipid and nauseating drink that you can offer a horse; and many would prefer to continue thirsty for some time ere they would imbibe it.

Time will not allow me to notice other popular theories regarding the cause of colic, but I shall, in a brief manner, offer a more rational view of the subject.

It is well known by physiologists, and I presume many of you must have observed, that both men and animals inherit peculiar idiocyncrasys: each are predisposed, either through parental defect, temperament, or conformation, to certain forms of disease. This peculiarity, or predisposition is said to lurk in breed, and those conversant with the horse's structure and temperament, can readily determine whether he be predisposed to certain forms of disease or not; for example, a horse predisposed to flatulent colic is often observed to have a capacious belly, voracious appetite, and does not properly masticate his food, and he is not over particular as to the kind of diet, for we often find him devouring, with apparent relish, the filthy straw that has served as bedding. Often he proves to be a "*crib-biter*, (*cribbing* is a defect, either inherited or acquired.)

Ordinarily the salivial fluid is augmented, yet it does not look healthy, it is more like soap-suds, and of a dirty color; the tongue is also foul, and the breath somewhat foetid. One or more of these peculiarities generally predominate in colicky horses.

I contend, therefore, that some horses are predisposed to colic, and this explains the reason why, the ordinary exciting causes; such as cold water, exposure, fatigue, irritating food and medicine are operative on the system of one horse, and inoperative on that of another. Colic is the heritage of some of the best horses in the world.

Now should you ask, What are the causes of colic? I answer, It is occasioned by predisposing direct and indirect causes, operating conjointly or not. Should you also desire to know, what is the state of the digestive organs at the commencement. I would inform you that their function is either disturbed, or partly suspended.

I shall now speak of the *treatment* of colic.

Treatment of Spasmodic Colic.—Supposing the case to be of purely spasmodic origin, we infer that there is some derangement in the nervous system; for, from the motor nerves muscular action is supposed to emanate. The state of spasm, however, is brought about, through the nerves, of involuntary motion. To act on the nervous system is our first object; because, through it, we operate on the muscular, and hear is the seat of spasm. The remedies are various, among them. I select the following: (*antispasmodic*)—Sulphuric ether, half an ounce; tincture of assafoetida, one ounce; to be given in thin gruel or mucilage. Next, I gave a ball, composed of Barbadoes aloes, four drachms; lobelia seeds, powdered, one drachm; nitrate of potassa, two drachms. An aloetic enema may be given; then immerse a blanket in hot water; wring out a portion of the fluid, and encircle the lions, and secure the blanket there by circingles, or other means.

Next, secure a buffalo, over the blanket, and in this way sweat the animal. At this stage I generally examine the bladder per rectum, and should it be distended with urine, I immediately introduce the catheter and evacuate it. This is the plan to be pursued in the early stage of the malady; beyond this, I cannot, on this occasion, undertake to enlighten you; but invite your attention to what I have to offer, in regard to the treatment of the more common affection, termed, "*flatulent colic.*" I might name a host of remedies that are in use for the cure of colic; some of them very simple, others very dangerous, and a great proportion worse than nothing; but as I propose to be "*practical*" this evening, I would inform you that our principal remedies are *carminatives*, *stimulants*, and *alkalies*. The aromatic spirit of ammonia is a very excellent preparation for flatulency. It can be given in the proportion of two ounces, diluted with one pint of water. Another equally efficient remedy is, the hypo-sulphite of soda, six drachms to a pint of water. I often combine with the latter, half an ounce of the fluid extract of gentian.

Chlorid of lime is sometimes used, with very good effect, especially when there is a voluminous accumulation of gas within the intestines. It is best to combine it with some diffusible stimulant. My formula is as follows:

Chloride of lime,	- - - - -	2 drachms.
Water,	- - - - -	1 pint.
Tincture of Jamaica ginger.	- - - - -	1 ounce.

Mix. Drench the horse, and at the end of an hour repeat the dose, if necessary. I give this remedy, supposing that the gas occupying the intestinal cavity, is sulphuretted hydrogen, for which the chloride of the lime has an affinity; the result of such an union is muriatic gas, which reduces the volume of the former (*so the authorities tell us*), in the proportion of, from nine to one. The muriatic gas is now supposed to be absorbed by the fluids of the stomach and bowels, we then get a weak muriatic acid, termed, "*dilute spirit of salt;*" with the latter, the lime unites, and the result is, a harmless substance known as the *muriate of lime*. I have been very successful in putting a stop to fermentation, and in absorbing the already accumulated gas within the stomach, by using charcoal and lime water, in the following proportions: Pulverized charcoal, three ounces; lime water, two ounces and a half; to be given in a pint of rain water.

A favorite remedy among Boston teamsters for colic, is a compound of milk, molasses and salaratus, but it is a very unsafe remedy, and often does more harm than good. Besides, in mixing the mess, it undergoes a chemical change; for example, salaratus is an alkali; milk and molasses have an acid base, and when the three are mixed, a recombination takes place; hence, it is a remedy that cannot be depended on.

The principal objects in the cure of colic, are to restore the tone of the stomach, by means of stimulants and tonics; to arrest fermentation and absorb the gases of the alimentary canal. I shall not undertake to say that the remedies, here alluded to, are the very best; but I have met with remarkable success in their use, I can safely recommend them.

I have an impression that when a horse is the subject of colic, he requires to be treated just as any intelligent physician would treat one of us. There is no necessity to convert his stomach into a "*slop shop;*" the patient should be treated in a rational manner, by the same means and with the same skill as if one of our race were concerned.

I do not like to see an animal trotted, up one street, and down another, (followed by a biped whip in hand, and a crowd of idlers,) when he is the subject of excruciating abdominal pains, and the sweat pouring off him like rain from sheer agony. The custom is decidedly wrong; our reasoning faculties confirm this opinion; and what reason teaches man should endeavor to put in practice.

No practitioner of human medicine dare advise such a course as compelling a man to hop off a bed of sickness, and start on a fast trot, up and down stairs; for, should he so advise, he would very soon entitle himself to a ticket of leave. Should, however, the attack be slight, a little walking exercise does no harm; and if the patient appears disposed to roll, it were better to let him do so on the ground, rather than in a narrow stall.

My usual directions are: Give the patient a *wide* stall and plenty of bedding; let him lie down, tumble about, and rise, as often as he chooses; only watch and see that no accident occurs.

A good wisp of straw vigorously applied to the belly and flanks, and to the limbs, should the horse feel chilly, may do some good; because we thus preserve the equilibrium

of the circulation. Injections are to be given occasionally, and such other treatment adopted as the urgency of the case seems to demand.

I have associated the subject of "*colic*" with that of "*bots*," because it often happens, that, when a horse is tortured with either one or the other forms of colic which I have named, and has his head turned round anxiously regarding his sides; some persons are very apt to conclude that the subject is "*troubled with the bots*," and in view of giving the so-called "*bots*" their "*ticket of leave*," the animal is compelled to swallow a juvenile apothecary's shop, and as much other stuff as can conveniently be poured down; which is more likely to destroy the horse, than the bots. I must confess that the subject of bots brings me into "*deep water*," as the saying is: for very many horse-men, and farmers, too, have always, and still entertain the idea that the *bot* is an enemy to the equine race, and is the cause of much inconvenience and torment; and I have found it very difficult, on some occasions, to undeceive men on these matters. I hope, however, on this occasion, to convince some of my audience, that "*bots*" are not so destructive to horses as they are represented to be.

Mr. Bracy Clark, who has paid considerable attention to the subject, informs us that, "*Bots*, are not, properly speaking, worms, but the larvæ of the gadfly, which deposits its eggs on the horse's coat in such a manner, as that they shall be received into his stomach, and then become bots. When the female fly has become impregnated, and the eggs are sufficiently matured, she seeks among the horses a subject for her purpose, and approaching it on the wing, she holds her body nearly upright in the air, and her tail which is lengthened for the purpose, is carried inwards and upwards. In this way she approaches the part where she designs to deposit the eggs, and suspending herself for a few seconds before it, suddenly darts upon it, and leaves the egg adhering to the hair by means of a glutinous liquor secreted with it. She then leaves the horse at a small distance, and prepares the second egg; and poising herself before the part, deposits it in the same way; the liquor dries, and the egg becomes firmly glued to the hair. This is repeated by various flies, till four or five hundred eggs are sometimes deposited on one horse. They are usually deposited on the legs, side, and back of the shoulder—those parts most disposed to be licked by the animal; in licking, the eggs adhere to the tongue, and are carried into the horse's stomach in the act of swallowing. The bots attach themselves to the horse's stomach, and are sometimes, though less frequently, found in the first intestine. The number varies considerably; sometimes there are not half a dozen, at others they exceed a hundred. They are fixed by the small end to the inner coat of the stomach, to which they attach themselves by means of two hooks."

I shall reason analogically, and therefore propose to enquire into the history, habits, &c., of some of the lower orders of animality; so that you may perhaps, infer that the presence of bots in a horse's stomach is no deviation from the general rule which seems to pervade all creation. In the study of animal physiology, we discover that animals and insects, require the operation of certain forces in order that their peculiar vital properties shall be manifested. They all require food, water, and oxygen: food, for the development of organised tissues; water, to maintain an equilibrium between the solids and fluids; and oxygen, for promoting various changes, uniting some particles for the benefit of the whole fabric, and disengaging others destined for excretion. These have to be obtained under various circumstances. The number of the different species of reptiles known to naturalists is about 1300, and there are at least 100,000 species of insects; among this vast assemblage of animate forms, a great proportion obtain *food, water* and *oxygen*, in a situation, and at a temperature, which is most congenial to each species; each one of which, as a race, exhibit great varieties in physical organisation and habits, and hence the necessity for that diversity in geographical distribution which seems to surprise some men. Each species of animal and insect carry about with them, in their own organisation, the fertile embryonic habitation, for successive parasitic development, and all are, to a certain extent, dependent on each other for both food and life. It has been truly said that there "*is life within life*." Begin with the body of man for example, and you will find that it is infested with thirty-nine distinct species of entozoa; these are not confined to a single location, like the bots, to the digestive cavity of the horse; but some are to be seen in the eye, bronchial glands, kidneys, liver, gall, bladder, intestines, muscles, and even in the blood. There are several other species of entophyta, to the number of ten, inhabitants of the skin and mucous surfaces. So that the master can boast of a larger number of living parasites within and about his body, than we have yet been able to find in his servant, the horse. And if the former can carry about in the

living citadel such a myriad of living, active creatures, without inconvenience, and he, being the weaker animal, why should not the horse who is the *stronger*, be able to furnish nutriment for some half dozen bots or more that are occasionally found in his stomach, and be able to perform his 2.40 gait without inconvenience? Some of the inferior orders of creation are the receptacle of a still greater amount of parasites. The grass-hopper, for example, is infested with a species of gordius, a sort of hair worm, which some persons have erroneously supposed to be a transformed horse hair. Several of these coil themselves in the digestive cavity of the former; often penetrating the abdomen, thorax and cranium; their bulk and weight often exceeds that of an ordinary grass-hopper; still you see and hear them, skipping, jumping and chirruping; notwithstanding this immense parasitic mass, just as freely as those not infested.

You cannot make medicine act on the external surface of the bot, for it does not absorb fluid—it is impervious. These creatures have been put into muriatic acid, and kept there for a time, without being injured. You may put them into new rum, and keep them for weeks, and on taking them out and exposing them to the sun's rays, they will manifest vitality. And from my own experience, and reasoning from analogy on the general innocuousness of animal parasites, I may safely say that they very seldom do any harm to horses.

I have heard some wonderful stories related of bots burrowing through the coats of the stomach. This, I think, rarely takes place while the horse is alive. That cavity is the home of the bot—its natural habitation; for I know of no other. Here it generally remains, until it is capable of exercising an independent existence. In this situation, the little creature is too comfortably located to burrow through the stomach into a cavity where it might perish for want of food. If the time has arrived for it to vacate its stronghold, instinct teaches it the most safe and expeditious route, which is through the alimentary channel. Turn a horse out to grass in the spring, or give him some green fodder in the stable, and the bots will soon leave him, if they are matured—otherwise they must remain until that period arrives.

I contend that the stomach of the horse is the natural habitation of the bot during its minority; and at the proper season, the digestive canal is the useful channel for its introduction into the external world; and if these parasites are ever found in any other situation within a horse's body, they are there by the force of circumstances, owing to disease or rupture of the stomach, or from some morbid condition in the gastric fluids, which arouses a set of involuntary actions, in response to a stimulus. Because, during the whole period of their minority, that is the larval state—a term which, in the language of entomology applies to the bot from the time of emersion from the egg or nit, up to that period when it vacates the horse and assumes the form of a gad-fly. They are, up to this period, in the same condition as a new-born babe or an idiot—the one in imbibing its mother's milk, and the other performing unnatural antics, appear to lack that train of mental operations which implies knowledge, motive, or the consequences resulting from such actions. I very much doubt if the bot can at any time, by voluntary act, vacate the body of the horse. Reasoning from analogy, I am led to the conclusion that the result is accomplished through their instinctive properties, which are common to many insects and parasites—a perfect adaptation of means to an end—by which they perform a certain set of operations without choice, purpose or intention of their own, yet, in many cases, producing results which man, through the aid of his superior intellect, has not been able to surpass.

Veterinary surgeons have long since discarded the absurd notion, that bots are the cause of any pain or suffering to horses. In fact, some of the most distinguished of them assert, that these little creatures, with their rough exterior, are rather beneficial, than otherwise—that by friction and irritation they arouse the sluggishness of the stomach, and thus promote digestion.

Persons unacquainted with these facts, are, therefore, apt to attribute effects, during life, to causes which happen after death, and consequently, the poor horse has to be dosed with all sorts of nostrums.

So popular has been the belief that bots are injurious to horses, and therefore must be expelled at all hazards, that almost all the old works on farriery contained some favorite recipe for their expulsion. Popular opinion, too, has been so much in favor of the theory, that Mr. Percival thought it his duty, as a public teacher, to make use of the following language:—"You may boldly assert, that bots are in nowise injurious. Still, you cannot persuade the world so, and therefore you must be prepared to meet the com-

plaints of those unbelievers, who will now and then declare that their horses have bots—which must be got rid of. But I know of no medicine that has the power of destroying: and even if we possessed such, I am not sure that we could, even when dead, detach them from the cuticular coat of the stomach to which they are attached by small horns." He recommends a run at grass.

And now, I ask, what connection can possibly exist between the presence of bots in a horse's stomach, and the violent pain he suffers from intestinal diseases. *None*; not the slightest. I once found fifty-six bots in a horse's stomach, that was killed in consequence of having broken his leg. Now, it would be very unreasonable to attribute this accident to the presence of bots.

And it is equally unreasonable to assign *bots* as the cause of an acute disease, which any intelligent surgeon might demonstrate.

Now, gentlemen, if I have not succeeded in redeeming my promise—which was to convince you of the harmless nature of bots—the fault is with me, and I shall have to refer you to the works of Clark and Percivall who are unquestionable authorities on this subject.

In conclusion, permit me to entreat you to protect your horses from that species of quackery which proposes to expel bots, and from those self-styled practitioners who, in order to hide their own ignorance of the nature and seat of disease, thus attempt to deceive you.

CHARCOAL AND SALT FOR HOGS.—One of the best articles that can be given to swine when confined, is charcoal pulverized, and common salt. Salt and sulphur are also very good articles, and should be constantly supplied. We would not, however, be understood as urging the necessity of keeping these articles continually by them, or introducing them daily into their food. The first is necessary to obviate the bad tendency of certain kinds of aliment, and should be supplied in quantities varying from one pint to two quarts, as often as once or twice a week. Salt should always be introduced as a seasoning in food. When it is not so used, it should be given twice a week, or it may be placed in a box in the sty to which the animals can have access whenever they wish to partake.

CREAM CHEESE.—Take one quart of very rich cream, a little soured, put it in a linen cloth and tie it as close to the cream as you can. Then hang it up to drain for two days—take it down, and carefully turn it into a clean cloth and hang it up for two more days—then take it down, and having put a piece of linen on a deep soup-plate, turn your cheese upon it. Cover it over with your linen; keep turning it every day on to a clean plate and clean cloth until it is ripe; which will be in about ten days or a fortnight, or may be longer, as it depends on the heat of the weather. Sprinkle a little salt on the outside, when you turn them. If it is wanted to ripen quick, keep it covered with mint, or nettle leaves. The size made from a quart of cream is most convenient, but if wished larger, they can be made so.

TO PRESERVE HERBS.—All kinds of herbs should be gathered on a dry day, just before or while in blossom. Tie them in bundles, and suspend them in a dry airy place, with the blossoms downwards. When perfectly dry wrap the medicinal ones in paper, and keep them from the air. Pick off the leaves of those which are to be used in cooking, pound and sift them fine, and keep the powder in bottles, corked up tight.

TREES KNOWN BY MICE.—In your paper, I see several articles about protecting apple trees from mice, &c. The best remedy I know is to paint them with coal tar. J. W. [We have published several different preventives lately, for this purpose, all of which have their advantages in different circumstances—but we have never found anything yet that is cheaper and more effectual than the long tested mode of banking up the stems with earth, about a foot high. One man will do hundreds in a day, and if grass or weeds are not thrown up with the earth, the mice will never approach the trees.]—*Country Gentleman*.

Nobility and gentleness go hand in hand and when I see a young gentleman kind to his mother, and gentle and forbearing to his brothers and sisters, I think he has a noble heart.

"Though it be not in your power," said Marcus Aurelius, "to be a naturalist, a poet, or a mathematician, it is in your power to be a virtuous man, which is the best of all."

NOTICE OF COUNTY SHOWS.

E. W. THOMSON, Esq.,

President of Board of Agriculture, U.C.

SIR,—I have the honor to submit to you the following brief statement of my proceedings since my last report:—

October 9th, I attended by appointment the Exhibition of the Agricultural Society of the County of Wentworth, held at Waterdown. The day was delightfully fine, and the number of visitors very large. Indeed, for miles around, the occasion seemed to be regarded as a general holiday, by the young and old of both sexes. It was evident from the countenances of the people that they were in earnest in the great cause of agricultural improvement, and appreciated the important purposes of these annual competitions.

Not intending in these short notes to enter into any minute analysis or comparison of the Exhibitions which I have witnessed, I am quite justified in saying that the Show at Waterdown was highly creditable to the County of Wentworth in general, and to the people of East Flamborough and its neighborhood in particular. Horses, cattle, and sheep were, as a whole, much above mediocrity, and specimens from each might have been readily selected that would have graced any Exhibition, whether of a Provincial or National character. Hon. Adam Fergusson's herd of short-horns was well represented by a bull and several heifers, which elicited general admiration; there were also a number of other good specimens of the Durham class. Mr. Malloch had a young bull and two heifers just imported from Ireland, which promise to be a valuable acquisition; the animals were in extraordinary good condition, considering they had been landed from the vessel only a fortnight; one heifer was indeed fat, quite fit for the butcher; indicating the strong tendency to thrive and fatten, characteristic of this celebrated breed. Sheep were numerous,—all long woolled, with only an exception or two,—many of them indicating pure breeding, and heavy both in carcass and fleece. The show of pigs was small, including some excellent specimens both of the large and small breeds. The grain and roots were good, indicating care and an improved state of culture. The ladies' department was quite superior, and their handiwork attracted general attention. A few good implements, chiefly manufactured in the neighbourhood, were on exhibition. Nothing indicates more plainly the advancing state of our agriculture than the superior and efficient tools and implements one sees at Shows like this, and produced by country mechanics residing in the surrounding villages. A goodly number of farmers afterwards dined together at the Inn, and several short but spirited addresses were delivered. Mr. O'Reilly, President of the Society, in the chair. The proceedings of the day terminated with an address from myself in the new Grammar School. The prosperous state of this Society is highly creditable to the Directors, and it still continues to enjoy the services of its old and efficient Secretary, Mr. James Wetenhall.

I had the pleasure of spending a couple of days with the Hon. Adam Fergusson, of Woodhill, whose residence commands a much larger portion of the picturesque than ordinarily falls to the lot of Canadian homesteads. Mr. Fergusson's herd of

short-horns is small but choice ; and I found him, as heretofore, animated by the same spirit for the advancement of agriculture, which has distinguished him for a great number of years both in Scotland and Canada.

I subsequently attended the Agricultural Show of the Township of Etobicoke, at the Village of Mimico. I had heard much of the flourishing condition of this Society, and was, therefore, prepared to expect something superior, and certainly I found the reality to exceed my anticipation. The large amount of visitors, stock, implements, fruits, and vegetables, much of which was of the best quality, indicated a first-rate County, rather than a Township Show ; and the ladies' work, exhibited under a large tent, was both extensive and excellent. The dinner was numerously attended, and the speeches and proceedings were animated. Mr. Fisher, President of the Society, occupied the chair. This Society affords a fine illustration of what may be effected, even within the limits of a Township, by united and zealous co-operation. The spirited competition in the growth of turnips, and the liberal prizes it has given for the same, for the past two years, places the Etobicoke Society among the first and most influential in the Province.

October 24th, I attended, in company with Messrs. R. L. Denison, Hugh Thomson, and others from Toronto, the County of Wellington Show, at Guelph. The amount of live stock was scarcely so large as one might have expected in this celebrated district, but the *quality* was all that could be desired ; in no department scarcely was anything to be seen that could be considered absolutely inferior or second-rate. This result has been brought about by the exhibition of the best animals for many years under the auspices of this Society, so that people will not now take anything but what is really good, well knowing that such only have any chance to win a prize. The *quality*, and not the mere quantity, should be principally regarded in these Exhibitions. Mr. Stone, who is now so favorably known to the public as an enterprising importer and breeder, had some beautiful specimens of his select pure bred cattle and sheep ; and there were others closely treading upon his heels, and even, in a few instances, exceeding him. It would not be too much to say that in cattle and sheep the Show might vie with any similar one in the mother country, whether we regard the animals imported or bred in the County. The grain was good, but rather small in amount. They have a beneficial practice of holding at Guelph a Seed Wheat Show soon after harvest, and awarding liberal premiums. As no prizes are offered for fall wheat at this general annual Show, little or none is brought forward. The roots were excellent, superior to anything I have seen elsewhere. Turnips of different kinds, particularly Swedes, were not only perfectly pure, but large, well shaped, and sound. The soil of this County must be well adapted to the growth of this root, and the culture skilfully conducted. There being no ladies' department, (except dairy products are considered such, which were excellent), the Exhibition did not attract any large amount of visitors who were not directly interested in agricultural pursuits. Wherever ladies are encouraged to bring out their useful and ornamental productions there is always a larger attendance and apparently greater animation. A large party sat down to dinner in the evening, and several interesting

and instructive addresses were given. This Society owes much of its present prosperity to the long and efficient services of its Secretary, Mr. John Harland.

The next day I proceeded to Stratford, the County Town of Perth, where I had engaged to give a lecture on the science and practice of modern agriculture. Owing to the extreme cold and wetness of the day the attendance at the Court House was small. After the lecture some conversation of a very interesting nature followed; Mr. Smith, the President of the County Society, suggested the desirableness of the Board of Agriculture procuring a collection of the soils, economic minerals, specimens of agricultural products, &c., from all parts of the Province, and to arrange them systematically in a place convenient for inspection. Of the importance of this suggestion there can be no doubt; but nothing of the sort can be accomplished until the Board is provided with suitable and permanent rooms. An agricultural museum is beginning to be felt as a desideratum which is hoped will soon be supplied. The weather during the three days I spent in Perth was very unfavorable for making extended observations. Notwithstanding, through the kindness of Messrs. Smith, Stewart Campbell (Secretary of the County Society), and McCulloch, I was enabled to see a considerable portion of the central and southern portion of the County. One cannot travel far here without being struck with the general uniformity of the soil, which, for agricultural purposes, is, with few exceptions, of first quality. A strong clay loam seems to predominate, and near the Thames, as at St. Mary's for instance, limestone, of apparently good quality, may be readily obtained to any extent. Drainage in some places is required, and the general surface of the country, although apparently flat, is in most places sufficiently inclined and broken to admit, without much difficulty, this important means of agricultural improvement. Gravel ridges intersect the County in several directions, and about sixty miles of excellent gravel roads have been made already. The Town of Stratford is favorably situated, being intersected by the Grand Trunk and Buffalo and Huron Railroads, and is rapidly improving. Property is fast advancing here as everywhere else, but as Perth is a newly settled County, having an excellent soil, and now unusual facilities for transportation of produce, it appears to offer peculiar advantages to all classes of settlers, more especially such as have limited means.

October 28th, I attended by appointment the Agricultural Show of the County of Halton, at Milton. The day was fine, and the number of visitors very numerous. In many respects it reminded me of the Wentworth Show. The cause of agriculture appears to be warmly espoused in all the sections of that great tract of country formerly known as the "Gore District." At all events in Halton the farmers, with their wives, sons, and daughters, take a lively interest, as their Annual Exhibition plainly testified, in whatever tends to foster and promote the interests of our native husbandry. I can only say that every department of the Show contained several specimens of merit, and that upon the whole it must be considered highly creditable to the farmers of Halton. The best of the live stock exhibited, will, if carefully managed, soon effect a general improvement in the horses and cattle of the County. It is extraordinary what extensive benefits a few good pure bred bulls will confer upon a whole district in the course of three or four years. The grain, roots, and

vegetables generally, considering the unfavorableness of the season for the latter, were better than might have been anticipated, there being several excellent specimens. In consequence of the great crowd of visitors I could not inspect the ladies' work, which embraced an extensive assortment; much of it was thought by those who had an opportunity of examining it to be of excellent quality.

After dinner in the evening I gave an address to a large audience in the Court House, and was followed by Mr. McDougall of the *Agriculturist*, Mr. Clarke, the indefatigable Secretary of the Society, Mr. White, and a number of other gentlemen, whose remarks on the state and improvement of agriculture, and upon the insect destroyers of our wheat crops, were both interesting and important. A meeting of this kind was certainly a rational and improving way of closing the proceedings of an Agricultural Show, and I left the County of Halton with a pleasing recollection of what I saw and heard.

In conclusion I would observe that it must be obvious to all who have opportunities of attending and observing our Agricultural Shows in different parts of the country, that their magnitude in many instances is now such as to require a suitable piece of ground, with permanent fence and convenient buildings, and *more time* to arrange and properly exhibit the various articles which make up the staple of such expositions. County Shows, where there is or ought to be much belonging to the mechanical, manufacturing, and ladies' department, require *two full days* to commence and terminate the business in a systematic and instructive manner. A small charge for admission too would not be felt as a burthen by individuals and would materially improve the pecuniary resources of the Society. I trust these few hints will not be lost sight of by those who are more immediately concerned in the management of these Exhibitions.

Respectfully submitted.

GEO. BUCKLAND.

Toronto, November 24, 1856.

APPLE WINE.—Take pure cider made from sound ripe apples as it runs from the press. Put from 40 to 60 pounds of common brown sugar (according to the sweetness desired) into 15 gallons of the cider and let it dissolve; then put the mixture into a clean barrel, and fill the barrel up to within two gallons of being full with clean cider; put the cask in a cool place, leaving the bung out for 48 hours; then put in the bung, with a small vent, until fermentation wholly ceases, and bung it up tight, and in one year the wine will be fit for use. This wine requires no racking; the longer it stands upon the lees the better.

PROTECTING DRIED FRUIT FROM WORMS.—Place it in a tin steamer, and set it over a kettle of boiling water; then cover it closely with several folds of flannel or cotton, to prevent the escape of steam. It should remain until thoroughly heated, when it can be put into a cotton or linen bag, tied up tightly, and hung in a cool place. Twice in the season, say in May and July, will be sufficient. I will warrant this to be effectual.—*Country Gentleman*.

PRESERVING EGGS.—The North-Western Farmer has tried the following method of preserving eggs, and recommends it. Take a sieve, and cover the bottom with eggs; then pour boiling water upon them, sufficient to give them a thorough wetting, permitting the water to pass off through the sieve. Take them out and dry them; then pack them in bran, the small ends down; and your eggs will keep *forever*.

DESCRIPTION OF THE CANADIAN WHEAT INSECT.

To the Editor of the Canadian Agriculturist.

TORONTO. October 7th, 1856.

MY DEAR SIR,—I am sorry to inform you that the caterpillars you gave me, about the latter end of August last, are dead. I account for the failure:—As neither of the two were, at the time, sufficiently fed or properly advanced in the second stage of metamorphosis, hence the change into the chrysalis state could not be effected. To obtain the *imago*, depends principally on the latter change. I have made a few microscopical observations, which may serve to detect the caterpillar when it reappears; and I trust some of your country readers will keep a strict look out for it next summer, and note down the exact season. I am anxious to obtain more specimens, that I may make another effort to procure the *imago*.

The two caterpillars were not of the same color. There was also a slight difference in form: the head of one constricted—segment rings of a russet color. The other had a longer head, but more compressed above; and the color of the segments darker, which may be a sexual character. Both were marked with the same number of black punctures and protuberances; and three longitudinal whitish lines, which proceeded from behind the head to the anus, corresponded. Likewise both specimens were provided with the same number of organs for locomotion; *i.e.* six prolegs, eight on the posterior segments, and two anal legs—making sixteen altogether. They spun a very fine thread, and coiled when touched. I think it is a species of *Tineæ*, and that it changes into the chrysalis on the surface of the earth.

There is a species of the same division found in England, *Tineæ Granella*, Reaumer. Ins. 3 tab. 20. f. 14, 16, the caterpillar is found in granaries, gnawing and gathering the seeds into little heaps. In winter it creeps up the walls. It is naked (without hair), and white; the head brown.

It may be discovered that wheat is not the original food of the larvæ of the Canadian *Tineæ*. Many species of this family are known to be parasitical in their habits.

I remain, my dear Sir, respectfully yours,

WM. COUPER.

NEURALGIC HEADACHE.—The application of towels, wrung out in hot water, to the forehead and temples, is represented to be an efficacious and speedy remedy for headaches arising from neuralgic affections.

BLACKBERRY DIARRHŒA CORDIAL.—The following is said to be not only an excellent and pleasant beverage, but a cure for diarrhœa, &c.

To half a bushel of blackberries, well mashed, add $\frac{1}{2}$ lb of allspice, 2 oz. cinnamon, 3 oz. cloves. Pulverize well, mix, and boil slowly till properly done. Then strain or squeeze the juice through homespun or flannel, and add to each pint of the juice one pound of loaf sugar. Boil again for some time; take it off, and while cooling, add half a gallon of best cognac brandy. Dose—for an adult, half a gill to a gill; for a child, a teaspoonful or more, according to age.

TO PREVENT FRUIT JELLIES FROM MOULD.—Cover the surface one-fourth of an inch deep with fine pulverized loaf sugar. When thus protected, the jellies will keep for years in good condition, and free from mould.

WHAT A MAN COSTS.—VALUE OF EDUCATION.

In a recent number of *Hunt's Merchants' Magazine*, there is an interesting calculation on the subject of raising and educating men. It presents a new and striking argument in favour of education. It is to be regretted that there should be any necessity for using such an argument; but as there are in the world a great many men who measure all things—even their professed religion—by the "almighty dollar," the article will do good. Aside from that, it is one of interest—from its calculation—and will be read with pleasure. We have only room for a brief extract, which goes to show how much a man costs—what he is worth—what is his real money or commercial value—and what percentage an education, if given him, pays on the original investment. Mr. Hunt says:—

"The average cost, with interest, of raising any person to the age of 21, will equal \$1,000. This is invested—what is the investment worth? It will cost \$100 a year to support him. To this body add a mind, and in what an extraordinary ratio has the person's value been raised! He can now earn, suppose \$300 a year—that equals \$400 above the value of the idiot, which is to be set down to the credit of mind.

"Now, add education, perfecting him from birth to maturity, and what can he earn? Is \$1,000 a year too much to allow? That is \$600 more than the uneducated man is allowed; and how highly must we rate the expense of education? It could not average \$700, which therefore yields 100 per cent. People usually count the cost of growth and sustenance of the body as part of the expense of education; but this should never be done; a clear distinction should always be made between the expenses to be charged to the body and those to be charged to the mind; and as clear a distinction should be made in case of the credits, for at once some very practical truths would be at once exhibited. Perhaps the following table will present the truth in a conspicuous manner:—

Body costs up to 21 years	\$1,000	Body costs after that (per year).....	\$100
Mind costs up to 21 years	1,000	Mind gains after that (per year) ...	300
Education up to 21 years.....	700	Education gains after that (per year)	1,000

"It is also to be noticed, that the uneducated man is more valuable in middle age than in advanced years; but the educated man grows more valuable as years increase, so that if he begin life with a sum representing the interest of \$10,000, he will find his income to double quite as soon as if his capital were in gold.

"These figures are not fanciful; they are, of course, a certainty given for an uncertainty, and merely for illustration: they may be exchanged for any other to please any caviller: but any fair test of the truth will prove that education will pay more than 100 per cent. upon its cost.

"It would appear, then, that any man who would reckon up his investments, must, to what he has in lands, cattle, implements, &c., add at least \$1,000 for every mature child he has raised; and if he has added to the child a good education, he has changed this otherwise unprofitable investment into a fortune of not less than \$10,000. Now, every principle of commercial economy would dictate that we should add a little investment if we can thereby save the whole, and much more readily should we do it if we can turn the whole into the most profitable of all investments. And what investment is there which will pay as will brain, mind, and education combined?"

PAINTING FARM IMPLEMENTS.—A great saving may be made by keeping implements constantly under shelter when not in use. But this is nearly impossible; and besides, many of them must of necessity be exposed, during their employment, to many days of hot sun and occasional showers. It is therefore very important to keep them *well painted*. As a general average, they will last twice as long by the protection of a coat of paint, renewed as it is worn off.

REMEDY FOR SWEENEY.—Mr. J. H. Shepherd, of Milo Centre, New York, says that he has found the following remedy for sweency very effectual, and confidently recommends its trial by others:—"Take equal parts balsam of sulphur and spirits of turpentine. Mix, apply, and hold a hot iron near enough to heat but not to scorch. Apply every other day until a cure is effected—usually from ten days to two weeks. The animal can be worked 'right along' during the treatment."

WOMAN, AND HER TOILS.

The following excellent article we copy from the "Housewife Department" of "THE NEW JERSEY FARMER." We hope all good husbandmen, who are *husbands*, will read it and ponder on the lesson therein taught:—

MYSTERIOUS PROVIDENCES.

What a mysterious Providence! say the farmers' wives, as they come together to look for the last time on one of their number; and they glance pityingly on the bereaved husband and the family of children, varying in size, from the tall youth or blooming maiden, down to the little child. Truly, it is a mystery, that she should be taken away in the prime of life, when her children need her watchful care and counsel more than ever before. But let us examine into the life led by most farmers' wives, and see if we can gain a clue to this "Mysterious Providence," which so often leaves the family circle desolate.

A young farmer marries, and for a year or two his wife can do very well without help; but by and by, his work is too much for him alone, and he must have a hand; and one by one, little children increase the family, until the wife's burden is much heavier than when she took it up. But he is just getting a start, and if they want to get rich, (as every body does,) they must economise; so she "gets along" without help. She rises early, milks the cows, gets breakfast, often for several men, dresses the children, washes dishes, skims milk, churns, perhaps, sweeps rooms, makes beds, prepares dinner, "cleans up," snatches an hour to sew, keeping a restless baby quiet meanwhile, gets supper, milks again, puts children to bed, and after they and husband are asleep, resting from their weariness, sits up to sew, that she may save paying a seamstress.

In addition to this daily routine, she does all the washing, ironing, baking, scrubbing, house-cleaning, soap-making, and hog-killing work; it costs so much to hire help. So year after year she toils and drudges, not allowing herself the least opportunity for improving her mind, so that she may be a better guide and counsellor for her children. And very soon her fair face is faded and care-worn, her temper soured and fretful, and herself prostrated now and then by fits of illness, only to resume her wearying labor as soon as her returning strength permits. And thus she yearly becomes less able to bear the burden of her increasing household duties. If the husband is a kind, considerate man, who has been taught to assist his mother in boyhood, he makes her work lighter, by carrying wood and water, amusing the children, and doing numberless little things, which may be trifling in themselves, but are of much importance in the aggregate.

But too many men leave the wife to draw water and carry wood, and if she finds it cut part of the time, she considers herself fortunate; and as for the baby—he thinks it is a woman's place to nurse children, so it frets and cries, or mamma must work with it on her arm, while he reads his paper or talks with his hired men. Well, the farm increases in value and fertility, and his labor in producing for his family becomes lighter, as he is able to hire more help; but it is an old thing, both to himself and his wife, for her to do all the housework, with what little help the elder children, if they are girls, can give her; for if they are boys, they cannot work much for her; as soon as they can use a hoe, they must help father; and so she toils on in the same old fashion.

And when the comfortable new house is built and nicely furnished, and her children are beginning to be a real help to her, *the pale, sickly wife and mother lies down to die!* Truly, her sun goes down at noonday. She has saved, by ceaseless, wearying toil, hundreds of dollars for her husband, and he has lost—what money is powerless to recall—the companion of his youth, the one who has walked beside him through life's most thorny paths.

And friends say it is a "Mysterious Providence!" Just as if God ordained that the mother should be taken from her children when they are most exposed to temptation and danger! Instead of laying it on Providence, let us remember the days spent in toil, when the weak, exhausted frame was suffering from disease, induced perhaps by over-exertion; the hours stolen from needed slumber and devoted to labor; the numberless household duties performed with a fretful infant upon her arm; the immense amount of time spent in cooking over a hot fire, and the many sleepless nights passed in anxious watching over sick children. When we look at the subject in this light, is it so very mysterious that so many women die in their prime?

A HORSE WITH THE HEAVES.

I tried all sorts of heave powders on my patient, with no effect whatever. It is said that in a limestone country this disease is unknown, and lime water was prescribed with no apparent advantage. Some one told me to give the horse ginger, and strange to tell, I found that a table-spoonful given to the "General" with his oats, would cure him for the day, in half an hour after he had eaten it; but on giving it daily the effect soon ceased. It is a jockey's remedy, and will last long enough to swap upon. Finally, I was advised to cut my horse's fodder and give it always wet. I pursued that course carefully, keeping the "General" tied with so short a halter that he could not eat his bedding, giving him chopped hay and meal three times a day, and never more than a bucket of water at a time.

He improved rapidly. I have kept him five years, making him a *factotum*—carriage horse, saddle horse, plow and cart horse—and he bids fair to remain useful for five years to come. Kept in this way, his disease does not lessen his value for speed or labor, a single dollar. When the boys grow careless, and give him dry hay, he informs me of it in a few days by the peculiar cough I have mentioned; but sometimes, for six months together, no indications of disease is visible, and he would pass for a sound horse with the most knowing in such matters. There is no doubt that clover hay, probably because of its dust, often induces the heaves. Stable keepers with us, refuse it altogether for this reason.

Many suppose that the wind of the horse is affected by the heaves, so that fast driving at any time will, as we express it, put him out of breath. With my horse, it is not so.

When the "General" was at the worst, rapid driving, when just from the stable, would increase his difficulty, but a mile or two of moderate exercise would dissipate the symptoms entirely. We have, occasionally, what are called *wind-broken* horses, which are nearly worthless for the want of wind. They can never be driven rapidly without great distress, and frequently give out entirely by a few hours driving. This is thought to be a different disease. The "General's" case is, I suppose, a fair example of the *heaves*.

I have no doubt that regular feeding with chopped and wet fodder, and exclusion of dust from hay fed to other animals in the stable, would render many horses now deemed almost worthless, and which manifestly endure great suffering, equally valuable for most purposes, with those that are sound.—*Indiana Farmer*

EFFECTS OF OPIUM.

It would appear that opium, besides its narcotic principles, possesses the property of sustaining muscular strength, thus enabling those who *moderately* use it, to undergo such continued exertion and fatigue as would cause others to sink. Thus the letter-carriers of India, and those who bear messages, when provided with a small piece of this drug, a bag of rice, and a vessel to draw water, will perform incredible journeys. The Rajpoots, and other Indian tribes, present opium at their feasts and visits, with the same familiarity that Europeans do their snuff-box. The Tartar couriers, who travel night and day, also make use of it. Travellers in the Ottoman dominions generally take opium in the form of lozenges. Even the horses in the East seem to be sustained by its influence. The Cutchee horseman shares his opium with his flagging steed, by which he becomes invigorated, though apparently wearied out before. It is, therefore, the *abuse* not the *use* of a thing that renders it deleterious.

Very variable are the effects of opium on different individuals; this being most observable in the different races of men. For instance, in the East its exciting influence is more marked than among Europeans. "The Javanese," says Lord Macartney, "under an extraordinary dose of opium, become frantic as well as desperate. They acquire an artificial courage; and when suffering from misfortune and disappointment, they not only stab the objects of their hate, but sally forth to attack, in like manner, every person they meet, till self-preservation renders it necessary to destroy them. They shout, as they run, *amok, amok*; which means, 'kill, kill;' and hence the phrase, 'running a-muck.'"

Captain Beekman was told of a Javanese who ran a-muck in the streets of Batavia, and had killed several people, when he was met by a soldier, who ran him through with his pike. But such was the desperation of the infuriated man, that he pressed himself forward on the pike, until he got near enough to stab his adversary with a dagger, when both expired together.—*Johnston's Chemistry of Common Life*.

HAIR SNAKES—SINGULAR PHENOMENA.

A correspondent of the *Michigan Farmer* lately made enquiry, through that journal, concerning the nature and origin of "hair snakes found in his milk pans." Another correspondent,—Mr. Justus Gage, of Cass County, Mich.,—gives some interesting facts on the subject. He says:—

"In relation to an enquiry of M. Bull, of Franklin, in the September number of the *Farmer*, concerning hair snakes which he found in a pan of milk, you say the circumstances 'would seem to indicate that they came there by some accident or freak of nature, which, at this distance, it would be impossible to explain.' Is it not equally difficult to account for the origin of such as 'are found in water during the summer months?'"

"There are certain classes of animals, the manner of whose origin, modes of existence, &c., science has not yet satisfactorily ascertained. Hair snakes belong, as yet, to such classes. The *Encyclopædia Britannica*, in an article on hair snakes, does not attempt to unravel the mystery in which the origin of these animals is involved; but contents itself by saying that they abound in pools of water, especially in the north of Europe; that they sometimes infest the bodies of other animals, &c. But what kind of animals they infest, or how they infest them, is not stated.

"In regard to the hair snakes seen by M. Bull, the probability is that they were deposited in the pan of milk by the smaller kind of black crickets, which happened to crawl into the cellar, and accidentally got into the milk. Crickets of both kinds are in the habit of depositing such snakes in brooks and pools of water during the month of August, especially after showers of rain. Any one can satisfy himself in relation to this matter, by throwing crickets into water at a proper season of the year. Whether they are produced by the cricket, or only happen to infest its body for the time being, I have not been able to determine.

"My attention was first called to this matter by Jonathan Carr, Esq., of Springport, Cayuga County, New York, by whom the discovery had been accidentally made. Seeing that my credulity was severely tasked in regard to his statement, he proposed that we should try the experiment, by throwing crickets into water, for the purpose of a full demonstration. After repeated trials, we succeeded in obtaining two snakes of about four inches in length. The next morning, on entering my room, a black cricket of the largest size crawled up the side of the water pail, jumped into the water, lay quiet for a moment, produced a snake of nearly seven inches in length, and then nimbly made its escape over the edge of the pail. My curiosity was greatly excited by what I had seen. The snake was lively and active. I put it into a basin of water for the purpose of further investigation, and then commenced hunting crickets, determined to pursue the investigation until not a shadow of doubt, or any possibility of mistake, could exist concerning this very curious phenomenon. I threw several crickets into water, but without any satisfactory result, and began to despair of further development, when, on turning over a flat stone, I discovered one of the small kinds of cricket lying on its back, dead, and partially decayed, with a hair snake, three inches in length, coiled up in the cavity of its abdomen. This I took on the point of my knife and put it into the water, when it soon began to show signs of life; but it was too much dried up to be able to uncoil itself.

"On returning to my room, I found a number of children collected, who had discovered my snake, held a consultation over it, and, like a set of little savages as they were, had buried it in the yard. The next day I succeeded in obtaining two snakes, of about six inches in length, which I kept in a basin of water for six weeks; but without making any further discovery as to the nature of the animal. At the close of the day they would coil themselves up together, appearing like a snarl of black thread; but on being placed where the sun could shine upon them next morning, they would wriggle themselves out of the kinks, and swim playfully around the basin. After a time they became less active, and on the approach of cold weather became nearly torpid, and I threw them aside. I have since discovered that these snakes will live a long time in moist earth; and I have found them in the ground, of a greyish color, and sometimes of great length and perfectly white, appearing like a white fibrous root of some vegetable. These, on being placed in tepid water, will soon show signs of life, uncoil themselves

when placed in the sunshine, and kink themselves up again at night, but never become so active as those obtained from crickets.

"I will here observe, in closing this article, that the hair snake, when seen through a magnifying glass, presents an almost exact resemblance to the lamper eel, and, when taken from the water, is equally powerless of locomotion."

The discovery of similar hair-worms in the bodies of grasshoppers, is mentioned by Dr. Dadd, in his interesting lecture "On Colic, Botts, &c.," which the reader will find in the present number of the *Agriculturist*.

CURE OF ITCH IN HALF AN HOUR.

Dr. E. Smith, at a Meeting of the London Medical Society, called attention to an article in the *Gazette Hebdomadaire*, by Dr. Bourguignon, in which is a confirmation of the value of the treatment of itch, in Belgium, by sulphur, combined with lime, in a liquid form. The remedy is prepared by boiling one part of quick lime with two parts of sublimed sulphur, in ten parts of water, until the two former are perfectly united. During the boiling it must be constantly stirred with a piece of wood, and, when the sulphur and lime have combined, the fluid is to be decanted and kept in a well stoppered bottle. A pint of the liquid is sufficient for the cure of several cases. It is sufficient to wash the body well with warm water, and then to rub the liquid into the skin for half an hour. As the fluid evaporates, a layer of sulphur is left upon the skin. During the half hour the acarus is killed, and the patient is cured. It is only needful then to wash the body well, and to use clean clothes. In Belgium, the treatment is introduced by first rubbing the body for half an hour with black soap; but this does not appear to be necessary. The only essential act is that of the careful application of the fluid sulphur. The lime is of no importance in the treatment, except to render the sulphur soluble, and such would probably be the case if potass or soda were employed, which is an improvement upon the mode of application of sulphur in substance with lard, as the more ready absorption of the remedy, and consequently the more certain and quick destruction of the insect, by using sulphur in a fluid form. In so disgusting a disease, it must be of great moment to be able to cure it in half an hour.—*Dublin, Med. Press, from Association Med. Jour.*

This might prove very useful in the treatment of skin diseases occurring among horses. Who will try it?

HYDROPHOBIA.

In the course of Dr. Blatchford's paper on hydrophobia, read before the American Medical Association, at its last annual meeting, at Detroit, the following curious facts were reported as taking place in Prussia:—In 1810 there were in that Kingdom 104 deaths from hydrophobia; in 1811, 117; in 1812, 101; in 1813, 85; 1814, 127; in 1815, 79; in 1816, 201; in 1817, 228; in 1818, 260; in 1819, 356—making a total of 1,658 deaths in ten years, in Prussia alone. It is mentioned also as a curious fact, that in Cyprus and Egypt hydrophobia has never been known to occur. It is believed also that the disease is incident to no particular month in the year, as statistics show, on the whole, as many deaths at one month of the year as at any other—there being no real difference between summer and winter. The doctor believed the constitutional irascibility of the dog was the true etiology of canine madness, and that excision is the only means now known which affords any reasonable hope of successful prevention. The report pronounces as an utter fallacy the general idea that the dog star has anything to do with the origin of virus in the dog, or that summer has any special preponderance over winter in the existence of cases of hydrophobia. The facts submitted, and which had been collected by the Committee, show the following result; Out of 72 cases, 54 were bitten by dogs, 6 by cats, 1 by a raccoon, and 1 by a cow. Out of 62 cases, 4 died the first day, 9 the second, 6 the third, 18 the fourth, 4 the fifth, 2 on each the sixth, seventh and tenth days, and 1 on the twenty-first. That 22 bites occurred in March, April and May; 17 the next quarter; 18 the next, and 22 the last. The average of the time of the sickness was 66 days, but this lengthy average was enhanced by two strongly-marked cases, lasting 365 and 360 respectively. The usual average is 41 days.—*New York Times.*

To REMOVE FLY SPOTS.—Dip a camel's-hair brush into spirits of wine, and apply it, to remove fly spots.

STEAM PLOUGHING IN ENGLAND.

It would seem that Boydell's engine, with revolving railway, is about to furnish the long-sought improvement in agriculture—a practicable steam-plough. We have always doubted, and still doubt, the economical application of any locomotive engine power to the cultivation of small farms, and on uneven or hilly soil. But on tolerably even surfaces, and upon extensive fields, such as may be found in England and on the Prairies of the West, there seems no reason to doubt that steam power may be profitably employed.

The following account of some recent experiments with Boydell's Traction Engine, in England, is from the *London Agricultural Gazette*, an authority which may be relied upon for intelligence and honest statements :—

“The trials having been advertised, we attended on Tuesday and Friday, the 16th and 19th inst., and shall present the readers of the *Agricultural Gazette* with a brief account of what came under our observation.

“On Tuesday the engine was trench-ploughing a small field on Steam Farm, with two of Cotgreaves' trench-ploughs, Mr. Cotgreaves himself superintending them. The work was being done about twelve inches deep, and at the rate of five acres per day, or half-an-acre per hour. The engine, to appearance, would have hauled nearly another plough, as it was never working up to its full pressure of steam; but the two ploughs being all that were at command, we had not an opportunity of bringing this to the test of experiment. The quality of the work gave great satisfaction, especially to the market-gardeners of the neighbourhood, some of whom offered to give 30s. per acre for land so trenched, assuring Mr. Middleton—who lets out engines—that a large area of market garden-grounds of the capital could be had at this rate.

“The daily expense of the engine and hands was estimated at about 30s., so that the cost per acre would be 6s.; consequently the profit would be 24s. per acre at the above estimate—equal to £6 per day, or £36 per week.

“On Steam Farm there was also a good deal of ploughing done by the engine, in two large fields, with four of Howard's P. P. ploughs, the depth of the furrow being nine inches, and the rate of ploughing from eight to ten acres per day. The quality of the work was superior—fully equal to what could have been done by four horses in each plough. Both fields were well adapted for traction-engine work, being comparatively level, and of great length.

“On Friday the engine was at work in a large field on Butts' Farm. It was again hauling four common ploughs, ploughing nine inches deep, and at the rate of an acre per hour when timed. The field was still better adapted than the former, being nearly as level, of greater length, and rather lighter in quality of soil. Both fields on Steam Farm, although of a gravelly character, were yet rocky hard in the bottom; but here the soil was more friable and sandy, consequently the ploughs were more easily held—enabling the ploughmen to make far better work than that done by them with horses in the same field.

“The steady, equal draught of the ‘steam-horse’ deserves especial notice, as it differs widely from that of horses. Accustomed to the latter, we think little about the irregularity of their traction force, when holding the plough behind them, but we have only to examine their mechanism and the ever-varying position of the fulcra (footprints on the ground) over which their muscular force acts, and compare them with those (the endless rails) of the traction-engine, to perceive that the difference is great, and wholly in favour of the latter. In point of fact, Howard's P. P. ploughs, after being entered behind the steam-horse, almost went alone, for we saw Mr. Middleton remove his hand from one of them for a considerable distance, and how much further it would have gone cannot be said. The expense of ploughing nine inches deep, with four ploughs, is thus given :—

“An engineman or stoker, at 4s. per day	£0	4	0
A steersman and four ploughmen, at 2s. 6d. per day	0	12	6
Ten cwt. of coal, at 1s. per cwt., per day	0	10	0
Tear and wear, &c., per day.....	0	10	0

Total expenses per day £1 16 6

"The sum of 36s. 6d. per ten acres would be something less than 3s. 8d. per acre; but say £2 per day and 4s. per acre.

"The value of the work done was estimated at from 20s. to 24s. per acre; say the lowest of these two figures, which would give £10 per day, so that deducting the £2 (the expense of the engine), we would have £8 as the profit per day over our present system; £48 per week; or the prime cost of the engine in some ten weeks' work.

"When the engine was timed it was ploughing fully an acre an hour, but at that time it was going rather over its ordinary pace. In point of fact, the boiler is only calculated to keep up a maximum pressure of 45 lbs. of steam per square inch, and with the most successful stoking it seldom much exceeded this pressure, while it very frequently fell below it. Midland we found it at one time as high as 50 lbs., and at another as low as 35 lbs. We may also mention here, that we had the diameter of the cylinder measured, and found it 6½ inches. Probably at the ordinary pace of the engine it was ploughing at the rate of eight acres per day of ten hours. We insisted very hard, on Tuesday, for a ten hours' trial without intermission; but owing to the urgent demand of visitors,—some of them from the continent of Europe, the East and West Indies, and the United States of America,—to see it trench-plowing, &c., &c., our request was found impracticable on any of the days advertised for public trial.

"At eight acres per day, the expense per acre would be 5s., and the profit per day, £6; per week, £36, over the present system—a profit which would soon pay off the prime cost of an engine. In the provinces the expense of such ploughing would be, on an average, only 16s.; at ten acres this would yield £3, or £6 of daily profit; at eight acres, £6 8s., or £4 8s. of profit, allowing the expense of the engine in each case to remain as before.

"There was no two-horse or six inches deep furrow work done, and therefore we cannot say from experience what the expense of such was; but we may safely conclude that, at ten acres per day, it would not be more than 2s. 6d. per acre; and at eight acres per day, 3s.

"Such are the leading facts which we gleaned from two days spent with the Messrs. Middleton. That they involve a revolution in agriculture no one will deny who comprehends their importance. To those of our readers who have hitherto been opposed to *Boydell's* steam-horse entering their fields, the above results may appear startling, and even incredible; but to such we say, go and judge for yourselves, and be guided by facts, not opinions. We ourselves hope very soon to witness far more triumphant results in favor of direct traction than the above, for several of our most intelligent and leading agriculturists have traction-engines of an improved construction, and with better implements for tillage, nearly ready to enter the field, than what were used on the above occasion."

WRITERS FOR THE PRESS.—We fully endorse the following:—Many practical farmers, who have been taught in the best schools, that of experience—decline to write for the press because they have not received the education of scholars, and do not write in a smooth and elegant style. If they were solicited to contribute to the columns of literary papers, where style often passes for more than thought, this might be a legitimate excuse. But writers for the agricultural press need only two things, neither of which is dependent upon the graces of mere literature: 1st, Something to say; and 2d, A few clear, plain words in which to say it. If our rural friends will bear these two points in mind, they may write to us as often as they have a leisure half hour, and we will stand all consequences. Nay, we solicit them to do so. We dare them to write us out of patience, if they think they can. We challenge them to put more interesting facts in a brief communication than we can publish. We defy them to write in language so plain that we cannot understand it. Let us see, now, which one of them will take up this gauntlet first.

IMPORTANT IF TRUE.—To secure from cattle, male or female progeny at will.—According to an article in the *Annals of the Luxemburg Agricultural Society*, communicated by a Belgian farmer, a heifer calf is invariably produced when the cow is put to bull before milking, and a male calf when the cow is put to bull just after she has been thoroughly milked. The author of this statement claims to have confirmed its accuracy by four years experience, and asserts that the plan has succeeded beyond all expectation. Cows, which previously had borne only male calves, and that for four or five years, gave heifer calves by the above treatment. Give it a trial.—BAKEWELL.

WEEDS.—"A lady asked her gardner why the weeds always outgrew and covered up the flowers.

Madam, answered he, the soil is the mother of the weeds, but only step-mother of the flowers."

The seeds of weeds in almost any ground, especially that not cleanly cultivated, are to be counted by millions. Every piece of soil at least to the depth it is usually cultivated has, although invisible to the eye, a quantity of seeds ready to germinate as soon as they are brought into sufficient proximity to the atmosphere. Besides quantity they have another important advantage over seed sown to produce a crop, and that is priority of sowing. Lying dormant in the soil for a longer or shorter period, they are already charged with water, and most likely brought from the bottom to the top, feel at once the vivifying influence of air and warmth, spring into growth as if by magic. Soaking the small kinds of seeds in water a few hours before sowing, would assist them in the battle of life with their numerous enemies, but the true way is never to let a weed grow seed if you can help it. In time this will work a cure.—E. S.

INVENTOR AS WELL AS ARTIST.—The Florence correspondent of the *Newark Daily Advertiser*, under date of Sept. 5th, says:—"Our countryman, Powers, whom Mechanics have never forgiven for his success in Art, is about to appease her with a new tool, which promises to supercede altogether the present *file*, by doing all its work easier, better, and cheaper. This instrument, originally invented to facilitate his operations in sculpture, has now been adopted to all the uses of the file in metals, ivory, bone wood, leathers, &c., and will, moreover, take the place of the greater in the kitchen. The inventor has devised a compact machine for producing it in great numbers with the least possible expense, and when the castings now in progress are completed, it will be brought into use—doubtless to the great profit of all parties."

Carefully preserve the fallen leaves of trees, and procure as many as you can; when rotted into mold, the produce is invaluable.

COMPARATIVE VALUE OF TIMBER.—A seventy-four gun ship will require the oak timber of 75 acres; but will not require more than the timber of 10 acres of larch.—*Transactions of the Highland Society.*

HINTS ON WINTER POTATOES.—If it is desired to have potatoes in the spring as fresh and mealy as in October, they must be preserved by making a layer of potatoes, then of dirt, filling all the crevices, and so alternately until you have secured them all. If you will try this for once you will ever after adopt it as the best method of keeping potatoes fresh and good. The idea of tumbling potatoes into a cellar, where the mercury ranges from 45 to 60 deg., and expect to have them fresh and good, is not a correct one. Potatoes grow in the dirt and are best preserved in it. But carrots, parsnips, rutabagas, are also much better kept by packing them in dirt. The dirt for potatoes and other roots and tubers should be about as moist as it should be to grow them to advantage, and if sandy in its composition, so much the better.

CABBAGE.—Cabbage is best kept by digging a trench in the cellar, and setting them out as if to grow. In this way, small heads will sometimes increase in size, and all will be kept without wilting.

CELERY should be carefully taken from the trenches and packed in boxes with dirt or left out upon the cellar bottom; let the earth be moist, and not too wet or dry. If left out in the trenches during the winter and covered, it often is destroyed by the frost and unfit for use.

STRAWBERRY PLANTS that have been late set should be protected from severe frosts by a slight covering of straw, or litter, or, what is better, a coating of leaves, putting on sticks or pieces of boards to prevent them from being blown off.

CURRENT BUSHES and gooseberries may have a barrow full of chip manure put around each one, and in the spring it can be spread over the ground as a mulching, and to keep down weeds and grass.

THE GOLDEN DROP WHEAT.—This wheat, taken from the State of Ohio to New York, is attracting attention in that State. It is recommended because it is less liable to the midge than other kinds are.

GUINEA FOWLS.—It is said that rats will not live on the same premises with guinea fowls. If so, let these fowls be introduced—notwithstanding their unearthly screaming.—*Ohio Farmer.*

At a meeting of the Wool Growers, in Cleveland, it was resolved to recommend the following compound for marking sheep:—*Compound Oil, or Sheep Coating.*—To one gallon of lard oil, put one pound sulphur and one-fourth pound tobacco or snuff; heat the same thoroughly, and add one-half pint tar; the whole strained, and settled, and it is fit for use.

SALTS FOR STABLES.—If a compound of gypsum and sulphate of magnesia be used on the floor of stables, it will absorb the moisture and ammonia, and keep the stable dry, and free from offensive smell. The compound salt, after it has absorbed all the moisture possible, is removed to be used for manure, and fresh salts applied in the same way. This is an excellent plan for keeping stables dry and healthy.

CONSIDERATIONS REGARDING THE HEALTH OF A FAST HORSE.—The health of a *fast* horse depends on the integrity of the heart and lungs. A slight deviation from health, in either organ, may prove of little consequence to the horse of *slow* work, but in a *fast* one it is a serious impediment to trot, or gallop. Therefore, when purchasing a *fast* horse, the purchaser should have him examined by a veterinary surgeon.

EDITORIAL MISCELLANY.

NOTICE.—We must urge upon the Officers of the Agricultural Society who are indebted to us to remit the amount of their account immediately. We have with this number completed our contract, and we trust that they will not hesitate in fulfilling theirs. The amount due by each Society is not sufficient to cause delay, and if the money be not forthcoming, it will in most cases be owing to negligence on the part of the Officers. We feel grateful for the patronage bestowed upon us, and tender our thanks to the many friends who have labored to encourage our efforts.

DIOSCOREA BATATAS (CHINESE POTATO).—We have received letters from two or three parties who have grown this new esculent during the last year, and who report favorably of it. In all the cases we have heard of, the plant has not had fair play, having been set out late in the season. We have strong doubts that this new root will be able to *root out* the much-loved and universal potato. The accounts of its culture in the United States are not generally favorable; and in Canada it seems only to have attained the thickness of a “pipe stem”—the words used by our correspondents, in different parts of the Province, to describe its appearance. We hope further trials will be made next year, and that the sets will be put out early. We shall publish one or both of the letters received, in the Number for Jan.

A FEW WORDS TO AGENTS AND FRIENDS.

As this Number concludes the Volume, and is the last our Subscribers will receive unless they re-order the *Agriculturist*, we respectfully ask them to continue their patronage. Unless they deem the paper unworthy of support, we shall expect our agricultural friends, especially, to take increased interest in its success. We think our efforts deserve encouragement, for we *know* that they have resulted in great benefit to Canadian Agriculture. We hope, by making increased exertions during the next year, to merit the assistance of all true friends of our country.

If asked how that assistance can be rendered, we answer,—in two ways. First, by inducing as many of your neighbours as possible to become subscribers; and, secondly, by contributing interesting facts to the *Agriculturist*, in the shape of correspondence. We are happy to state, that the number of our intelligent correspondents is greater than at any former period. We consider this the most valuable feature of the paper.

Let every subscriber, then, renew his own subscription, and persuade at least one of his neighbours to join him, and we promise a greatly improved volume next year. For terms, see first page.