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NEWCASTLE FARMER.

VOL. III.—NO. III. COBOURG, NOVEMBER 1, 1848. THOS. PAGE,—Editor.

BLIGHTS OF THE WHEAT.

CHAPTER X.

The economy of the minutest insects and animalcules with which we are acquainted is quite as wonderful as the nature of the fungi adverted to in the preceding chapter; while some experiments recently made on the infusoria, to which class the little eels of the pepper-corn of the wheat belong, are as striking as those that have been described in relation to the growth of moulds. The injuries we receive from insects are doubtless great; but we have our compensation in the benefits they confer upon us. When we look upon some of these separately insignificant portions of creation, their importance seems almost incredible. Who could suppose, on examining a minute cochineal insect, that this nation actually pays about five millions of dollars every year for the myriads of their dried tiny bodies which art has called into use? How wonderful is it to remember, when we may be sealing a letter, that the little gum-shel-lac insect provides for us wax as an appendage to our writing apparatus, and that very large sums are yearly expended on its importation! When we look at a slugglish silkworm feeding lazily on some leaf, and consider it merely as the larva of a plain-looking moth, and perceive its feeble movements and rather sickly aspect, it fills us with amazement to recollect that more than fifteen hundred thousand human beings gain their daily bread from gathering, winding, and manufacturing the web of the cocoon of such a caterpillar! Many other instances might be adduced to prove that though the insect tribes offer us much annoyance, and inflict upon us frequent losses, we are still largely their debtors. Like the fungi, also, they have assigned to them a most beneficial part in the grand economy of nature; and this is the removal of decomposing organic matter, and thus preventing disease from putrid exhalation. Every maggot that is bred in the dead body of any animal, or the tissues of any rotten plant, is performing this needful and beneficial function. For this purpose extensive powers of multiplication and great voracity, are evidently essential requisites. Hence we may see the reasons of the changes peculiar to the insect world, and of the multitude of eggs the various flies which are parents of larvæ continually lay. Small numbers could not perform the offices assigned them to any useful extent; nor, if insects passed at once into that state in which they are employed in the cares of reproduction, would they be able to carry on the work of feeding on putrid matter as their sole object. Hence we see the wisdom of God as applied to his designs. The design in this case has been explained, and we may perceive the adaptation. It is expedient that these insects, whose province it is to remove the injurious substances adverted to, should be wholly employed in this work. Accordingly we find these maggots in a state incapable of reproduction, and endued with what they require —an insatiable desire for constant feeding, and proportionate digestive organs. They pass into another condition before they begin the reproductive processes, which must interrupt their operation of constantly feeding on the superabundant and injurious matters which would otherwise destroy the healthiness of the air we breathe. The larva, therefore, has no propensity but a constant appetite for food, and is the longest state of insect life. After this it is changed into a condition of inactivity, wherein, by certain slow processes, the perfect fly is formed, and subsequently disclosed, not to feed with the voracity of its maggot, but to lay multitudes of eggs in places suitable for the development of more larvæ. The object of its existence having been thus answered, it dies. Who can think of these marvellous transformations, and not admire the wisdom and power of God, nor fail to remember for himself, that, before he can perform the services of a better world, he must be transformed too, and that by the renewing of his mind? The same insect may be said, in certain cases, to live in several different worlds: It inhabits, in its successive conditions, water, earth, and air, while it is fitted for these respective abodes by new organs, instruments, and forms suited to each. Every one has some purpose. Can we have a better illustration of this than in Bonpet's celebrated remark: "Of what riches should we not have been deprived, if the silkworm had been born a moth without having been previously a caterpillar!"

Still the larvæ of many insects do the greatest injury to the produce of the farms of this country. For example, there is scarcely any species of cultivated plant free from their attacks. Wheat, rye, oats, and grasses are largely destroyed by them. These wire-worms are the larvæ hatched from the eggs of certain beetles. "It will probably," remarks Mr. Curtis, "surprise the general reader to learn that there are nearly seventy species of beetles in this country which are the parents of wire-worms: many of them, however, live in decaying trees, or under the bark; and the number that affect our crops of corn, vegetables, and flowers, is very limited." The beetles from which they spring, and into which they pass, are called *claters;* and almost every farmer has an instinctive dread of these worms themselves. Yet not many of these persons know that the little long beetles called "skip-jacks," which jump when laid on their backs in a wonderful manner, lay the eggs which produce these mischievous devourers. The claters, or skip-jacks themselves, feed only on flowers. The best account to be found of them is that by Mr. Curtis, who gives more hints for remedies than any other writer. The long time these wire-worms exist in their larva state, adds very much to the amount of mischief inflicted by them.

Generally speaking, the larva state is the one in which insects do most injury to corn; but Mr. Kirby mentions that the weevil devours it when housed in the granary, both in the *imago* as well as larva condition; and that a single pair of these insects will produce in one year about six thousand of their species.

Cereal plants are likewise attacked by larva of the willow moth, which consumes the grains of wheat and the seeds of grasses. Flies, also, of various kinds, lay eggs that give birth to larvæ destructive to the several kinds of corn, when they appear in any considerable quantity. These flies have their ichneumons for checking their increase, in the same way as the midge described in a previous chapter. They do not, however, belong peculiarly to the wheat, and are therefore not legitimate subjects for this work, beyond a passing notice of their existence. Amongst the British flies, the one called *oscinis vastator* is much to be dreaded. Two broods of maggots are yearly ushered into life from its eggs. Those born in the summer are located between the sheath and stem, above the soil; those that are hatched in the autumn are close to, and perhaps below, the surface. These flies and their preventives are described in the papers before mentioned, which have been published by the Agricultural Society. One of the most remarkable flies which infest wheat and other grain, appears to be the *cephus pygmæus*, or corn saw-fly. For a knowledge of the singular habits of this creature we are entirely indebted to Mr. Curtis. No farmer had previously discovered it, as far as is known; no Englishman of science had previously described

its operations and habits. It is, however, not a stranger to certain ingenious foreigners, who have noticed its ravages in the rye-fields of France, and have published accounts of it in the scientific annals of their country. The fly itself is about half an inch long, and black, with four transparent and iridiscent wings; the legs are yellow, striped with black. Many of them may be frequently observed on flowers, in corn-fields, during June, and on grasses, in woods; but a casual glance at them gives no indication of their mischievous habits. The female lays her eggs just below the ear, in the straw of the corn plant, and the larvæ travel from the top to the bottom, eating as they go, and working through the knots with perfect ease, until the time of the ripening of the harvest, when they eat through the stem near the ground, and pass into the chrysalis state. France has, at times, suffered extremely by the attacks of this singular insect, whose habits have hitherto been little known and less suspected by those whom they much concern in this country. Persons have now been led, by the light thrown on the subject through the papers of Mr. Curtis, to search for it; and an interesting communication appeared respecting it in the "Gardeners' Chronicle" for Feb. 21, 1846. It is stated in this periodical, that the maggots inhabiting the straws live through the winter enclosed in transparent cases, of very close texture, and enter the pupa condition in March. It is also added by the correspondent of this valuable paper, that "these flies resort to flowers in corn-fields, grass in woods, and umbelliferous and composite flowers on banks and road-sides. The straws containing the larvæ may be detected after harvest by a little attention. the short pieces of stubble being cut horizontally by them. They undoubtedly cause serious mischief, as the ears of the infested stems are either sterile, or contain only a small number of shrivelled grains. Burning the stubble seems to be the best means of extirpating the cephus; but there is an ichneumon named *pachymærus calcitrator*, which keeps it in check by depositing eggs in the maggots, which hatch and live upon them."

There are many other little insects found on the stems and ears of the *cerealia*, or corn plants, the habits of which have not yet been sufficiently inquired into, nor the actual services performed by others that accompany them. We have an example of this in the *thrips*, as it is called, that Mr. Kirby described many years ago; but it ought to become the subject of fresh observations. This venerable naturalist took the orange powder in the ears for the excrement of the thrips. It was probably the *uredo rubigo* which he saw. The author found quantities of the *thrips* last autumn, (1845.) He has also found a great many this year, (1846.) The larvæ likewise of a fly called chlorops has this year attacked barley. In some instances the orange powder in the wheat appeared, and some not. Where it did appear, it was the uredo fungus just mentioned.

To say that wheat is subject to the presence of *aphides*, or plant-lice, is only to state in the case of wheat what may be affirmed of almost every known produce of our soils. The same may be likewise said of several other minute creatures that are found in the fields. In our granaries besides weevil, the larvæ of a species of *tinea* make great havoc. Thousands of *acari* will be found in bran kept for any length of time. All these minute creatures, like the weeds, the thorns, and the briers, have been permitted to spring up; and in this our fallen condition we must count upon "the years to be eaten by the locust, the canker-worm, and the caterpillar, and the palmer worm," which are "His great army," who rules over all things.

When alluding to the *vibrio tritici*, or eel of the wheat, it has been more than once stated that it belongs, properly speaking, to the class of animalculæ called infusorial, because they constantly appear in infusions of certain substances. The possessor of a tolerable microscope may soon convince himself of the truth of this assertion. Let him take a small glass vessel, a tumbler if he please, and place in it a little hay, and then fill it nearly full of rain water. When it has stood a few days exposed to the air, a slimy sort of matter will be seen floating on the surface; take a little of this off with a pointed feather, and put it on a slip of glass; use a quarter of an inch achromatic. A sight perfectly astonishing will now present itself: the little drop of water will appear a perfect mass of active life. Sour paste will also be found teeming with vibriones, or little eels of extreme activity. The author obtained the most active and curious eels he ever met with from an infusion of ripe strawberries in rain water; they darted about with amazing quickness. Myriads of little black vibriones abound in almost all stagnant waters, and may be seen mingled with the other infusoria by taking a little of the scum in the way just recommended. Those who wish for acquaintance with the several forms these animalculæ assume, must consult writers on the subject, particularly the great work of Ehrenberg. Some of the most beautiful sights exhibited by the microscope, may be enjoyed by those who make various infusions with a view to observing these infusoria. Besides those mentioned, cabbage-leaves, sage-leaves, leaves of sea-kale, and other vegetables, make excellent infusions teeming with life. Like the sporules of fungi, their eggs are universally diffused, and hatch in any suitable place.

The forms of these infusoria are capable of the greatest possible variety. Some of them can hardly be said to have any well-defined figure, but are composed of a kind of gelatinous substance, having no solid framework, and so may be made to assume almost any kind of outline. Others are enveloped in shields or sheaths, which continue after the animalculæ themselves have long ceased to exist. Ehrenberg, believing that they are provided with many stomachs, calls them *polygastrica*. If they are suffered to remain a short time in water containing finely divided particles of colouring matter, the appearance of these particles in their transparent bodies, is such as to indicate that they contain numerous globular cavities. Still this point cannot be regarded as completely decided; and by many persons the views of Ehrenberg are declared to be untenable.

Round the mouths of these animalculæ there are found *cilia*, moving with a rapidity that astonishes the observer: they look like hairs vibrating with a vehemence that is incredible till witnessed. This vibration produces currents in the fluid containing the infusoria, and thus the food on which they live floats into the mouth. At the same time, they are enabled by the cilia also to swim quickly about. Totally invisible to the naked eye, a good quarter of an inch achromatic presents them to the view of the microscopist in a little globule of water. 'When,' says an eminent physiologist, 'a number of dissimilar forms are assembled in one drop of water, the spectacle is most entertaining. Some propel themselves directly forward, with a velocity which appears, when thus highly magnified, like that of an arrow, so that the eye can scarcely follow their movements; whilst others drag their bodies slowly along, like the leech. Some make a fixed point of some portion of the body, and revolve round it with great rapidity; whilst others scarcely present any appearance of animal motion. Some move forwards by a uniform series of gentle undulations or vibrations; while others seem to perform consecutive leaps of no small extent compared with the size of their bodies. In short, there is no kind of movement which is not practised by these animalculæ; they have evidently the power of steering clear of obstacles in their course, and of avoiding each other when swimming in close proximity. By what kind of sensibility the wonderful precision and accuracy of their movements is guided is yet very doubtful. The general surface, in those whose bodies are not inclosed in a firm envelope, appears very susceptible of impressions. No organs of special sensation, however, can be detected, except certain red spots observable in the bodies of many species, which are believed by Ehrenberg to be eyes."

The least and simplest of these infusoria are called *monads*, which generally are spherical in shape, and swim about with ease and rapidity. It is not, however, the object of this notice to trace the various families of infusoria, but by a few general observations to show their most prominent characteristics, and the singular analogy between them and the minute fungi brought before the reader in the foregoing parts of the volume. All geologists are acquainted with the quantities of fossil infu-

soria in chalk and other minerals, some of which contain them to an extent perfectly incredible, until proved by ocular demonstration. The mineralised skeletons actually in many cases have contributed to form solid strata of the earth. There is a kind of siliceous stone from Tripoli, which is completely made up of skeletons or sheaths of infusoria. A single cubic inch of bog iron ore contains about two millions of millions of microscopic animalculæ. Of the species of fossil infusoria thus discovered half at least still exist. In their dead state, and fossil condition, they doubtless contribute to the growth of vegetable substances. We shall now see the wonderful functions they perform during life, for the benefit of us all.

These curious infusorial animalculæ are found living in all the stagnant waters with which we are acquainted. It may be truly said,—

"——where the pool
Stands mantled o'er with green, invisible
Amid the floating verdure millions stray.

Every fluid drop of the ocean contains them; and they abound in mud.

Like the eels of the wheat again, some of these maintain a torpid existence, when dried up by the summer's sun; and in this condition countless myriads of them are raised up with exhalations into the atmosphere. The *guano*, so extensively used for manure, is full of the most beautiful infusoria, some of them splendidly iridiscent; and there is no better method of testing the genuineness of this useful substance than by the microscope. A small portion of guano dust, viewed with a quarter of an inch achromatic, affords a surprising spectacle, as any one who pleases may prove. In short the whole creation teems with life.

"Link after link the vital chain extends,
And the long line of being never ends."

(To be continued.)

From the Farmer's Gazette.

EXTRACTS FROM PROFESSOR ALLMAN'S LECTURE ON INSECTS INJURIOUS TO AGRICULTURE.

WIRE WORM.

In the two insects which have just been brought before your notice you must have been struck with the fact that their ravages were confined to a single kind of crop—namely, the turnip; that, however, to which I now request your attention is omnivorous, and many very different kinds of crops become its victims.

You will, perhaps, have already anticipated that I allude to the *wireworm*. Now, under this name very many different grubs and worms have been confounded, and it is important that you should know the true wireworm from those animals with which it has been falsely associated. The proper wireworms are of a nearly cylindrical form, covered with a hard, shining skin of a yellowish brown colour, and devided into numerous distinct rings or segments. Six short legs are borne by the three segments which immediately succeed the head.

Now, all the true wireworms are insects in an imperfect state, and, like the black caterpillar just described, are larvæ destined to undergo a series of metamorphoses before they arrive at their completely developed condition.

The perfect insects of which the wireworms are larvæ, belong to a tribe of beetles, called from a remarkable power which they possess of springing with a peculiar snapping sound, when placed upon the back or otherwise annoyed, *Elaters* or click-beetles.

Among the parents of wireworms are several species of Elater, but those which at present chiefly demand our attention, as being the most numerous and destructive, are the two species called by Linnæus, *Elater obscurus*, and *Elater lineatus* and indeed many entomologists are of opinion that these are varieties of the same species. They may be found in abundance from April to midsummer under stones, and in fields, woods, hedges; and gardens.

Whether the parent beetle lays its eggs in the earth or in the under-ground portion of the plant, which is to become the food of the wireworm, has not been accurately determined.—The eggs, at all events, are very minute, and from these proceed the little worm, at first almost invisible to the naked eye. It grows slowly, but in time acquires the length of about three-fourths of an inch. During its growth it frequently changes its skin, and it is ascertained that it remains in the condition of a larva, or wireworm, for five years, becoming more and more voracious as it grows, attacking the roots and under-ground portions of the stem of almost every crop it has once got possession of—wheat, oats, barley, mangle-wurzel, turnips, potatoes, cabbage, grass, and the flowers and culinary vegetables of the garden.

On the expiration of its five years of larva-life, the wireworm penetrates to a considerable depth in the soil, and there forms for itself a little earthen cell, in which it undergoes its metamorphosis into the *pupa*, and from that moment the agriculturist has nothing more directly to fear from it. This generally occurs about the end of July or beginning of August. It would seem that they continue in the *pupa* state generally for two or three weeks; but Mr. Curtis is of opinion that many remain buried throughout the winter. At length the period of their final change arrives, and, bursting the *pupa* skin and the earthen chamber which imprisoned them, they emerge into air and light, with propensities and habits totally changed, an elegant and active little beetle, no longer the terror of the agriculturist, and appeasing its easily-stated appetite on the delicate organs of a few flowers.

For arresting the ravages of the wireworm numerous methods have been adopted. The use of the roller is by some strongly recommended, as well as the folding of oxen and sheep on the infested fields.

Various chemical applications have been found useful, such as lime, soot, the refuse lime from gas-works, chloride of lime, nitrate of soda, and common salt.

It is a curious fact that there are some crops which have the effect of expelling the wireworm. Of these, *woad*, a plant cultivated in some parts of England as a dye, and *white mustard*, have been highly spoken of. "I learn from Dr. Roy," says Mr. Curtis, "that on breaking up damp meadow and pasture land in Lincolnshire, if it be sown with woad instead of corn, the wireworm will be got rid of; and about Boston it is found to be a very profitable crop. It may be repeated for two years, after which splendid crops of oats and potatoes may be obtained from the land." Sowing white mustard seed on the infested land was attended with results to the succeeding crop of wheat equally beneficial.

Few modes of destroying the wireworm, however, are to be preferred to the obvious and most effectual process of hand-picking. "Mr. G. Pearce, of Pennare Goran," says Mr. Spence, as quoted by Curtis, "saved an acre and a half of turnips sown to replace wheat destroyed by the wireworm, and attacked by hosts of these larvæ, by setting boys to collect them, who at the rate of 1½d. per 100, gathered 18,000; as many as fifty having been taken from one turnip. Thus, at the expense of only £1 2s. 6d., an acre and a half of turnips, worth from £5 to £7 or more, was saved; while, as the boys could each collect 600 per day, thirty days' employment was given them at 9d. per day, which they could not otherwise have had."

Not only in the case of the wireworm, but in that of almost every other noxious insects, the different species of insectivorous birds, and, above all others, the rook, are our best friends, and should always enjoy the careful protection of the farmer; and nothing deserves stronger reprobation than the wanton destruction which is but too often practised of these faithful allies of man.

APHIDES.

The next insect pest to which I shall for a few moments request your attention, belongs to a family in some respects the most remarkable of the whole class. I allude to the different kinds of *aphides*—a race from whose attacks there is scarcely a single species of terrestrial plant that can claim exemption.

It is, however, the turnip, and pea, and bean crops on which

the attacks of the aphides are chiefly to be dreaded by the farmer, and it is to the principal species which infest these valuable crops that I am now desirous of calling your attention.

It is, of course, fresh in the memory of you all, when a theory to account for the destruction of the potato was attempted, by referring this mysterious phenomenon to the ravages of a species of aphis, designated *Aphis vastator*. To this theory, however, though supported by its author with much zeal, and with evident desire to adduce nothing, of the truth of which he was not himself convinced, I cannot assent —and I believe we are in no respect justified in referring to any insect this utterly inexplicable affection.

Towards the end of summer, and in autumn, the leaves of the turnips may frequently be observed distorted and curled up, and, on examination, hundreds of small, green, soft-bodied insects, some with wings, but the greater number wingless, may be seen clustering on the under surface of the distorted leaves, and securely sheltered within their folds. These have been named *Aphis rapæ*, or turnip-leaf aphis, by Curtis, in allusion to the plant on which they are found, and though, perhaps, the injury inflicted by them on the crop can never be compared with the ravages of the insects previously described, there can be no doubt that very serious damage is not unfrequently the result of their attacks.

But though it is comparatively seldom that we have much cause for alarm from the attacks of the aphis rapæ; this can by no means be said of the species which infest the crops of beans and peas. Here the crops are often greatly injured by them, and sometimes almost totally destroyed.

[Mr. Beamish rose and said, he had a field of about 4 acres of vetches destroyed by the green *Aphis*.]

The aphis which infests the pea crops, as well as that which is found on the leaves of the turnips and to which Mr. Curtis was the first, I believe, to draw the attention of scientific men, is of a grass-green colour, while that which is so destructive to the beans, and which has therefore obtained the name of Aphis fabæ, is sooty black. The latter is known among the cultivators by the appellations of black-fly, black dolphin, and collier, while the aphis to which the peas are subject is known as the green dolphin.

There is, perhaps, no one member of the animal kingdom whose economy is more remarkable than that of the aphides.

It would seem that most of the species of aphis make their appearance at the very commencement of spring, and these are hatched from eggs which had been laid in the previous autumn. They are now all wingless females, and in ten or twelve days bring forth living young ones, which, like the parents, are all also wingless females. These in like manner give birth to similar young ones; and in the third generation from the egg, we first, according to Kollar, see a power of bringing forth not only wingless but winged females. In this way does every successive generation go on giving birth to living young ones, though as yet none but females have appeared, and thus do they proceed until the middle of September, when the generations often amount to sixteen or twenty. Now it is that males are for the first time produced, and after this the female aphis lays only eggs which are intended to remain through the winter, and to produce in the following spring a fresh brood, all wingless females.

From the wonderful fecundity of this extraordinary reproductive process, you will have no difficulty in understanding the phenomenon of the sudden appearance of countless multitudes of aphides prevading and ravaging entire districts. Indeed it has been calculated that in one year an individual of the *Aphis lanigera* may be the progenitor of one quantillion or a million million of millions of young ones.*

[Mr. Beamish, no doubt of it]

The injuries experienced by the plants of which the aphides have taken possession, are inflicted by means of a sharp tubular rostrum, or beak, through which the insect sucks up the juices of the plant, and which is for this purpose kept perpetually plunged up to its base in the tender shoots and leaves.

With the view of arresting the ravages of the aphides I believe the agriculturist has nothing to rely on but the removal of the infested leaves, which should be carried away and burnt. The bean aphis first shows itself on the tops of the bean plants, and on the very first appearance of the insect these tops should be removed.

When we reflect on the inconceivable multiplication of the aphis just mentioned, and consider moreover, the very limited means in our powor of keeping their numbers within bounds, we begin to wonder that the whole earth has not long since been covered with them, and that a single green thing has been left.

Such a catastrophe would, indeed, in all probability, be the result, were it not that Providence has ordained certain agents to keep them within due limits. The principal of these, besides the elements and insectivorous birds are certain insects which, either in the larva or perfect state, live exclusively on aphides, and as these aphidivorous insects are, therefore, among the agriculturist's best friends, I must be pardoned if I endeavour to make you acquainted with them, and point out the marks by which they are to be known from your enemies.

Foremost among these is a most interesting tribe of flies, called ichneumons. The ichneumons are all four-winged flies, belonging to the order Hymenoptera, the same as that which includes the saw-flies, bees, and wasps.

The habits of the ichneumons are among the most extraordinary in nature. The female fly invariably deposits her eggs in the body of some living insect, which is at the time, generally, in the larva state. The eggs are no sooner hatched than the little larvæ which proceed from them begin to prey upon the unfortunate insect to which they had been committed, yet not so far interfering with its vital functions as to prevent its eating as usual, and often even acquiring the pupa state. During all this time the ichneumons are passing towards their final change within its body, and finally eat their way out, either as perfect insects or as full-grown larvæ whose changes are completed externally.

Now, among the numerous enemies of the aphis are several minute ichneumons. The habits of these little parasites are thus described by Mr. Curtis. They "hover about plants infested by the aphides, and the female soon settling among them begins to examine the herd with her vibrating horns, and having fixed on a female aphis which is not already punctured, she bends down the apex of her body, and pierces the insect with her ovipositor, which is invisible to the naked eye; she then proceeds to another, depositing a single egg in each, and thus daily innoculates a considerable number. As the aphis imbibes the juice of the plant, the little maggot which was hatched in her body, hourly increases in size, growing with her growth until the exhausted aphis dies, leaving its horny, silvery, and inflated skin sticking by is rostrum and legs to the plant, looking like a little tawny pearl; the parasite then changes to a pupa, and having completed its various transformations, it becomes a perfect fly in about eight days, and eats through the side of its cell, often leaving a round lid attached, and open like a door." The species to whose attacks the turnip-leaf aphis is subject has been named by Mr. Curtis *Aphides rapæ*, and is represented in the plate before you.

But the Ichneumons are far from being the only enemies to whose attacks the aphis is exposed. The larvæ of an exceedingly abundant two-winged fly, called *syrphus*, and those of the elegant little beetles called *coccinellæ*, or lady-birds, and of the beautiful flies known to entomologist by the name of *chrysopa*, with their brilliant golden eyes and ample gauze-like wings, commit vast havock among the herds of aphides.

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* Owen's Lectures on Comp. Anat., vol. I.

Whom to Cheat.—Cheat the doctor by being temperate; cheat the lawyer by keeping out of debt; and cheat the demagogue of whatever party by not voting for any.

THE BREEDING AND MANAGEMENT OF HORSES.

From the 'Rural Cyclopedia.'

Every young colt of a spirited breed, especially if he be intended to serve as a hunter or as a prime hackney, ought to be early accustomed to the handling and control of a keeper. Never one should he, in even the slightest manner, be frightened and coerced; for every disturbing of his equanimity leaves a bad impression on his constitutional temper, and tends to make him either timid or rebellious. His earliest formal lesson, and one which requires to be very gently given and very often repeated, is to lead him about at the full length of his rein; and if he start or become playful during his lesson, his keeper ought to allow him the amplest possible scope for scampering and frolic, and to let him feel as little as possible of the restraint of the rein. After a few days he may, with great care and gentleness, be lounged in a circle, so as to be taught some of his paces; but with the least practicable formality or control, and in a manner of constant kindness and coaxing, and of frequent patting and caressing. All his lessons ought to be short and thoroughly pleasant to him; and when he has once acquired docility he may again be turned loose, and occasionally taken up for a few hours during the day for the purpose of repeating his lessons, so that he may enjoy a large degree of absolute liberty, and at the same time may not forget what he has learned. When the time for thorough breaking-in and total subjection arrives, he should be accustomed to the dumb-jockey, and steadily conducted through all the successive parts of breaking and training; and if he be intended for the chase or for rough and rapid country riding, he should be often led over small jumps and moderately wide blind ditches, in order that he may be gradually habituated to every species of fence, and rendered confident in his own powers. But the practice commonly observed by professional horse-breakers, of tightly reining up the head of the young colt to the dumb-jockey, and then turning him into a loose box during many hours of the day, is both unnecessary and cruel. This practice is usually said to 'give the horse a good mouth; but it really produces the opposite effect; while the kind and dexterous handling of a judicious horseman at once gives a really 'good mouth,' gives a good bearing along with it, avoids all cruelty, and entails no evil consequences.

The young cart-horse has, for the most part, a constitutionally quiet and tameable disposition; and does not require such precaution and nicety, in the initial lessons of handling and lounging, as the young horses with much blood. But should the practice of harnessing him in a team be encountered by a disposition of restiveness and of kicking, he may be harnessed by himself to a billet or light log of wood, with long traces attached, in order that he may have free play for his heels without risk of hurting himself; and he should be led gently about in traction of the billet, and coaxed and wheedled rather than urged to proceed; and not till he learns to tug the light thing docilely and pleasantly and somewhat steadily after him, should he be harnessed with a team to an empty cart, and cautiously inured to perform a small degree of work. 'A medium plan must be adopted with the carriage-horse. He is not only required to have somewhat showy action, but likewise to be steady in draught. He must, therefore, be lounged like the hunter, and taught to raise his knees and deliver his legs with freedom,—motions which can never be acquired without the good exercies of the hands and legs of a perfect horseman. Previous to being made to draw, it is a good practice to drive such horses with long reins but unattached to any vehicle, the man who drives them running behind, and being furnished with a whip to keep them up to the proper pace. By this means, being guided in every direction, made to turn back, &c., they will when harnessed be made less raw and unhandy than when simply broken-in to draw by ploughing and harrowing, to which work they may be put upon light soils when about three years old. If also, the farmer exact but gentle work from his young stock, and can manage to employ them upon soft ground, the longer he can avoid having them shod the better; shoeing at an early age being the bane of young horses, and frequently crippling their feet so as to render them almost worthless.'

The training of all kinds of horses ought to be sufficiently comprehensive to prepare them for every kind of work which they may be destined to perform, and for every kind of ordinary situation and exigency in which they may be expected to be placed. But even when executed by a professional breaker, and when formally declared, upon the sale of a horse, to be as perfect as it can be made by man, it by no means comprises any effort to prepare the animal either for extraordinary situations or for the blunders and cruelties of his future master. No breakers can anticipate what the folly or ferocity of a brutal driver may do to a horse; and even if he could anticipate it, he would himself become a fool, and only inflict needless pain and irritation, were he to attempt to fortify the animal against it. Breakers can train horses only for rational treatment; and if they would address themselves to prevention of the accidents which arise from ignorance and brutality, they must apply the discipline for it, not to the horse, but to their drivers. 'There can be no doubt,' remarks the writer of 'Stable Talk,' 'that of the numerous accidents we often see and daily hear of, as occuring to gigs, phaetons, and other vehicles, three out of four arise from want of judgment in the driver. He is not aware of what is likely to produce accident, consequently takes no steps to prevent it He has probably no conception that a strap buckled too tight or left too loose will render a horse uneasy in his harness, irritate his temper, set him plunging, and finally kicking and running away. This horse might have been a week since bought of a dealer, might have been driven in a double harness, have always gone perfectly quiet, and always would have done so if common judgment had been used. This is all we have a right to expect from a high spirited horse.—He does not promise us to carry a phaeton or gig down hill on the top of his tail, or to be flayed alive by his harness from our care lessness.'

The regular exercising of a horse is an exceedingly important part both of his training and of all his subsequent treatment. A saddle-horse who has been regularly exercised during the period of his training, will, if afterwards properly treated, always perform his work with ease and pleasure; while one who has been fitfully exercised, or alternately overdone and neglected, will come from the breaker's hands either with windgalls, splints, or other forms of chronic disease, or with an enfeebled constitution and a morbid sesceptibility of inflammation, and other acute disorders. A properly trained and ordinarily strong farm-horse has, for the most part, regular, full, and healthy exercise in the simple performance of his daily work; he neither suffers worrying exhaustion, nor stiffens and stagnates from inactivity, nor contracts predisposition to either chronic or acute disease; and, when moderately well-fed and otherwise well managed, he enjoys a degree of both healthiness and longevity which is rarely witnessed in any of the kinds of either saddle or carriage horses. But the occasionally worked saddle-horse, even though he should have been thoroughly well trained, can be maintained in tolerable vigour, or kept free from a morbific condition, or preserved in life and activity through a moderate series of years, only by means of daily, judicious, artificial exercise. All idle and neglected horses are more or less enfeebled and diseased; and even horses who stand inactive during only a very few days and then pass into a short continuance of violent exertion, or make an ordinarily long and not very rapid journey, are very liable to inflammations or other dangerous acute disorders. 'How often, nevertheless, does it happen,' exclaims Youatt, 'that the horse which has stood inactive three or four days, is ridden or driven thirty or forty miles in the course of a single day! This rest is often purposely given to prepare for extra exertion,—to lay in a stock of strength for the performance of the task required of him; and then the owner is surprised and dissatisfied if the animal is fairly knocked up, or possibly becomes seriously ill. Nothing is so common and so preposterous, as for a person to

buy a horse from a dealer's stable, where he has been idly fattening for many a day, and immediately to give him a long run after the hounds, and then to complain bitterly, and think that he has been imposed upon, if the animal is exhausted before the end of the chase, or is compelled to be led home suffering from violent inflammation. Regular and gradually increased exercise would have made the same horse appear a treasure to his owner.' A young horse requires more exercise than an old one; yet a very young one ought not to have either very prolonged or very fatiguing exercise. A well-fed horse, also, requires more exercise than an ill-fed one, and ought to have it during an hour each time twice a day, or at least during an hour and a-half once a-day. A saddle-horse, especially if he possess much blood and high spirit, ought, when exercised, to be first walked for a considerable distance, next gently trotted, sometimes next briefly galloped, and always finally reduced down to walking, and taken home in a cooled and unexcited state after his exertion.—The practice of galloping a horse for an hour, and then taking him to the stable in a state of profuse perspiration, is always more or less injurious, and sometimes entails almost as bad consequences as a serious degree of inertion and neglect.

In Egypt and Arabia, horses are usually watered but once a day; in Persia, they are watered at sunrise and sunset; and in Britain, they are pretty generally watered thrice a-day.—Spring water, partly from its coldness and partly from its want of saline admixture, is injurious to most horses; and river or pond water, even though it should be muddy and warmish, and should contain but a very diminutive proportion of carbonic acid, agrees well with almost all horses.—The regularly-worked and healthy-conditioned draught horses of a farm, usually drink their fill at some pond or streamlet adjacent to the farmery, without almost ever experiencing any bad effect; while hunters, hackney, and other horses kept entirely for the saddle, are commonly stinted or controlled in their drink, and yet not unfrequently suffer from it very serious consequences. When pump water or other spring water must be used, it ought to stand in the trough or pail, exposed to the air or to the sunshine, for a sufficient length of time to let it acquire nearly as high temperature as that of the surrounding atmosphere; but the soft-water of a brook or a pond, and most of all the water of a pond or brook to which the horses have been accustomed, ought always to be preferred. A prejudice exists in most persons against the unrestricted permission of water to saddle-horses; and this, in the case of racers and hunters, usually rises so high as to stint them of water for a day or two before running, and to allow them none whatever on the day of action. But though the watering of a horse immediately before he is galloped, may certainly do serious and irreparable mischief to his respiratory organs, the limitation of his drink in other respects makes him fidgetty and unhappy, retards or embarrasses some of his functional secretions, and powerfully predisposes him to violent spasms, sudden inflammations, or some other forms of very dangerous acute disease, from the occasional indulgence of an insatiable thirst. A horse who has frequent access to water, and is allowed the uncontrolled use of it, really drinks less in the course of a week than a horse who has access to it only under some restraints, and who, whenever he touches it gulps it down like a vortex and looks as if he would annihilate the stream. The stinting of water to any horse is both cruelty and very bad policy. Every working horse ought to be liberally watered thrice a-day, especially in summer,—and then he will be free from the tortures of thirst, and will have due liveliness and perseverance in his work and, will escape liability to many pains and disease; and every hackney, while on a journey, ought to be liberally watered thrice or four times every day,—first waiting till he is somewhat cooled, then receiving two or three quarts of water, then his feed, and then another draught of water.

Yet four important points in the feeding of horses remain to be here discussed,—the bad effects of over-feeding, the benefits of the system of manger-feeding, the proper allowances and mixtures of articles of food, and the proportioning of the amount of nourishment to the size, age, and work of individuals. No horse ought to be over-fed or to have an unlimited allowance of highly or even considerably nutritious food. The packing of a horse with as much food as he can take, under the mistaken notion either of kindness to the animal or of its enabling him to perform a maximum of work, not only wastes the food and does the horse no real good, but injures his constitution, and predisposes him to many dangerous inflammatory diseases. His stomach, when unduly full, presses upon the diaphragm, diminishes the surrounding area of the chest, encumbers the oxygenizing action of the lungs, impedes the heart's power of propelling the blood with sufficient velocity through the various textures of the body, and, in consequence, diminishes the energy of the whole system, induces a lethargic and somnolent tendency in the functions of the brain, dilutes the strength and vitality of all the secretions which are immediately dependent on the circulation, and occasions the formation and desposition of fatty matter in lieu of some of the requisite renovation of muscle. The repletion of the stomach, also, weakens its mechanical, action in consequence of excessive distension—enfeebles its secretive power, in consequence of an overload of matter—and makes an exorbitant demand upon its gastric juice, in consequence of the enormous scope afforded for the decomposition of the proximate principles of nutrition. All food, like all other dead organic matter, has a tendency to resolve itself into its elements; it encounters a thorough resistance of this tendency, so as to pass into actual nourishment, partly by the antiseptic power of the peculiar gastric juice; and when it is swallowed in such quantity as not to be wholly reducible by the gastric action and completely saturated with the gastric juice, some portion of it is decomposed, and not only ceases to be food, but forms putrid and noxious combinations which irritate the intestines, and produce either actual disease or at least a morbific disposition. 'So long as an animal experiences the sensation of hunger, the gastric juice is poured out from the coats of the stomach, in sufficient quantity to saturate the ailment that is swallowed; but that feeling once appeased, the secretion of the juice either ceases entirely, or its properties are so altered and weakened as to be no longer capable of offering due resistance to the putrefactive process.—Thus beyond a certain quantity, every mouthful of food, placed as it must be in the situation most likely to favour decomposition—namely, one of warmth and moisture,—speedily becomes a putrid mass, evolving a large quantity of noisome gas—as does every animal or vegetable substance in this state—by which distension is increased and acidity and irritation produced.'

Continued repletion, therefore, produces direct diseases of the stomach, the intestines, and the circulatory system; it produces, in particular, prevailing costiveness, occasional diarrhœa, and continual feebleness of vital secretion; and it excites, or indirectly and slowly produces, many inflammatory affections, many chronic disorders, and almost all the morbid conditions of organ or function to which different breeds or constitutions may be liable,—in the viscera of one class of horses, in the brain of another, in the eye of a third, and in the lungs or liver or other organs of a fourth. Even continued feeding, though neither the progress nor the aggregate of it should ever amount to actual repletion, is exceedingly injurious. The single and comparatively small stomach of a horse, just as really as that of a human being, requires long intervals of repose, and cannot, without damage, be kept constantly working upon a continuous supply of food. It performs its functions in a progressive or serial manner, first liberally secreting gastric juice in preparation for a meal, next saturating the materials of the meal with the gastric juice, and working them up into a homogeneous mass, and next comminutes successive portions of the mass into the fine pulp called chyme, and discharges them into the pylorus on their way to yield up their nourishing juices to the system; and only when it has conducted most part of a meal through the whole process, or has nearly finished the reduction of the

whole mass into chyme, does it return to a vigorous secretion of more gastric juice, preparatory to the reception and saturation and digestion of the contents of another meal. Hence the alternate disrelish for food and keen hungering for it on the part of a healthy and regularly-feeding human being; and hence, too, the necessity, in both man and horse, of taking food in meals, and of completely abstaining from it during the whole of every interval between the meals. The effect of putting fresh food into the stomach before the previous meal has been digested, is either to excite the stomach to secrete fresh gastric juice and so overtax its powers, or to send the food in a decomposing state into the intestines, and so produce irritation and disease.

Every horse, therefore, ought to receive at any one time only so much food as is sufficient to appease his hunger and maintain his strength, and never enough to overload his stomach or to leave a surplus for his after-use; and he ought, in all ordinary circumstances, to pass an interval of at least four hours between any two meals. A Farmer should not only mete out the proper daily allowance of corn, beans, or other chiefly nutritious food for his horses, but prevent his men from giving them an unlimited, or constant, or unduly large supply of hay, herbage, or other fodder. Many a ploughman or carter, totally ignorant of the natural laws of a horse's digestion, and either to save himself the trouble of giving limited periodical supplies, or in order, as he supposes, to let the horse maintain a maximum of power by continually eating as much as he is able, cram the rack with hay or other fodder, and seldom or never allow it to be empty. The consequences are, that much of the fodder is pulled down, blown upon, and wasted,—that the horse acquires a mischievous and morbid habit of eating between meals,—and that, if he happened not to have a due allowance of corn or beans or other highly untritious food, he always eat more hay than his comparatively small stomach can rightly contain, and entails upon himself all the disastrous effects of excessive gastric distension.

NOTES ON SOME ENGLISH FARMING.

BY MARTIN DOYLE.

Any intelligent Irish farmer who may be favoured with opportunities of observing the modes of husbandry pursued by scientific cultivators in Great Britain will not only be pleased at what he sees, but disposed to introduce in his own homestead some of those practical details which he has admired.—Having read of the clever farming of Mr. Hewitt Davis, at Spring Park, in Surrey, I went there lately to compare the actual state of the farm with the reports which I had received of it.

As it is not my intention to notice anything that may not lead to the consideration of some interesting and important point in agriculture, I shall in this instance confine my remarks to those particulars which in some degree distinguish the practice of Mr. Davis from that of other experienced cultivators. The farm to which I shall first invite attention, contains 215 acres, in regular tillage, the remaining portion being under coppice wood. The arable part alone is to be noticed here.

At first view I supposed the soil was a calcareous gravelly loam, and the darkness of the colour led me to conjecture that it contained much humus. But on looking at the unstirred margins of the natural soil, which bordered some open drains and gravel pits, I perceived that the blackish colour had been principally occasioned by peroxides of iron, which had bound together the entire subsoil, of which the surface did not exceed more than 6 or 7 inches in depth. The Chronicles of a Clay Farm, which I have read with exquisite pleasure in the *Agricultural Gazette*, have not described so unpromising and so difficult a material to work into a fertile texture as this conclomeration of black gravel, intermixed with peat (which has been generated by the agency of confined water underneath,) presented to the indomitable inustry of Mr. Davis. A more discouraging soil can hardly be found, and yet it now yields more weight of wheat and other crops than better soils in the neighbourhood, and with less manure. But these objections may be urged: any land may be forced into fertility by a great expenditure of labour and money; but will the returns overbalance the outlay? A land proprietor, or any man who has a strong passion for farming, and possesses capital sufficient for the gratification of his whims, may contrive to extract certain classes of crops in favourable seasons even from a field of gravel, but no man who expects a fair interest for his capital, no tenant farmer undoubtedly, no body who has been bred up to accounts, would ever dream of reclaiming a boggy gravelly moor by such expensive operations as thorough draining, trenching, or subsoiling, for the benefit of his landlord's family, and the impoverishment of his own. Let us learn from his own testimony, whether Mr. Davis commenced his agricultural life solely to set a good example to his tenantry, in order to raise the value of his estates, to indulge his farming propensities at any cost, or to work out practically the theoretical projects he had spun out in his library.

"I was 21 before I thought of becoming a farmer, and I feel it has ever been an advantage to me that my farming education did not commence so early as to inoculate me with any particular practice, but began when I was of an age to seek information, and open to every consideration that might conduce to a more profitable cultivation and return. Previous to that period I had been engaged in mercantile employment, where every question was tested by figures, and I had learned the necessity for keeping very accurate accounts. This training has been most serviceable to me. By my accounts I have frequently been set right on many a question with which I could not otherwise have grappled, and by them have gained confidence to enter into expensive improvements. My farming commenced by my being put in charge of 2000 acres of highly cultivated land. Here, with the assistance of bailiffs, I began bp keeping the accounts by double entry, and while I was gaining practical information by daily watching what was doing on the farms, I was learning the elements of good farming by carefully perusing every work on agriculture that was recommended to me. * * * At the age of 28 years, when by study and the opportunity I had of gaining information by the practice of others, I thought myself competent, I took, at a rent far beyond the value, Spring Park, a farm of 500 acres, principally a boggy, gravelly soil, which at that time scarcely returned six times the seed put on it. I believe the state in which I found this farm would have broken the heart of an older or more experienced farmer; but I entered upon it with buoyant spirits, and was young, and not of a character to despond; nor did I then foresee the time, labour, and outlay necessary to make such a wretched soil profitable; and I fortunately was assisted by an income from other sources which kept increasing, and found me means through a long period of heavy expenditure and ungrateful return. I continued to work my farm under every disappointment with that energy and perseverance which insure success, and I can venture to assert that the crops at Spring Park have latterly equalled those on very much better land, although raised at less cost, and that my Wheat is now grown and sent to market, exclusive of all profit, at less than 36s. per quarter."

Here is the simple straightforward testimony of a gentleman brought up in strict habits of business, always looking to his ledger, and as unlikely from education, and from his professional attendance as a land agent at his office in the heart of the city of London during eight hours in the day, to pursue a losing system. If, then, this tenant farmer has found himself even under the abstraction of his official employments, a gainer, after reclaiming and cultivating so discouraging a farm, under a lease of 14 years, and in a district too where labourers receive 12s. a-week, and in harvest more, is it not to be inferred with truth that the land proprietory and tenantry of Ireland (with leases of a much longer duration in general), would find it much more profitable to reclaim and cultivate the tens of thousands of acres of waste shallow bog land, which in quality is vastly superior to the soil of Spring Park?

The subsoil at Spring Park is a uniform and deep mass of worthless gravel and rock, which, with the expensive team employed to open its texture, and mix it with the small portion of

vegetable earth above, and two men following the plough, required two days of such labour to each acre. The shallow bogs of Ireland, in general, have beneath the peat either limestone, gravel, marl, or a clay partaking of its qualities, and most suitable in any case for correcting the opposite qualities of the peat above it. Human labour can be obtained readily and thankfully for one-third of the wages paid by Mr. Davis, and the labour of either trenching or subsoiling with the spade would be executed better, and at much less cost than by the expensive machinery which he found it expedient to employ. The shallow Irish bog contains within reach of the cultivator, by merely introducing his spade—without horse or cart in the case—the material for rendering it a prime soil (draining and loosening the under soil being supposed); and any tenant who possesses such bog land at 1s. and 2s. 6d. an acre, with measurement (an ordinary case), or any proprietor who has such land under his own control, and will not cultivate it, deserves to be poor. Capital! money may be obtained in most cases by proprietors from the Government Loan Funds; and the tenant farmer has it, but too often unemployed, beneath the thatch of his cabin, in the form of labour. He and his sons *often find that their time and labour are uncalled for in stipendiary employment*, and they stand gazing at their field of worn-out bog, resting on a mine of wealth, (and which hardly supports a lean cow), without dreaming of rendering it, by their labour, even at broken intervals, a productive garden, as it might be rendered.

A superior soil is easily compounded from peat and limestone, gravel, or peat and clay.—far better, indeed, than that of Spring Park now is, or ever can become, from the nature of its constituent parts. "Much has been done, probably all that art can do, to improve it; but man cannot change gravel or sand. By draining he may make it dry, and by trenching he may multiply the space for roots to range in and derive nutriment from; but a gravel or a sand, unlike clay, or chalk, or mould, admits of no other change, and, to the last, must be a hungry, uncertain bed for corn—a fast consumer of nutriment, much dependent on seasons, requiring frequent rains for maintaining its continuously vegetating powers in May and June."

When Mr. Davis took his farm in 1833, for 14 years (but with two extra years at starting), it had been seven months out of cultivation, and had been from 1808 to 1833, in the hands of wealthy owners. One tenant who had held the 500 acres of Spring Park, with 100 acres more, at £66 a-year, failed, owing two years' rent, when a new purchaser obtained the property. It is important to bear in mind these circumstances of discouragement, not only to perceive the triumph of perseverance, skill, and energy in the instance of Mr. Davis, but to estimate correctly the comparative facilities which offer themselves to the Irish cultivator. The expensive modes by which Mr. Davis subdued his execrable soil, which was sometimes boggy, from under water, and at other times as dry and hard as rock, were first by trenching it with a powerful plough drawn by eight horses, two men following the plough with pickaxes, to raise the rocks which it had not displaced, and thus the iron-bound pan of gravelly composition, which prevented the percolation of water, was crushed, brought up, and laid over the shallow surface-soil, which became an appropriate bed for the roots of future plants in place of the impenetrable barrier which had been the immediate undersoil, and the separated mass of gravel, by imbibing the rains and dews of heaven, and receiving in its bosom the various principles of aliment afforded by the dunghill and its auxiliaries, has become comparatively fertile. The land was next drained where it most required it, at the cost of £500, on the part of Mr. Davis (the landlord providing tiles), who made the drains 4 feet deep, at distances of 40 feet. Previously to such drainage, the soil (according to the printed reports of Mr. Davis) was so wet that the sheep waded there in mud up to their bellies during the winter. In spring it could not be sown for weeks after the due season, and the winter crops were starved or partially destroyed by the chilling effects of stagnant water. When that was removed the soil became dry and warm, fit for the reception of seed in the early spring, and capable of nourishing it to full and seasonable maturity, with improvement in the quality and increase in the quantity of produce. And the benefit to the live stock has been in a corresponding ratio. The area of cultivable land has been increased by levelling fences, filling ditches where they were not required for drains, tilling their borders, and cutting down scattered trees.

Such have been the leading points in the natural quality and treatment of Spring Park Farm, which the tenant is going to surrender at the expiration of his lease, after another harvest; not because he has not realised some money by that farm under all its disadvantages, and after all his expenditure, but because a more grateful soil will repay him better for time and outlay. I have other remarks yet to make on the same farm.

ON THE DIFFERENT SYSTEMS OF FARMING.

From the Farmers' Herald.

It has been my pleasure, during the last two months, to peregrinate pretty extensively over the eastern counties, into Berkshire, Wiltshire, and Surrey, to see the state of the growing crops, and to observe the different systems of farming. I have "footed it" over very many acres, and encountered almost every variety of soil: envying neither the stiff undrained clays of Essex and Berkshire, nor the blowing sands of Norfolk and Suffolk, that seem to thrive best, if it happen to rain every other day, during the growing months of the year. I have seen good and bad farming, fine waving fields of full ear'd wheat, without a weed to mar its beauty, with neighbouring lands crowded with red poppies, thistles, and docks. Holdings neatly fenced, and occupations overrun with hedge-row timber and worthless pollards. Flourishing crops of natural grass, worth 4s. 6d. an acre to mow, and half-starved fields of bents and fescue, hair-grass and wild clover, too thin to shelter from the eye, the pretty numerous partridges of the season. I had with me, a stout, sharp pointed, walking stick, to help me and my curiosity along. My curiosity was to prove the depth of the soil in the fields.

Here and there, but sadly few and far between, were small tracts of land that had been subsoiled; they had generally a depth of earth, of from ten to fifteen inches, rarely more; but with these exceptions, four, five, and occasionally six inches, was all the room the roots of corn of every kind, had to roam about in. Extensive little fields of potatoes, mangolds, and turnips had no more. 'Twas lamentable to find in so many places, where the soil is a retentive one, an impervious crust of *glazed earth*, cold, wet, and destructive to vegetation, six inches below a life-giving loam.

In upwards of fifty fields tried by my staff, not more than seven had a growing earth of ten inches, the larger number had not more than five.

In this calculation, I of course exempt those light lands, where there is "an unlimited supply of fine sand," and where my stick would seemingly have gone down to the antipodes. Now, I know how much has been wisely said and written, concerning the advantages of "*deep ploughing*;" how frequently the benefit of breaking up the stubborn deep has been admitted, and yet, to this time, how little has been done.

Is it because "deep ploughing" is considered as one of the numerous *new fangled* farming theories; or is it because all its advocates have not had the fortune, (or as I sometimes think, the misfortune,) to be brought up at the plough tail; or, because, as more than one ploughman has told me, "his horses worn't *us'd to it*, nor he neither?" That it is not a *new* light, a mere Mechian theory, history plainly reveals.

Pliny tells us, the *accustomed depth* of ploughing, in the time of the ancient Romans, was *nine inches*, and, moreover, that the ploughmen in those days, went *twice over* the land, not going round the head land as they now do, but returning in the furrow, thus, in all probability, scratching up a few more inches of earth. The same writer tells us, they were at great pains to make their furrows straight, and of equal breadth.

A crooked ploughman was designated a "prevaricator," a man of shallow or impaired intellect. Now, if a ploughman cuts off a slice of from four to five inches from a lea or stub-

ble, he seems to satisfy himself, and, in many cases, his master too. He does not dream of "the crock of gold" being buried deeper than that—he thinks the precious metal of the fields, is like the gold in the streets of London, only pavement deep; if he break up that, he feels sure the yellow grain will come. There is no implement so valuable to the farmer, as a good plough; no labourer more worthy of his hire, than a ploughman who can set out his lands well, and "with his team a-field," make deep, clean, straight furrows; one too, that can work a pair of good horses, without wanting a boy to whistle to them. To be an expert hand at ploughing, in the olden time, was accounted the highest praise; and whoever neglected his farm, or tilled it improperly, was liable to the animadversion of "the censors." If a few of the steadiest and most able ploughmen were admitted to the annual agricultural shows, *and dinners*, (taking of course their places below the salt, or together at a side table, as in days gone by,) and there permitted to witness the interest taken in every department of agriculture, by not only the worthy husband of our gracious queen, but by a goodly array of old England's noblest and best, titled, and untitled men; it would do them a lasting good, spur them on to greater efforts, induce a spirit of praiseworthy rivalry among themselves, make them vie with each other for the palm of victory, for "conquering the clods," and rendering still more fertile the stubborn earth; thus would once again, our nation's peasantry become our country's pride.—"*West Norfolk*" *August 1st*, 1848.

From the same.

FARM-YARD MANURE.

It may appear to some to be a trifling thing to write about the management of a dunghill; but others, whose minds are somewhat enlightened by the knowledge of chemistry, know that the subject is of more importance than many cultivators of the soil imagine it to be. A living writer says, "the fermentation of farm-yard manure is in fact a subject of far greater importance than is generally imagined, for on a due estimation of its value mainly depends the individual success, as well as the national prosperity of our agriculture." We are informed that in some places, the annual value of the urine of a cow is estimated at £2. Now in some places much urine is allowed to waste; but suppose only one half of it is lost, only imagine what a loss the farmer and the country sustains. One pound sterling on a cow may appear to some a small amount, but when we recollect that the assumed number of cattle amounts to 7,000,000 or 8,000,000 in this country, it will be seen at a glance that the loss is no trifle. It is a common custom with some persons to allow the farm-yard manure to ferment till the fibrous texture of the vegetable matter is entirely broken down, and till the manure becomes cold and can be cut with a spade. Chemists bring forth many arguments and facts which show that such a mode of treating farm-yard dung is injurious to the interests of the farmer. When violent fermentation is going on, a large quantity of fluid and gaseous matters are lost; so much so, that the dung is reduced one half or two-thirds in weight: much carbonic acid and ammonia are set free, whereas, if these had been retained, they would have become useful for the nourishment of the plants. We are informed that Sir H. Davy filled a large retort, capable of containing three pints of water, with some hot fermenting manure, consisting principally of the litter and dung of cattle; he adapted a small receiver to the retort, and connected the whole with mercurial pneumatic apparatus, so as to collect the condensible and elastic fluid which might arise from the dung. The receiver soon became lined with dew and dross, and began in a few hours to trickle down the sides of it—elastic fluid was likewise generated. In three days thirty-five cubical inches had been formed, which, when analyzed, were found to contain twenty-one cubical inches of carbonic acid, and the remainder was hydro-carbonate mixed with some azote. The fluid matter collected in the receiver at the same time amounted to nearly half an ounce; it had a saline taste and a disagreeable smell, and contained some acetate and carbonate of ammonia. Ammonia is a compound of nitrogen and hydrogen. It was originally obtained in the form of muriate of ammonia, by burning the dung of camels which was collected for the purpose in Egypt, especially about the temple of Jupiter Ammon, hence the term sal-ammoniac. We are informed by Boussingault and Payen that manures properly so called are of organic origin; they supply the deficiency of that gaseous or valuable food which plants are able to assimilate. It is those putrescent substances which abound in nitrogen, and which undergo the most rapid decay that ought to be constantly consumed by the crops. This is now a fact that admits of no question. From these statements, we learn that much valuable matter is lost to the cultivator of the soil, when farm manure is allowed to undergo violent fermentation.

Various plans have been recommended from time to time to prevent violent fermentation, such as watering the dung, turning it over at intervals, &c.; but on this subject, we would draw the attention of our readers to an extract from the *Farmers' Gazette*, which appeared in the *Farmers' Herald* for July last, page 77, as it may be advantageous to many, where it can be conveniently done.—*P. M.*

SEEDS AND THIN SOWING.

An astounding fact on the foreground of all inquiries respecting the seed sown by farmers, is that an enormous proportion of them is destroyed or never germinates. This proportion has been computed to amount to two-thirds of the entire quantity sown; and therefore to involve the stupendous annual waste, throughout Great Britain and Ireland, of 4,666,666 qrs. of wheat, barley and oats—a quantity equal to the support of one million of human beings. One portion of the loss of sown corn-seeds is easily traceable to birds; and whatever amount of this is occasioned by the over-harrowing of light soils, might be prevented. Another portion of the loss is traceable to the bursting and rotting effect of too much moisture; and whatever amount of this is occasioned by the stagnation of rain water in furrows and hollows, ought to be ascribed to bad tillage or insufficient drainage. A third portion of the loss is traceable to the trampling of the horses, pressing the seeds beyond the action of the air, or making holes over them for stagnant water; but this, in the present state of husbandry cannot be avoided. A fourth portion of the loss is traceable to the exclusion of air by adhesive clays, or undue exposure to frost or heat by sandy soils; and this, as well as the greater evil of comparative infertility, might be cured by a little georgical improvement. A fifth portion of the loss is very probably caused by the depredations of the numerous insects which inhabit the soil; yet, as the seed is not eaten by them, but damaged or destroyed in consequence of their peculiar habits of existence, this source of loss is a proper subject of investigation for entomologists.

A sixth portion of the loss is, in some instances, very probably caused by noxious metallic salts existing in combination with the soil: and this evil, as well as other evils of greater magnitude, forms a decided reason for a careful chemical analysis of soils. A seventh portion of loss is possibly, though not certainly, traceable to high electric influence; and this consideration, in spite of being merely theoretic, is strong enough to concur with reasons of greater weight for urging upon scientific agriculturists the study of electricity and of electric agency on soils and vegetation. An eighth portion of the loss is, in many instances, manifestly occasioned by the over-ripeness, the bad preservation, or the otherwise damaged vitality of the seeds: and this—often a very abundant portion of loss—may easily be prevented by using only seed-corn, all the grains of which, when tested in the sample of one or two handsfull, will sink readily in water. A ninth portion of the loss—and this both a general and large portion—is caused by damage to the seed, or absolute destruction to its vitality, from the blows of the scutchers or the flail in threshing; and this ought to be prevented by a slow, cautious, and quite partial threshing of the selected sheaves for seed-corn, leaving the remainder of them to be afterwards threshed in the usual manner for edible grain. A tenth portion of the loss, and the last we shall mention, is indiscriminate sowing, or the want of adaptation in

the quantity of the seed to the powers of the soil.—*Rural Cyclopedia*.

EMPLOYMENT FOR OUR EXTRA POPULATION.—'It is true that both practical men, like Mr. Smith of Deanston, and eloquent writers like Mr. Allison, unite in asserting that the soil of Great Britain has within itself the means of producing an abundant supply of food for *double* or *treble* the numbers of our existing population. But, on the one hand, many reject these opinions as mere fanciful speculations; while, on the other hand, those who assent to their truth appear slow in adopting any decisive measures by which the desired result may be *effectually* or *speedily* realised. I confess, that when, in crossing the country in every direction, I behold, in whatever place I rest, the clearest proofs that large returns of corn invariably follow the application of new methods—of a more enlightened zeal—of a more patient industry—to the cultivation of the land; when in Hampshire, I observe that by chalking the soil the return of wheat is increased one-half; when, in Cheshire, I see the grass land entirely renovated, and the produce permanently increased in value from three to five times by the application of *bone-dust;* when, a short distance from the city of Durham, I can look upon nearly a hundred square miles of country, the average produce of which is not more than ten bushels of wheat per acre, but which the most skilful practical men concur in assuring me to be *capable* of producing an average crop of twenty bushels; when in Northumberland, I am told of a farm of 500 acres of arable land, for which a proposing tenant offered *double the rent*, on condition that it should be *drained;* when, on the border, I find the flying bent of Liddisdale converted into pasture of three or four times its former value by the application of *lime;* when, in Dumfries-shire, I am shewn a farm which in a few years has been raised to *six* times its previous rental, by the judicious improvements of its resident owners; when, in Ayrshire, I see the more frequent sheaf amply testify to the efficacy of the *tile-drain* and the subsoil-plough; and when the turnip fields at Yester shew me that even barren clays will yield a six-fold return to the bold and skilful Farmer;—when facts like these accumulate upon me, *to prove that the soil has everywhere dormant energies within it;* and, when, in addition, I see with regret that *these happy results, everywhere possible, have only here and there been obtained;* that, though in most counties many active minds and busy hands are at work, *yet that the great mass has not yet received any decided impulse, and that by far the largest breadth of the land is yet untouched by the energy and enterprise of the enlightened Agriculturist;* when I thus see and reflect, I confess that I can discover much reason for the ardent hopes expressed by the writer to whom I have alluded—though to what precise extent their anticipations are likely to be realised, I am unable to determine.'—*Professor Johnston.*

Gentlemen will find themselves mistaken if they put faith in the idle rumours of the Potato disease being stayed, or exaggerated, or about to disappear. Whatever local circumstances and the incomprehensible changes in this malady may here and there effect, they cannot alter the course of Nature; they cannot convert putrescence into living matter; they cannot produce a crop where the leaves and stem are blighted before the crop was formed. I have raised my Potatoes, writes the Irish farmer, and "there is nothing under them." Can any one seriously imagine that where nothing is under them anything will come, the leaves and stems—the source from which the underground crop is derived—being removed? The notion is childish.

That the early Potatoes have proved apparently sound in many places, notwithstanding the blight, is doubtless true, and so it is that in many places the loss under such circumstances is not so large as might have been expected. In such cases the crop had reached an advanced stage of growth before the blight struck the leaves.

The truth is that, as we have long foreseen and warned the public, the Potato crop is lost. Of course we do not mean wholly, as some dull persons would infer, but lost in the same sense as a general action, wherein multitudes are killed but multitudes escape. We will not pretend to estimate the extent of the injury in Ireland; the time has not come for that; it is variously stated by the numerous reporters to be a total loss, which is the fact here and there, or ¾, ½, ¼, or "a good part." There is no object now in continuing the returns themselves; they are, in five cases in seven, worse, and in none better, except as far as has been already explained.

We may add that we have as yet received no satisfactory proof that our speculation about the connection between the Potato disease and luxuriance is wrong; on the contrary, some supposed cases to the contrary, especially one from Portishead, near Bristol, confirm the opinion. But concerning this most important subject we wait for further information.—*Gardeners' Chronicle.*

STATE OF THE POTATO CROP.

The period having arrived at which the fate of the potato crop begins to be indicated, the appearances of disease are anxiously looked for, and their occurrence noted and speculated upon with an interest and anxiety proportionate to the importance of the subject. Throughout Belgium, Rhenish Prussia, and, it is to be feared, the whole of Germany, the disease has made considerable progress. There is hardly a district in England free of it; and, although a few weeks ago it was conjectured that little injury was to be apprehended, the rot has spread so rapidly of late that in all probability great damage will be sustained from it. In Ireland also, where but recently appearances were so favourable as to indicate the almost entire cessation of the disease, there has been a rapid and extensive development of it. If in the northern parts of that country there is little or in some tracts none of it, this is probably owing to the less advanced state of the crops there. The same remark has to be made as to Scotland, which as yet is comparatively free of the disease, it being only in low and highly manured spots, where the growth has been very luxuriant, that it has made its appearance. Judging from the numerous reports and statements contained in the Agricultural periodicals and newspapers, we fear there is very little reason to expect exemption from the disease in any part of the country; but we may hope that in the less fertile, dry, and exposed situations, where the stems have not been stimulated by manure into excessive growth, little damage will be sustained. It is of very little importance to know, that hitherto there has been little appearance of the disease in our districts. We know that it has progressed from the warmer low-lying tracts to the colder and more elevated, according to the development of the plant, and that it is chiefly at the season of flowering, in plants full of juice, that the atmospheric influences operate.

Our opinion as to the nature of the disease is much in accordance with that expressed in the last number of the 'Gardeners' Chronicle,' which is to the following effect:—Whatever tends to render the potato luxuriant predisposes it to disease, and in general the mischief is in proportion to the degree of luxuriance. It matters nothing how the luxuriance is produced: it may be by wet and heat; natural richness of soil; or stimulating manures; each, or all combined. Wet ground low-lying places, gardens with rich moulds, are notoriously liable to the disease; and the liability of plants forced in garden frames is an additional illustration of the fact, that luxuriant growth is most dangerous. The districts first and most ravaged by the disease—Devonshire, Cornwall, the West of England, and the South of Ireland—are those which are mildest and dampest, and thus most favourable to luxuriant growth. On the other hand, it is in poor land, cold places, and dry situations, or dry seasons, when, be the temperature what it may, the elements of luxuriance are withheld, that in general least injury has been sustained. The facts brought forward seem to indicate that the best preservative against the disease is to plant it where it cannot grow exuberantly, and that luxuriant growth, by whatever means, is to be carefully avoided.

It is reasonable to suppose that, like every other plant, the potato has certain constitutional limits within which it continues in a healthy state; and that these limits may be exceeded by too abundant a supply of juices, as well as by im-

poverishment. The most healthy condition would no doubt be that nearest the natural state of the plant; but as the object of cultivation is to increase the tubers, this end may be accomplished by artificial treatment, to which, however, there is a limit, beyond which the plant becomes liable to disease. The potato has everywhere been over-stimulated, and has to be gradually depauperated; a moderate or sure supply of food from it, being of more importance than a large supply liable to occasional, general, or even partial failures.—*Scottish Far.*

HOUSES OF UNBURNT BRICK.

From the Albany Cultivator.

I have lately been requested by many persons to write an article for the Cultivator on the construction of buildings of unburnt brick. I therefore send you the following, the result of my own experience.

In the summer of 1844, I purchased a piece of land for a nursery, and wishing to build a house to correspond with my business, I concluded to build of unburnt brick, several of the kind having already been erected in the vicinity, which had given good satisfaction. Mine has proved to be warm in winter and cool in summer. The walls are never damp, and there is every indication that it will be durable—more so, at least, than the *clap-board wind castles* which a person meets with every few rods, through the country.

My process for making the bricks was as follows: A circular pit, ten feet in diameter was dug, two feet deep. A floor of inch boards was laid over the bottom, and the pit filled with clay, and a small admixture of sand. Water was then added to moisten the batch. It is better to let the clay soak over night, if it is convenient, as I found it worked much easier. When all was prepared, a pair of oxen were driven into the pit, turned to the right, and driven about till the clay became soft and free from lumps. I then cut six bundles of straw into lengths of about six inches, and scattered over the clay, keeping the oxen moving moderately at the same time, till the clay and straw were thoroughly mixed together.

I then placed a table, four feet square and three feet high, by the side of the pit, and with the help of a man, proceeded to mould the bricks. The moulds were made of pine boards, nailed together like a box, but made very smooth on the inside. The dimensions on the inside, were fifteen inches long, one foot wide, and six inches deep. Cleats were nailed on each side of the moulds, to lift them by when filled. Two moulds were used alternately. The moulds were wet, sprinkled with sand, and placed upon the table. The clay was then shovelled from the pit and thrown upon the table. The clay was taken by the hands, filling the corners of the mould first—dashing it into the mould to make the bricks solid. When the moulds were full, they were stricken off even with the top, with a straight edge board to make them even. They were then placed upon a wheelbarrow and taken to the ground previously levelled and sanded, where the moulds were carefully inverted and lifted from the brick, leaving them to dry in the sun. As soon as the bricks became sufficiently hard they were turned on one edge, which exposed both sides to the air. They were afterwards placed in layers five feet high, under cover, till they were fit to be placed into the wall.

In laying them in the wall, I used clay mortar, mixed in the same way as the clay for the bricks, omitting the cut straw. It is necessary in laying the foundations for buildings, to elevate them well above the ground, so that no moisture reaches the bricks from below, and no base should project to impede the running off of the water. I would here state that an aperture about a quarter of an inch wide should be left in each end of the bottom of the moulds, to admit air, as the bricks adhere without such a precaution. The space could be left by making the bottom of the moulds too short to cover the whole length. The moulds should be washed as often as every third brick is moulded, on account of the soft clay adhering to the sides and bottom. I offer my house for the examination of any laboring man. It is now covered to the eaves with roses in full bloom, and other climbing plants, forming an object of attraction to the passers by. I. HILDRETH. *Seneca, June* 1, 1848.

From the Agricultural Gazette.

CULTIVATION OF WHEAT.

As the agriculture of a country advances, it becomes more and more an object with cultivators to raise a greater proportion of those products which command a higher value in the markets, and whose manuring equivalents can be as readily supplied as those of other products of less value, which can be raised with a less amount of capital and labour, but which exhaust the soil as effectively as the more valuable. It is a growing opinion that a crop of Wheat does not exhaust the land more than a crop of Oats, but it is very evident that a higher condition of the soil is necessary to ensure a good crop of Wheat than of Oats; for the one, the soil must be dry to enable the plants to withstand the vicissitudes of winter, as well as in good heart to secure abundance of plant in spring; the other can be raised with much greater certainty under more unfavourable conditions, as the spring prepares the land for the reception of the seed, and, with a high temperature, a rapid growth takes place, which gives the crop full possession of the land. As efficient drainage and cultivation extend, the growth of Wheat will extend also. Since the introduction of draining into Suffolk, Oats are now rarely grown; some farmers never grew a piece, and there is no doubt that the price of Oats is greatly kept up by the large quantities which are consumed in the eastern counties in the feeding of stock, as the farmers find it far more profitable to buy at the market prices than to raise.

It is no doubt a defect in our Scotch system of farming, which cannot by any means be entirely attributed to the influence of climate, that the proportion of Wheat is so small to the extent of land in arable culture. On many of the rich trap soils in the middle counties, the extent does not average more than one-seventh, while in Norfolk it has long been one-quarter, and in some of the English counties the aim is one-half, or Wheat alternately on land whose inherent fertility is not so great as those first mentioned. In Scotland it is a very prevalent idea that the fertility of the land is best maintained by allowing it to lie to pasture, and in general this is the principal condition which is inserted in written leases to prevent deterioration. With proper management this is, no doubt, a sure way where the soil is naturally rich. The farmers on the light lands of Norfolk have fully satisfied themselves that the mere pasturing the land with sheep or cattle does not tend to the accumulation of the fertilizing agents, and the four-course shift is universally adopted. Although Wheat requires land in high condition, your correspondent "Amicus" would find that land which has become so from pasturage in Scotland, would not be in a favourable state for a crop of Wheat; among other reasons for this, there would be an undue amount of available nutriment, which would be quite prejudicial to the proper maturing of the crop. But we must confess that we are rather puzzled to give good substantial reasons why Wheat is not grown to a greater extent after Clover lea in the north than it is, excepting that the opinion is somewhat prevalent that wheat is a much more scourging crop than Oats. On the light lands in Ross-shire the practice of growing Wheat after lea prevails to a considerable extent. In the Carse of Gowrie and Lothians it is also adopted, but to a less extent, and from several trials which we have made on our own account our success warrants us in persevering.

In many of our counties the principal part of the Wheat crop succeeded the Potatoes, but as this crop has now become so precarious its cultivation must be curtailed, and it becomes a question how the former extent of winter Wheat can be best made up; this has been partly done already, by a greater breadth of Beans, but they are not suited for such a range of soil and climate as the Potatoes; and there is usually too little time after the ingathering of the corn crops to clear a great breadth of Turnips so as to get the seed committed to the ground in good season; and although spring Wheat succeeds much better in the north than the south, still it is much more uncertain than winter sown.

The principal resorce which is left to us appears to be to sow after Clover, and we have no doubt that in many locali-

ties it is perfectly practicable, and would prove much safer practice than sowing so much in the spring months.

We are well aware that there is a distinct line where the geological and climatic influences intersect one another, and the two concur in moulding our farming practices and results and should make us cautious in adopting the suggestions of those who live under more favoured skies; but we are decidedly of opinion that it would be much for the interests of the farmers of the north that they would suit their cultivation so as to raise a greater proportion of Wheat, which is rapidly becoming the main article of human sustenance, for even in the "land o'cakes," with our increase of population, there is actually less Oats manufactured into meal than there were 20 years ago;

PARSNIP SEED.

The following system will answer for Parsnip seed as well as Carrots:—Let the ground intended for planting the roots be of a good loam and well drained; it must have a good coat of dung spread on the top, and the most successful manner of planting the roots I have found to be this; dig out a trench at least 18 inches deep, and place the Carrots or Parsnips upright against the side, at least 24 inches apart in the rows, and the rows to be 36 inches between each other; the ground must be kept free from weeds all the spring and summer; it is the custom with some raisers of those seeds not to plant the roots till the end of February, but as far as my experience goes it is best to get them in the first open weather after Christmas. I have almost invariably observed that the roots left in the ground all the winter are the most productive, and I always leave those that come up in the ground, though they may injure those plants immediately around them, yet I think the seed is more valuable, as it is generally of the finest description where it is the greatest distance apart, the sun and air having more opportunity of circulating around the plants. The first portion of Carrot seed is ripe generally about the latter end of August or beginning of September, and is always the best seed; it is best to look over the ground twice a week at least when the seed begins to ripen, as Carrot seed holds the wet like a sponge, and it soon discolours the seed much. Parsnips require to be looked over every day or two, as its seed easily shakes out with the least wind; the best way I have found to gather the seed of both Carrots and Parsnips is for one person to go with a sharp knife and cut off those heads that are ripe, he being followed by a boy with either a sack or basket, into which he drops the seed as cut off; it then requires to be spread out on a floor where the air can get at it; must not be spread more than 2 or 3 inches thick, and be occasionally turned till quite dry. The best way I have found to thresh it is to have a fine sieve just large enough to let the seed pass through then to be rubbed through with the hand. It is a great pity that all farmers do not grow their own seeds of all kinds; there would not then be the disappointment that is so frequently complained of in missing plants, but it is very difficult to persuade farmers or gentlemen that have never grown them to do so; in fact the growing of roots (except Turnips) are considered too expensive for a tenant farmer, but this is a great mistake, for there is no food that cattle will do so well on as Carrots or Parsnips (particularly the latter,) boiled or steamed and mixed with Bean, Pea, or Barley meal, and for small porkers for London market there is nothing that can be given that will pay so well.—*Ag. Gazette*

USE OF RAIN TO VEGETATION.

Rain performs several, and very different offices for vegetation. It brings down the ammonia and also the alkalies which are suspended in the atmosphere, it directly supplies hydrogen one of the constituents of plants; but its most valuable aid is, probably, rendering soluble those salts in the earth which serve as the food of plants. On this subject the Editor of the Rural Cyclopedia says:—"One of the prime offices performed by water in connection with vegetation, is the reduction of the alkalies to such a state of solution as to render them absorbable by the spongioles of plants. During spring and the early part of summer, while soils are in a moist condition, a greater quantity of alkaline bases and salt enters the organism of land-plants, than during the middle or later parts of summer, when soils are comparatively dry and arid. The descent of rain upon a soil is the introduction of certain necessary alkaline matter in a state of readiness for use by both soil and plant' and the action of water within the soil is the preparation of other necessary alkaline matter in combination with accompanying aliments for the vegetable organism. The necessity of rain for these purposes is so specially great at certain stages of the growth of plants, that, in many districts, the stuntedness or the luxuriance, the strength or the weakness, the opulence or the poverty, of a whole season's crop of corn may depend on the presence or absence, the copiousness or the paucity, of one day's rain, or even of a single shower. In dry seasons, the lower leaves of annual plants in summer, the lower leaves of herbaceous perennial plants at a later period in summer or early in autumn, and the lower leaves of deciduous perennial short-rooted plants just before autumnal maturity, lose their vitality, becomes yellow, shrink, and fall. These leaves were the earliest developed; they received alkaline juices from the ascending sap of the plant, and carbonic acid and ammonia from the surface action of the atmosphere; they elaborated these ingredients into the constituents of new leaves, buds, and twigs; and, when a continuance of drought occasions a scantiness or a cessation in the supply of alkaline matter through the ascending sap, they part with nearly all their own alkaline juices for contenued elaboration with the ammoniacal and carbonic acid gases, till they cease to have a sufficient quantity for the maintenance of their own health and verdure; and they, in consequence, sicken, fade, and die.—Hence, the withered leaves are found to contain mere traces of soluble alkaline salt, while the buds and sprouts are remarkably rich in these substances."—*Maidstone Gazette.*

Newcastle Farmer.

COBOURG, CANADA WEST, NOVEMBER 1, 1848.

The business of threshing and preparing grain for market, where that operation has not been already performed by those who choose rather to realize on the instant than wait the issue of fluctuations in price, until the spring, will, in a few weeks (at most) be in operation, and as many farmers have their own Threshing Machines, and numerous others in nearly every neighbourhood are offered for hire at a very moderate charge —the quantity of grain threshed in the old tedious manner (by hand) is exceedingly small, and where labour is so high as it is in Canada, it is a matter of importance that machinery should supersede, as much as possible, manual labour.

In England other considerations are mixed up with the question, for there labour is low in price, and as the poor labourers are located, almost immovably in their several parishes, and as it is obligatory on the residents of each Parish, or Union, to support its own poor, so it becomes a subject for the consideration of the farmer, whether it is not cheaper for him to resort to "the flail" rather than the machine, inasmuch as the laborer is then giving some return for the support the employer is obliged to furnish him and his family, in the shape of poor's rates, and this will continue to a great extent while so small an amount of winter's work can be found for a redundant population. There is yet another reason for discarding in some instances the powerful aid of the machine, and this is founded in some instances in local prejudices, or in consequence of imperfect machinery; by many, it is supposed, that all grain

thus threshed is unfit for the purpose of seed, and this is certainly a subject which ought to be duly taken into the consideration of the Canadian Farmer. He has enough vicissitudes to contend without committing to the ground seed incapable of germination; his disappointments after a severe winter especially, are sufficiently disheartening without such an additional cause of failure, and it would be well, for his own satisfaction at least, that he should test a certain number of grains, threshed by machine, previous to sowing the bulk of his crop. That the loss on the amount of seed sown is very great, is shewn by the fact that as many seeds do really supply from three to five or more heads of grain, and as each head will furnish from twenty-five to seventy or more grains, so, (should all return their increase), a crop would seldom produce less than one hundred and fifty fold. That such is not the case, we are all well aware, and doubtless many causes tend to produce an untoward result. Birds and insects prey on a portion—a neglect of proper tillage increases the amount of loss, in some instances from depositing the seed too deep, beyond the ordinary atmospheric influence, or from such an imperfect covering as totally to preclude the possibility of germination. In low undrained situations the seed rots while in high dry soils, unless sufficiently covered, it withers; but after all it is far from doubtful but that some grain is rendered unfit for vegetating by the means used to seperate it from the husk or straw, and there can be no question, but that some Machines are more productive of this evil than others and particularly if a careless hand regulates and feeds it. We have often thought, that when grain for seed only is required, it would be well to set the machine wide, so that in passing the sheaf through, only the larger and finest heads would be subject to the action of the beaters or spikes, and then at the same time be scarcely liable to any injury from any machine whatever; the straw could be threshed a second time with the cylinder set closer to the concave, and every particle of grain remaining be separated from the straw, so that no loss would ensue and a much better chance be afforded for seed of sure and equal germination, a matter of the utmost importance to the agriculturist.

By this mode of preparing Seed Grain, a decided advantage would be gained by the exclusion of all small and unsound seed, and by the easier removal of all weed seeds in passing through the Fanning Mill. How often do we see, from want of attention in this matter, a perpetual succession of weeds, robbing the grain of a large proportion of the nourishment it would otherwise receive from the soil, thereby causing a deficiency both of straw and grain, besides filling the land with seeds which nothing short of a good scouring fallow can exterminate, and which if laid down to grass or clover, produces but a meagre scanty crop, vexatious and unremunerative. Endeavours to prevent such a state are far better than the most strenuous exertions at extermination the end accomplished with much less labour and expense, and ensures, as far as human care and foresight are available, a good crop of grain and a subsequent beneficial growth of Hay or Pasture. How is it that the average yield of grain in the British Isles so far exceeds the average of the virgin soils of our own lands? it is simply because due attention is paid to the nature, capabilities and requirements of the soil, its adaptation to the different crops, accompanied by a judicious rotation; and until the Canadian farmer, as far as circumstances will allow, adopts the same course, it would be folly to expect the same results. We know that labour is much cheaper and easier attainable *there* than here; were it not so we should not hear of one Farmer raising, as was done last year, 600 acres of Wheat, the same of Barley and of Oats, in addition to 1200 acres of Turnips. To such an extent we are not likely to go, but would it not be far better to expend on 20 acres of grain the same amount of labour usually expended on 40 when the chances are that the 20, say of Wheat, would give a yield of 600 bushels, while the latter would not, most probably, exceed 12 bushels to the acre, or 480 in the whole.

For the Newcastle Farmer.

Mr. Editor,—Seeing a paragraph in your Newcastle Farmer, saying "you are more than doubtful of the existence of wheat that will not rust," I enclose you a sample of a new kind which has been grown in Otonabee *six years, in various soils and situations and during that time has not been* affected by the rust. The following brief account of it may be relied on. Mr. David Fife had a friend returning to Scotland 7 years ago, whom he requested, if an opportunity occurred, to procure wheat from any of the northern parts of Europe to send him a little. On arriving at Glasgow *he found a ship discharging a cargo from one of the Baltic ports; he sent* some of it to Mr. Fife, who sowed it the spring following, which came up various kinds, from which he selected five ears of this variety, two of which were destroyed by cattle, and from the remaining 3 ears has sprung the quantity now grown in this vicinity—near 1000 bushels I should fancy, *chiefly raised by the Fifes whose name it bears, or ought to do.*

It is a late kind of wheat, being green when the Club and Siberian were ripe, and although in many instances his year growing contiguous to them, on low clayey, and black soils, it continued plump and bright, when they were rusty as old iron, and worthless.

I beg to add that I am not a grower, nor a seller of this wheat, nor any way connected with such, directly or indirectly, hence I have no inducement to puff the article.

I merely write for the pleasure of furnishing an interesting fact to my fellow farmers, and am,

Sir, your humble serv't,
AGRICOLA.

Otonabee, September 25th, 1843.

We are much obliged to the writer of the above. The sample is in good hands, and will get a fair trial.

The Flower Garden.

From the Horticultural Magazine.

FLOWERS AND ORNAMENTAL PLANTS OF THE INDIAN ISLANDS.

Nearly all nations when they wish to select an emblem to convey the idea of purity and delicacy, make use of some small white, or at least pale blossoms. Accordingly, among the Indian islanders, chaplets of flowers, with pleasant perfume, are twined in the hair or bound across the forehead. In Java and Sumatra, especially, this practice obtains. The beatitude of a future life is expressed by strewing the resting-place of the dead with delicate blossoms, fresh culled by the hand of affection; the happiness and purity of married life are denoted by decking the person of the bride with garlands of white flowers, and pale fragrant blossoms are emblematical of whatever is beautiful or good in this world.

One custom of the Indian islanders we have not often seen remarked on. Among the inhabitants of Teenghor, when a man dies, after many ceremonies have been observed, an image of leaves made to represent the human form, and of about a cubit high, is prepared and placed in a conspicuous position. A garland is twined around it, and in front is placed a pot of water. After many days have elapsed, the chaplet is burned, and no more notice is taken of the dead, until the expiration of a thousand days, when, if his memory be loved and cherished, the ceremony and the feast are repeated.

Among some of the ornamental plants of the Indian islands which we have not as yet particularized, is the Coral tree, which puts forth abundant clusters of large, crimson flowers. There is also a treee called the Tchampaca, of which there exist two varieties, the one bearing red, the other yellow flowers, of exquisite fragrance. Among the innumerable flowers which bloom in perpetual succession, are the Champaka, the Tanjong melatikananega, the Magaseri, and many others, of which we have as yet no accurate and scientific description, but which are all of a showy and elegant appearance, and remarkable for their sweet odour. They are much used by the natives as ornaments. The myrtle and the rose are found in Java, in the gardens of the European settlers.

The Camellia Japonica flourishes everywheae in Borneo, in the most luxuriant wildness. Every European settler's

garden is adorned with this graceful flowers, while in the loneliness spots it is found in every variety.

We now come to describe a gigantic flower, discovered by Sir Stamford Raffles while on a journey to the Hill of Mists, in Sumatra, and named after him Rafflesia Arnoldi. It is perhaps the largest and most magnificent in the world; and is quite distinct from any other flower. Across, from the extremity of each petal, it is rather more than a yard; the nectarium is nine inches wide, snd as deep, holding a gallon and a half of water. The whole flower weighs fifteen pounds.—This giant flower, the native name of which is Peturum Sinkinlili, or, the Devil's Betel-box, is generally found in the forests, parasitic on the lower stems and roots of other plants. It appears at first in the shape of a diminutive round ball, which by degrees dilates to a great size. The flower-bud is invested by numerous membranaceous sheaths, or plates, which surround it in successive layers, and expand as the bud enlarges, until at length they form a cup round its base.—These sheaths are large and firm, and dark brown in colour. The bud, before expansion, is depressive, round, with five obtuse angles, and of a deep red. When fully expanded, this flower may well be termed the wonder and glory of the floral kingdom. It forms a broad, deep cup, capable of holding twelve pints of water. Inside, it is of an intense purple hue, more or less maaked with yellow, with soft, flexible spines of the same color. Towards the mouth are numerous depressed spots of the purest white, which appear strongly in contrast with the deep, rich purple of the surrounding substance. The petals are of a brick red, with numerous pustular spots of a lighter colour. Nor is this flower tender, fragile thing, likely to be blown away by the breeze. The substance of its petals is not less than half an inch thick, and of a firm, fleshy consistence. Soon after expansion, it begins to give out a smell like that of decaying animal matters. The fruit never bursts, but the whole plant gradually rots away, and the seeds mix with the putrid mass. This flower is almost unknown to the natives of its indigenous country. Very few accounts of it, indeed, have reached this land of inquiry and research, of science and thirst for knowledge. This flower takes three months from the first appearance of the bud to arrive at maturity. It is generally seen clinging to the roots and lower stems of those gigantic creepers which are everywhere seen in the forests of Java. Sometimes they climb the trunk of some majestic tree which towers to the height of a hundred and ninety feet before throwing out branches, and then drop to the ground like a huge cable, along which are seen darting the squirrel and monkey.

Another flower growing in many of the islands in the Straits of Malacca is remarkable. It also grows parasilytical on rocks and tree trunks. The stems are as thick as a man's wrist, and six or seven feet long, without branches, and at the extremity produce abundance of leaves. But the most extraordinary feature of it is its magnificent inflorescence, which forms an erect *spike six feet high*, with upwards of one hundred large, spreading brown and white chequered fragrant flowers, between two and three inches in diameter.

Among the ornamental productions of the Indian islands, the clove tree is not the least remarkable. It grows in the form of a pyramid, its branches sprouting forth close together. It is as large as a cherry-tree, but more resembles the laurel. In the midst of each leaf is a large vein which which sends forth many lesser branches; these leaves grow on long stalks, sometimes single, but for the most part in clusters; those that grow near the extremities of the branches are of a purple colour, but the rest dark green; if they are rubbed between the hands they scent as strong as the cloves themselves, and so do the branches. On the extremities of the branches grow many sprouts which produce buds, from which springs the flowers which at last produce the knot.—The blossom is white at first, not unlike our cherry blossom, each leaf of the flower having three small streaks; they then turn green, afterward red, and last of all dark yellow inclining to black. A cluster of these treese affords a very agreeable sight.

Miscellaneous.

THE ACORN.

A FAMILIAR MORALIZING.

What do I see in thee, thou little ball,
Which yon weak twig—shook by the breeze—let fall?
The incipient Oak lies in this narrow space,
Which shall ere long the young plantation grace.

What do I see prospectively in thee?
In all its majesty, the Forest Tree,
Which Art shall shape into a thousand things,
Fit to adorn the palaces of kings!

What do I see in thee? The man-of-war,
Ploughing the mountain-waves of ocean far—
Conveying to some distant hostile shore,
The thundering cannon with tremendous roar,

What do I see in thee? The festive broad,
Groaning beneath the splendid ponderous load
Of gold and silver vessels, richly filled
With sparkling liquid from the grape distilled.

What do I see in thee? The miser's chest,
Where lie the treasures which disturb his rest:
In servile homage to his god he bends,
But to the poor he neither gives nor lends.

What do I see in thee? The awful seat
From whence the culprit will his sentence meet,
And the dread steps he trembling must ascend,
A wretched life of infamy to end.

What do I see in thee? The shelves which bear
The fruits of midnight literary care;
Which ages yet unborn shall learn to prize,
Above all other sublunary joys.

What do I see in thee? The classic chair
Round which the youthful students quake with fear,
Which bear away those lessons which shall guide
The aspiring genius near fair Virtue's side.

What do I see in thee? The sacred place
Where the ambassador of gospel grace
Stand up between the living and the dead,
Proclaiming life to men through Him who bled,

What do we see in thee? Oh sad to tell!
The poor man's coffin and the rich man's shell;
Both, side by side, they slumber in the dust,
Until the resurrectionof the just. T. B.

Lutterworth.

HORSEMANSHIP IN CHILI.

The Guachos are well known to be perfect riders. The idea of being thrown, let the horse do what it likes, never enters their head. Their criterion of a good rider is a man who can manage an untamed colt, or who, if his horse fall, alight on his own feet, or can perform other such exploits.—I have heard of a man betting that he would throw his horse down twenty times, and that nineteen times he would not fall himself. I recollect seeing a Guacho riding a very stubborn horse, which three times successively reared so high as to fall backwards with great violence. The man judged with uncommon coolness the proper moment for slipping off—not an instant before or after the right time; and as soon as the horse got up, the man jumped on his back, and at last they started at a gallop. The Guacho never appears to exert any muscular force. I was one day watching a good rider, as we were galloping along at a rapid pace, and thought to myself, "surely, if the horse start, you appear so careless on your seat, you must fall." At this moment a male ostrich sprang from its nest beneath the horse's nose; the young colt bounded on one side like a stag; but as for the man, all that could be said was, that he started and took fright with his horse. In Chili and Peru more pains are taken with the mouth of the horse than in La Plata, and this is evidently a consequence of the more intreate nature of the country. In Chili, a horse is not considered perfectly broken, till he can be brought up standing, in the midst of his full speed on any particular spot, for instance, on a cloak thrown on the ground; or, again, he will charge a wall, and, rearing, scrape the surface with his hoofs. I have seen an animal bounding with spirit, yet

merely reined by a forefinger and thumb, taken at full gallop across a court yard, and then made to wheel round the post of a veranda with great speed, but at so equal a distance that the rider, with outstretched arm, all the while kept one finger rubbing the post. Then making a *demi volte* in the air, with the other arm outstretched in a like manner, he wheeled round with astonishing force in an opposite direction.—*Darwin's Researches.*

The Signs of Old Age in the Horse.—The following symptoms are, we believe, infallible:—"The general indications of old age are various and distinct. The teeth of an old horse are yellow, and sometimes brownish. The gums are worn and sunk; and occasion a portion of the stumps of the teeth to appear long and naked. The bars of the mouth, which in youth were always fleshy, and formed a series of distinct ridges, are now lean, dry, and smooth, with little or no rising. The eye-pits, which in youth generally appear fleshy, plump, and smooth, are now sunk and hollow, and make the animal look lugubrious and ghastly. A horse which was formerly grey is now white; a horse which was formerly all black, is now probably grey over the eye-brows, or over a large proportion of the face; a horse, which was formerly black, but had a star or blaze fringed round with grey, is now grey or whitish over much of the face; and most horses, according to the variety of their colour or constitution, sooner or later become flea-bitten over most of their body except about the joints. All horses, when very old, sink more or less in the back; some, which are naturally long-backed, become so sunk that a saddle can hardly any longer be found to fit them; and most become so stiff in their joints as to trip and stumble upon even a smooth and almost level road. But long before a horse is transmuted into one of the mere animated skeletons which are sometimes seen to drag themselves along the streets of a market town, every respectable farmer will have repudiated the cruelty of fastening it under a harness."—*Bell's Weekly Messenger.*

Hemlock Hedge or Screen.—In the garden of J. W. Wheeler, Esq., of Hyde Park, we lately saw a beautiful hedge or screen, of hemlock, (*Abies Canadensis.*) We had not previously seen this material used for such a purpose, but in this instance it has answered admirably. Mr. W. informed us that it had received no particular pains in its management. The young trees were taken from the woods when from 6 to 8 inches high, and set where they now stand; since which no attention has been given except to keep them sheared in the proper form. It is five years since the screen was planted, and it is about three and a half feet high, perfectly even, and so dense as to be wholly impenetrable to sight from the ground to the top. We would not be understood to recommend hemlock as a live fence against cattle, and we are not certain that it would answer against sheep, as they might check its growth by browsing, especially in the winter or early in the spring, when, in consequence of the scarcity of green forage, they will eat hemlock freely. But for a screen, in pleasure grounds or gardens, we have seen nothing which surpassed the one alluded to.—*Albany Cultivator.*

Useful Hint about Cholera.—A writer in a weekly medical journal, who saw much of the cholera in 1832 and 1834, suggests a very simple, and, as he asserts, a very valuable prevention against the susceptibility of the disease.—The weakened state of the stomachs, he says, which predisposes to cholera, is so decidedly obviated by *eating freely of common salt* with our meals, that it is believed that three-fourths of the cases which would otherwise occur may be prevented by this simple addition to our food. The writer recommends for an adult a ninth of an ounce (about a small teaspoonful) three times a day, at breakfast, dinner, tea, or supper. It may be eaten with fish, animal food, poultry, game, bread, toast, or bread and butter. The same beneficial result is not obtained with salt meats, broths, soups, &c. in which salt is dissolved; because by the action of heat, or long admixture of the salt with other matters, a change is produced in its properties, and the preventative power, with reference to this particular use of it, destroyed.

Remedy for Cholera.—The following valuable prescription for the effective cure of the cholera has been received from J. Brooker, Esq., H. B. M.'s Vice Consul at Constradt, Russia. "The principal part is to attack the disease the instant it is suspected, take a stimulating dram, with peppermint, and a few drops of laudanum, cover yourself up as warm as possible, to promote perspiration, apply hot substances, such as water, bran, salt, and even sand to the limbs, and put a mustard poultice over the whole stomach. As soon as perspiration breaks out, and the beating of the pulse is restored, the complaint may be looked upon as conquered; if it is neglected till its last stage, recovery cannot be expected." By strictly attending to the above simple means, Mr. Brooker says that no person need fear fatal consequences.

Shoes Made of Straw.—"It would seem, by the following extract from the Magazine of Science, that straw shoes (of rice straw,) are common in Japan. It would seem that the natives of most other countries are before our own in manufacturing from such substances.—"Platting of straws, grasses, and chips into hats, and different articles for wear, is far from being confined to Europe, or to civilised countries. The art is indeed found to obtain in different degrees of extent and excellence in nearly every part of the world. In the southern provinces of China, where, in summer, the population use no other head covering, and where the Mandarins wear these hats with tremendously wide brims, the quantity of straw platted is prodigious. In Japan, in proportion to the population, the consumption is almost equally great. 'When on a journey,' says Thunberg, 'all the Japanese wear a conical hat, made of a species of grass platted and tied with a string.' He also observed, that all the fishermen wear hats of the same material and shape. But in addition to this extensive use, the Japanese hardly ever wear any shoes or slippers but such as are made of platted straw. 'This,' remarks the same excellent traveller, 'is the most shabby and indifferent part of their dress, and yet in equal use with the high and the low, the rich and the poor. They are made of rice-straw platted, and by no means strong.'—They cost, however, a mere trifle; they are found exposed for sale in every town and in every village, and the pedestrain supplies himself with new shoes as he goes along, while the more provident man always carries two or three pair with him for use, throwing them away as they wear out. Old worn-out shoes of this description are found lying every where by the sides of the roads, especially near rivulets, where travellers, on changing their shoes, have an opportunity at the same time of washing their feet.' In very wet weather they use wooden clogs, which are attached to their straw-platted shoes by ties also made of straw-plat. People of very high rang sometimes wear slippers made of fine slips of rattan neatly platted."

Zoological Curiosity.—The *Presse* gives the following account of a young ourang outang, which has just arrived in France, and added to the collection in the Jardin des Plantes. The animal is only six months old, but presents in appearance the aspect of a serious and meditative child of three years of age. He makes none of those jerking movements or contortions of countenance, which are so characteristic of the "ape" species; nor is that absence of sustained attention, so common to monkeys in general, in any way remarkable. He is calm—nay, almost affectionate, and gives the keepers that pass by his cage the most hearty shake of the hand, with the same air of semi solemnity that would be assumed by an old Arab. His diet is very *recherche* consisting of chocolate, roast meat, wine, and even *liqueurs.* As he comes from a very hot climate, the greatest precautions are adopted for the exclusion of cold, and the little creature is, accordingly put to bed between a large cat and a very shaggy dog, all three animals being covered up with a thick mantle of wool. During the day the ourang-outang is clothed in a red blouse, after the fashion of the "Greek" design of the curains of the empire, and white pantaloons. The studies of zoologists can hardly fall to be greatly advanced by the presence of this animal in their menagerie.

Remedies for fits.—*For a Fit of Passion*—Walk out in the open air; you may speak your mind to the winds without hurting any one, or proclaiming yourself to be a simpleton. *For a Fit of Idleness*—Count the tickings of a clock. Do this for one hour, and you will be glad to pull off your coat the next, and work like a negro. *For a Fit of Extravagance and Folly*—Go to the workhouse, or speak with the ragged and wretched inmates of a goal, and you will be convinced

"Who makes his bed of brier and thorn
Must be content to lie forlorn."

For a Fit of Ambition—Go into the churchyard and read the grave stones; they will tell you the end of ambition.—The grave will soon be your bed-chamber, earth your pillow, corruption your father, and the worm your mother and sister. *For a Fit of Repining*—Look about for the halt and the blind, and visit the bedridden, and afflicted, and deranged; and they will make you ashamed of complaining of your lighter afflictions. *For a Fit of Despondency*—Look on the good things wich God has given you in this world, and to those which he has promised to his followers in the next—He who goes into his garden to look for codwebs and spiders no doubt will find them; while he who looks for a flower may return into his house with one blooming in bosom.

An Honest Codfish.—A sloop, belonging to Rothesay, was recently lying in Lichbroom, the skipper of which, when fishing over the side, lost the keys of lockers, &c., from his pocket into 10 fathoms of water. Attached to the bunch of keys was a small piece of parchment, on which his name and that of the vessel were written. He, of course, gave up all hopes of ever seeing the keys again, and gazed on their rapid descent into the watery depository with deep regret. Six weeks afterwards the skipper cast anchor off the island of Rassay, about 100 miles from Lochbroom, and again resumed his piscatory employment. Among the results of his labours was a large codfish, which was speedily unhooked and thrown upon deck; and, to the utter amazement of the skipper, the poor cod, when in the last agonies of death, vomited up his bunch of keys. The parchment being partly preserved, proved his property beyond a doubt. At the same time, as if conscience-stricken, it disgorged a penknife belonging to a brother skipper, on which his initials were engraved. It is a remarkable circumstance that this fish, in its migratory course, should arrive at the same spot where the sloop was, sacrificing its life, and with its last breath discharging an act of honesty that would have honoured a higher grade or species of animals.—*Greenock Advertiser.*

Boiling Fish in Salt Water.—Bacon hams are said to be better boiled in salt water, no doubt for the reason that in a given time they are much better boiled. Hams require a long time in boiling. Sir Humphrey Davy tells us that the reason why vegetables and fish should be plunged in boiling salt and water is, that this solution boils at a higher temperature than plain water, and that the sudden scalding fixes the albumen, mucilage, and other nutritive parts of the viand, instead of their being macerated and sodden, and so partly lost in lukewarm water.

To cure Wounds on Horses or Cattle.—As there are many useful receipts hidden from the public for the sake of speculation in a small way, by many who would be thought something in the world, I am induced to lay before the public a receipt for making the King of Oil, so called, which perhaps excels any other for the cure of wounds on horses or cattle, and which has long been kept by a few in the dark. Feeling a desire to contribute to the good of the public, but more especially to the farmers of Genesee, I send you the following very valuable receipt for publication:—1 ounce of green copperas, 2 ounces white vitriol, 2 ounces of common salt, 2 ounces of linseed oil, 8 ounces of West India Molasses. Boil over a slow fire fifteen minates in a pint of urine; when almost cold add 1 ounce of oil of vitriol and 4 ounces of spirits of turpentine. Apply it to the wound with a quill or feather, which will immediately set the sore to running, and perform a perfect cure.

Simple Cure for the Rheumatism.—Boil a small pot of potatoes, and bathe the parts affected with the water in which the potatoes were boiled, as hot as it can be applied, immediately before going to bed. The pains will be removed, or at least greatly alleviated by the next morning. Some of the most obstinate rheumatic pains have lately been cured by one application of this novel and simple remedy.

Lockjaw.—I have noticed lately several deaths by lockjaw, *and for the information of all I will give a certain remedy.* When any one runs a nail or any sharp iron in any part of his frame, take a common smoke pipe, fill it with tobacco, light it well, then take a thin cloth or silk handkerchief, place it over the bowl of the pipe and blow the smoke through the stem into the wound—hold the stem close, to carry the hot smoke into the wound; two or three pipes-full will be sufficient to set the wound discharging. I have tried it on myself and five others, and found it to give immediate relief. If the wound has been some days standing it will open it again, the tobacco is good.—Try it, any one who chances to get such a wound.—*Baltimore Sun.*

Iron and Gallic Acid.—When a piece of iron is driven into a stick of green oak, a blue colored stain is frequently seen on the wood. This is caused by a union of the gallic acid of the oak with particles of iron. It is, in fact, genuine ink, and only needs to be combined with a little gum arabic to give it a body, to be used in writing.—*Ib.*

Case hardening Iron.—H. Webster gives the following account in the *Prairie Farmer*, of his mode of case-hardening iron, which he has found by twelve years' experience to be superior.

Take one part of oxalic acid and two parts prussiate of potash; pulverize them together, and put them upon the iron when red hot—hold the iron in the fire to dry. If it is desired to harden very hard, repeat the operation several times. The iron does not need to be kept from the air, as by the old process of hardening.—*Ib.*

Alleviation from Cough.—Persons using stoves, will find that a small piece of common resin, dipped in the water which is placed in a vessel on the stove, will add a peculiar property to the atmosphere of the room, which will give great relief to persons troubled with a cough, who breathe the atmosphere of the apartment. The heat of the water is sufficient to throw off the aroma of the resin, and gives the same relief as is afforded by a combustion of the resin. It is preferable to combustion, because the evaporation is more durable. The same resin may be used for weeks.

Ladies' Blacking.—Take one drachm of isinglass, half a drachm of indigo, half an ounce of soft soap, two ounces of glue, and a small handful of logwood raspings. Boil these all together slowly in one pint of vinegar, until the quantity is reduced one half. The shoes are to be entirely cleaned from dirt or dust; and if any blacking remain on them, it must be washed off with cold water, and the shoes dried. Then the blacking is to be applied with a small bit of sponge; it is merely rubbed on; when a perfect shining jet is produced, needing no brush, and making no dirt; nor will it soil the dress.

To Preserve Water.—It is said that water may be preserved quite pure, either in long voyages, or in cisterns, by the addition of about 3 lbs. of black oxide of manganese powdered; stir it well together, and the water will loose any bad taste it may have acquired, and will keep for an indefinite length of time.

Harness-maker's Jet.—Take 1 dram of indigo, 1 ounce of isinglass, ½ ounce soft soap, 4 ounces of glue' 1d. worth of logwood raspings, and 1 quart of vinegar. Boil the whole together over a slow fire, till reduced to one pint. A small quantity is then to be thinly applied, with a clean sponge, to harness, boots, &c., which have been previously well cleaned. Exposure to rain will take off the gloss from harness so treated, but it is so easily applied, that a renewal of it on harness, washed clean, is very little trouble.

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