Technical and Bibliographic Notes / Notes techniques et bibliographiques

The Institute has attempted to obtain the best original copy available for filming. Features of this copy which may be bibliographically unique, which may alter any of the images in the reproduction, or which may significantly change the usual method of filming, are checked below.

L'Institut a microfilmé le meilleur exemplaire qu'il lui a été possible de se procurer. Les détails de cet exemplaire qui sont peut-être uniques du point de vue bibliographique, qui peuvent modifier une image reproduite, ou qui peuvent exiger une modification dans la méthode normale de filmage sont indiqués ci-dessous.

- [ ] Coloured covers/ Couverture de couleur
- [ ] Covers damaged/ Couverture endommagée
- [ ] Covers restored and/or laminated/ Couverture restaurée et/ou pelliculée
- [ ] Cover title missing/ Le titre de couverture manque
- [ ] Coloured maps/ Cartes géographiques en couleur
- [ ] Coloured ink (i.e. other than blue or black)/ Encre de couleur (i.e. autre que bleue ou noire)
- [ ] Coloured plates and/or illustrations/ Planches et/ou illustrations en couleur
- [x] Bound with other material/ Relié avec d'autres documents
- [x] Tight binding may cause shadows or distortion along interior margin/ La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure
- [ ] Blank leaves added during restoration may appear within the text. Whenever possible, these have been omitted from filming/ Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été filmées.

- [ ] Coloured pages/ Pages de couleur
- [ ] Pages damaged/ Pages endommagées
- [ ] Pages restored and/or laminated/ Pages restaurées et/ou pelliculées
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached/ Pages détachées
- [x] Showthrough/ Transparence
- [x] Quality of print varies/ Qualité inégale de l'impression
- [x] Continuous pagination/ Pagination continue
- [ ] Includes index(es)/ Comprend un (des) index

Title on header taken from:/ Le titre de l'en-tête provient:

- [ ] Title page of issue/ Page de titre de la livraison
- [ ] Caption of issue/ Titre de départ de la livraison
- [ ] Masthead/ Générique (périodiques) de la livraison

- [ ] Additional comments:/ Commentaires supplémentaires:

This item is filmed at the reduction ratio checked below/
Ce document est filmé au taux de réduction indiqué ci-dessous.

10X	12X	14X	16X	18X	20X	22X	24X	26X	28X	30X	32X
								/			

NEWCASTLE FARMER.

VOL. II.—NO. VII. COBOURG, MARCH 1, 1848. THOS. PAGE,—Editor.

BLIGHTS OF THE WHEAT.

CHAPTER II.

Our inquiry into the habits of the parasitic fungi, found upon the wheat-plant, will commence with one of its most common pests attacking the straw. And here it may be mentioned, that the joints of the straw are not unfrequently affected by a small and almost unobserved fungus called *dipazea*, upon which it is unnecessary to dwell, for it is not considered as making its appearance on stems in a healthy condition. It is a very minute species of *sphæria*, and may frequently be noticed if the joints are carefully examined. But in the case of the fungus now to be described, the fields, especially of late varieties in certain localities, may be often perceived to be quite blackened by its encroachments, while the grain, as well as the straw, becomes exceedingly deteriorated. On gathering a stem, it will be found completely disfigured by numerous dark blotches of the *sori*, or patches, often running its entire length. The common name of this disease is mildew, and it has been designated by botanists *puccinia graminis*, a term supposed to be derived from a Greek word (*puka,*) signifying closely or thickly, and to have reference to the crowded condition in which the little fungi are packed in the several patches in which they grow. When the disease first shows itself, the stem exhibits a number of dark-coloured spots beneath the epidermis, some of which have an orange-coloured tinge, others a deep brown. In a short time, the outer cuticle splits, and dark musty clusters of spores appear in the openings. On examining these with the microscope, they manifest distinct and curious forms. They are seen to be dense masses of pear-shaped fungi with a stalk, into which each one gradually tapers.

The threads of *mycelium*, or spawn, are not visible, but they interweave themselves amongst the tissue of the straw, and it is from them that the spores emerge, and break through the epidermis. A beautiful figure of it may be seen in Corda's celebrated drawings of fungi; but it requires great skill and a very powerful microscope to see it well.

Piece of straw with mildew, as viewed under the microscope magnified 125 diameters.

The usual magnified appearance of a piece of mildewed straw is represented in the drawing, viewed as an opaque object by a good achromatic glass. The pear-shaped bodies thus clustered together are the spores of the *puccinia*. If a small quantity be scraped off with the point of a knife, and further magnified, they will be still more distinctly seen. They are well represented in the figures we have given, the round spore being one of *uredo*, or rust, mixed with those of *puccinia*.

Each of the two compartments into which these spores are divided is filled with *sporules*. The spores themselves generally make their appearance immediately beneath the *stomata*, or pores, with which the stem abounds. These *stomata*, it is well known, are the organs by which plants exhale and inhale. Under the influence of light, and in dry weather, the stomata are in active exhalation; but in wet and gloomy seasons these functions are reversed, and they inhale powerfully. It is then that, in all probability, the sporules are imbibed with the moisture, and find a suitable place for vegetating in the subjacent vegetable tissue, when favourable atmospheric circumstances, neatly designated by a foreign philosopher "*cosmica momenta*," call them forth.

Spores of puccinia apart from straw, and magnified 240 diameters.

As some of the readers of these remarks may never have seen these beautiful organs called *stomata* in the vegetable structure, whose functions are so indispensable to the life of the plant, it may be proper here to mention the simplest method of obtaining a knowledge of their character by actual observation. They are found in the leaves of all vegetables, and in the stems of the gramineous tribes, including every sort of British corn plant. They also occur in their leaves. They are small spaces which lie between the sides of the cells in the cellular tissue, and open into intercellular cavities in that part of the tissue lying beneath them. *Stomata*, the plural of *stoma*, a mouth, is an appropriate name. When seen with a good microscope, their appearance is most interesting. They form apertures for the purposes mentioned, and these apertures are closed or opened by little elastic vesicles, whereby their action is beautifully regulated. The naked eye can never detect them, but under a good microscope no object whatever is more completely defined. Those persons who have not seen them, cannot do better than to cut with a pair of scissors a small bit from the leaf of the plant called St. John's wort. Place this little fragment on a slip of glass, with the under side, in which the stomata abound, uppermost. Take a good half-inch achromatic object-glass, and put on the speculum. Throw the light on with the reflector attached to the microscope, and view the leaf with an appropriate eye-piece. To the astonishment of every one witnessing this sight for the first time, the whole surface will appear closely studded with the stomata. Some will be found open, others shut; but the whole will be seen with the utmost distinctness. Ever after, the use of the term will present no difficulty; and if other leaves and stems be submitted to a similar inspection, whatever is said relative to these minute organs will become intelligible. A practised microscopist will show them admirably by scraping off a slight morsel of the cuticle of a leaf, and putting it on a piece of glass with a slip of very thin glass over it. The power then used should be one-eighth of an inch. The location of the spores of mildew in wheat straw, as stated, naturally induces the observer to conclude that the sporules enter by the stomata. In other fungi, to be noticed hereafter, it is to be inferred that the process of entering the plant is different. We now speak only of *puccinia*.

In the year 1804, the complaints of the mischief done to the wheat were of so serious a nature, that Sir Joseph Banks caused some stalks of the plants affected by what was then merely called blight, to be carefully examined by the microscope. The person employed was the celebrated Mr. Bauer, who made drawings of the fungi with his usual skill. A large volume of these productions of the pencil of that eminent observer is preserved in the British Museum. Mr. Bauer delineated the *puccinia*, which had vegetated on the straw and prevailed to such an alarming degree, with extreme accuracy. He did not, however, detect the mycelium, as Corda has done since. In 1805, a pamphlet was published on the subject, asking for observations from intelligent agriculturists on the origin and progress of the disease. This publication embodied a principle which is now more regarded than it was in those times. It was commended to the

notice of farmers as justly deserving their attention, and the principle itself was, that the exercise of their intellectual faculties upon the objects with which they are conversant would, in time, convey to them a practical reward. An extract from the pamphlet, taken from Loudon's Encyclopædia of Plants, will show the design of the writer; but it was at that period productive of no great effect. "Botanists," he says, "have long known that the blight in corn is occasioned by the growth of a minute parasitic fungus, or mushroom, on the leaves, stems, and glumes of the living plant." In this observation sufficient distinction is not made between the different forms of these fungi. The fungus alluded to here is only the *puccinia*, which is by no means the sole fungal blight to which the corn-grower's attention ought to be urgently called, as will abundantly appear in the course of this treatise. Mr. Bauer's drawings in the British Museum contain nearly all the fungi referred to, elaborately and beautifully figured. The pamphlet continues, "Felice Fontana published, in the year 1567, an elaborate account of this mischievous weed, with microscopic figures which give a tolerable idea of its form; more modern botanists have given figures both of corn and grass affected by it, but have not used high magnifying powers in their researches. Agriculturists do not appear to have paid, on this head, sufficient attention to the discoveries of their fellow-labourers in the field of nature; for though scarcely any English writer of note on the subject of rural economy has failed to state his opinion of the origin of this evil, no one of them has yet attributed it to the real cause, unless Mr. Kirby's excellent papers on the diseases of corn, published in the Transactions of the Linnæan Society, are considered as agricultural essays. On this account, it has been deemed expedient to offer to the consideration of farmers, engravings of this destructive plant, made from the drawings of the accurate and ingenious Mr. Bauer, botanical painter to His Majesty, Geo. III., accompanied with his explanation, from which it is presumed an attentive reader will be able to form a correct idea of the facts intended to be represented, and a just opinion whether or not they are, as is presumed to be the case, correct and satisfactory. In order, however, to render Mr. Bauer's explanation more easy to be understood, it is necessary to premise that the striped appearance of the surface of a straw, which may be seen with a common magnifying glass, is caused by alternate longitudinal partitions of the bark, the one imperforate and the other furnished with one or two rows of pores or mouths, shut in dry, open in wet weather, and each calculated to imbibe fluid whenever the straw is damp. Pores, or mouths, similar to these, are placed by nature on the surface of leaves, branches, and stems of all perfect plants; a provision, indeed, intended no doubt to compensate in some measure the want of locomotion in vegetables. A plant cannot, when thirsty, go to the brook and drink; but it can open innumerable orifices for the reception of every degree of moisture which either falls in the shape of rain and of dew, or is separated from the mass of fluid always held in solution in the atmosphere. It seldom happens in the driest season that the night does not afford some refreshment of this kind, to restore the moisture that has been exhausted by the heat of the preceding day." The writer then proceeds to say that it is by these pores, or *stomata*, as we have called them, the seeds of the fungus gain admission; and with respect to the one now before us he is right, according to our supposition. So exceedingly small is each individual spore of the mildew, that Sir Joseph Banks was persuaded that any single *stoma* on the stem would produce from twenty to forty germinating in the hollow beneath it. In such positions, where they are invariably found, they intercept the sap originally destined for the nourishment of the grain, while they prey also on the tissues; so that the grain, by these means, failing to receive its proper nutriment, becomes shrivelled and defective, in proportion to the number of the fungi which thus rob it of its sustenance. The corn sample is accordingly bad to the eye and deficient in flour, yielding, at the same time, a quantity of superabundant and inferior bran.

In all cases where such a little pest as this becomes multiplied to a great extent, it gives rise to fearful consequences. We find it frequently mentioned in the Old Testament, that the "mildew" was one of the Divine judgments for the sins of the people, who, even under that infliction, still failed to return to the Lord their God. Solomon, in his prayer for Israel's prosperity and safety, intreated the Lord that when under the pressure of this particular affliction they might be heard and forgiven. To Omnipotence, number has no limits, and the smallest thing God has made can be so augmented in quantity as to accomplish vast designs.

All the tribes of *gramineæ* seem more or less subject to puccinia, and it is frequently found on the leaves of different kinds of reed, presenting unmagnified the precise appearance represented in the sketch, and which is indeed much the same as on the straw of wheat. The shape of the spores are, however, somewhat different. It does not generally break out into patches till the autumn has considerably advanced; hence rye, which ripens earlier than the other corn-plants, is seldom much attacked by this parasite. It is common to almost all countries; and when the eye of the observer has once become accustomed to it, the true *puccinia* is instantly detected, as well as the dark-coloured spots under the cuticle, which precede its rupture by the spores. Moist seasons, damp situations, over-manured lands, and lateness in the crops, are peculiarly favourable to mildew, which almost always appears in a chance plant of wheat that may have vegetated on a manure-heap. Some say this is invariably the case, but it is far too loose an assertion. The rapidity with which it sometimes spreads is astonishing; only let the circumstance be favourable, and millions upon millions of sporules seem ready to enter the stomata, and germinate beneath them.

Mildew on a Leaf of common Reed.

Puccinia Arundinacea.

The atmosphere is charged to an inconceivable extent with such invisible organs of reproduction. Fries declares the sporules to be so infinite that they rise like thin smoke into the air by evaporation, and are dispersed in innumerable ways; as for instance, by the attraction of the sun, by insects, by wind, by elasticity, or by adhesion. He asserts that in one individual he calculated on good grounds, that there were at least ten millions, if not more. Thus a stoma can scarcely ever perform the function of inhalation without taking in more or less of these sporules; and it is a happy circumstance that they refuse to grow except in certain places, and under peculiar conditions; for if their vegetation were general, the produce of the earth would be almost entirely consumed by them. There is no subject on which grosser mistakes are made, even by writers well-informed on other topics, connected with these fungi. The cause is, that attention has not been properly paid to it, from its apparently recondite nature. But it is hopeless to expect a systematic adoption of remedies while the veil of ignorance invests the cause of disease. It was curious to see, in the speculations on the potato disease of 1845, how vague the ideas of their authors were respecting the fungi. But the great improvements in modern microscopes will be attended, it is hoped, with the increase of much important knowledge. Under the able management of Mr. Berkeley and others, these instruments have already done wonders; and what a number of otherwise listless winter hours might an agriculturist pass, with the aid of a good Argand lamp, in acquainting himself with these little pests which constantly attend his labours. Farmers' clubs have multiplied throughout our rural districts, and every one ought to possess a microscope. There would be always found one or more members able to exhibit this instrument, and others would soon learn its use. Ministers might sometimes attend at such meetings, and would find revealing the secrets of nature no unworthy or ineffectual step towards awakening attention to the more weighty objects of their sacred calling. The author has more than once shown these corn diseases to the members of a farmers' club, who viewed them with extreme interest. Nothing can be more simple. To show the *puccinia graminus*, or mildew of the wheat, the exhibitor should first strip off lengthwise a little bit of the affected straw, and let it be viewed as an opaque object. The thick clustering of the spores, as delineated in the first drawing of this chapter, might be easily pointed out, as well as the way in which they

rupture the cuticle: an half-inch achromatic object-glass, with a low eye-piece, will suffice for this; with a higher power, and bits of cuticle and straw, cut so thin that the light may easily be shown through them from the mirror, the stomata would be seen, and the vegetation of the spores on the mycelium in the cavities beneath them. Lastly, a small piece of one of the dark patches might be taken off with the point of a pin or of a small penknife, and laid on a strip of glass. Moisten this with a little drop of water, and cover it with a small fragment of the very thin glass sold by opticians for such purposes. Place it on the stage of the microscope, show the light through it, and look at it with a quarter or eighth of an inch achromatic. The structure of the spores, the division of the chambers, the stalks, and every part of them will become distinctly seen, just as they are depicted in the second drawing. The observers would become by these means perfectly acquainted with this fungus.

It is a common error to say that wheat which often appears covered with a black sooty fungus, dusting the ears all over, and accompanied with signs of general decay, is *mildewed*. Although this dust is a fungus, it must not be confounded with puccinia. Its botanical name is the *cladosporium herbarum*, so called from the Greek work *klados*, a branch, because the spores are terminal on small and pointed branches. This fungus is undoubtedly always accidental to some previous disease, and is only superficially attached to a decomposing plant, while the ear appears as here represented. There is no symptom of the sporules having, as in the cases of *puccinia*, entered at all into the tissues of the plant, and having caused any deterioration of the vegetable system. Even the naked eye may detect a difference in the general effect, but the microscope shows an entire and perfect distinction. There is not the slightest resemblance between them. The confusion of ideas consequent on such ignorance may be readily conceived, while palliatives have actually been given to the world in various shapes fostering the error. Where the soil is stiff, or boggy, and when winds have injured the crop, or the rain laid it on the ground, it becomes unhealthy: then the *cladosporium* seizes it; but the cause, and therefore the remedy, is not the same as in the case of true mildew. We see from these facts, that truth only results from careful research and accurate examination. There is not a thing, however minute, in the material scene around us, which may not afford some hint for our benefit:

Ear of Wheat attacked by the Cladosporium Herbarum.

——————— Nothing so slight
Which in nature sends not forth some light.
QUARLES.

The next question that suggests itself to us is—What remedies may be successfully applied to check the devastating growth of puccinia, or corn mildew? Although its botanical character is now so well known, the remedies hitherto suggested have been principally conjectural. Mr. Knight, who was a most careful and experienced observer, expressed his persuasion that when fogs come on after a very dry time, the wheat-plant is more than ordinarily subject to this blight. This opinion is in unison with the supposition in the preceding pages, relative to the action of the *stomata* under such circumstances. Hence the obvious method of guarding against mildew in places particularly subject to its influences, is to endeavour to procure the earliest varieties, which may arrive at maturity before the autumnal fogs extensively prevail. More observations are also wanted as to the effects of soils on the growth of this fungus, and especially whether heavy soils are really more favourable to it than light ones. There is as yet little more than surmise on these points, which is always unsatisfactory. Nor is it well decided whether spring wheats are less liable to it than winter wheats, though an opinion that such is the case widely prevails. Agricultural societies should make all these things matter of accurate special inquiry, which can only be known from practical men.

The certainty that all the gramineous tribes are liable to mildew, renders it very doubtful whether the extermination of this evil can ever be expected; but, unquestionably, much may be done towards checking its injurious diffusion to any alarming extent. The proper method is, to consider what remedies may be safely recommended, and to try them carefully. The following are undoubtedly worthy of attention:

1. An endeavour as inexpensively as possible to change the texture of soils by amendment by mixture, where mildew has long obstinately prevailed. The farmer should learn that the mechanical state of his land is just as important as the chemical. Glass, which refuses to part with its alkalis when in a solid state, if brought into contact with water, parts with them easily when moistened, after being finely pounded in a mortar. Any person may convince himself of this fact, by laying a lump of wetted glass on turmeric paper. No result follows. Now, reduce the same piece of glass to fine powder, and wet it; the turmeric paper turns red, indicating that an alkali has been set free. Hence the fine mechanical division of the soil effected by judicious mixture of more friable materials, may produce great results in giving out organic compounds, whose tendency is to strengthen it against the attacks of disease. This is only one instance out of thousands, to show the importance of science to a class of men long entirely neglectful of its advantages, but now becoming more aware of them.

2. A careful notice of many places where mildew has prevailed, will at once satisfy the observer that they have been so situated as to be subject to the evils of too much shade, or want of free circulation of air. Letting in more air and light in these localities, by obvious means, would be, in such cases, the best mode of proceeding.

3. There is no doubt that over-luxuriance in early growth is favourable to the mildew. The intelligent farmer will know best how to check this, whether by feeding it down with sheep for a few hours in the day-time, or other methods. This must be a matter of experience, keeping only the design in view.

4. The desirableness of growing early varieties in places subject to mildew. The reasons have already been considered.

5. Another plan worthy of being adverted to, is the avoidance of manuring immediately before setting the seed.

6. Attention should also be given to hoeing the wheat crops in the early stages of growth, and taking great care to free them from all weeds. Mildew will seldom prevail to any extent where this precaution is taken; but wherever there are many weeds on the land, the straw will be generally found more or less affected by it. The author can say from experience, that he has seldom, if ever, failed to meet with it in unclean lands.

Wherever the farming is of the best kind, where these precautions are taken, and where drainage is good, this fungus will not be found in any alarming degree. Just as the clean skin of animals is a defence against nauseous living parasites, so, by an analogous method, the soil will be rendered free from the destructive fungi under our present notice. Improved domestic habits in our peasantry are well known as tending to check the spread of epidemic diseases; and, in the same way, a better system of cultivation will avert diseases from our corn-fields, while there is given thereby increased opportunity for the employment of the poor. Mildew was once more prevalent than it is at present; and doubtless its diminution is in a great measure to be ascribed to a better husbandry.

AGRICULTURAL SEEDS.

An astounding fact on the foreground of all inquiries respecting the seeds 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 quarters 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 handfuls, 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. To give the same quantity or even variety of seed to all sorts of land, good, bad, and indifferent, is an error as discreditable as it is common. "Experiments instituted and conducted with care for a series of years, on the quantity of corn which is required to sow various kinds of land in different situations, would doubtless present most important results. But to render these experiments as conclusive as they should be, the land ought previously to be thoroughly drained, in good heart, and under judicious treatment. With these means and appliances to the land, and a few authenticated experiments of the quantity of seed requisite for sowing the various qualities of land, we have no doubt it would be proved that much less seed would be sufficient to produce even better crops than we reap; and though natural causes will always exist to check our hopes of enjoying a prolific crop every year, a considerable saving would annually accrue in seed-corn." Were due care used to avoid all the occasions which we have pointed out of damaging or destroying seed corn both before and after sowing, or rather were care used to avoid such of them as are perfectly under our control, probably about one-half of the quantities of seed-corn at present sown would be found quite sufficient, and the crops from them would be very observably improved.

A laptation of the variety of seed to soil and climate, is not only a general preventive of partial loss of seed corn, but sometimes a requisite to the growth, the health, or the fructification of a whole crop. The change of most good varieties from one soil to another,—provided the soils are not widely different in character—often stimulates the seed, and prevents it from degenerating; but any change from one set of influences to another set of considerably different power—especially as respects the combined influences of temperature and moisture—is frequently followed by disatrous consequences. Thus some varieties of oats—the Angus, and others, which succeed well in most parts of Scotland—do not fill in the ear, but shrivel up after blossoming, in the southern counties of England; and some varieties of wheat—such as the woolly-chaffed white sorts—which succeed well in Kent and Essex, rot in the ear under the comparative moisture of even the climate of Lancashire. Special varieties of peas and beans, in particular require a very nice adaptation to both soil and climate; and as an example of this, the early varieties of peas, in all respects grow and mature well on the hot gravelly soils of the south of England, while the late grey pea, in the same circumstances, produces no pulse and but little haum. Any Farmer, when settling in a district with whose agricultural conditions he is not thoroughly acquainted, will, for a year or two, do well to select only the best seeds which he can find in the immediate neighbourhood, contenting himself with merely cleaning them from imperfect grains and from the seeds of weeds.

The use of only unmixed, unadulterated, undegenerated seeds, is not quite so easy as most young Farmers might suppose, and vastly more important than they are likely to conjecture. Many seeds which appear good have naturally lost their vitality; many, especially of the clover classes, are, by chemical appliances, doctored from a state of rottenness into an appearance of soundness; many, of almost all sorts, are mixtures of good, bad, and indifferent; many have been procured from dwarfish, stunted, or unhealthy plants; and many belong to degenerated, obscure, or worthless varieties. If rape seed have not been procured from the strongest and largest rooted plants, it will not, even on the best soils and under the best treatment, produce a good crop. If the seeds of carrots or of mangel wurzel have been obtained from plants with small, deformed roots, they will, in any circumstances, produce a poor and sickly growth. If the corn-seed of wheat, no matter how plump and good-looking in itself, belong to certain unprolific varieties, it may not yield much more than three-fourths or four-fifths of the crop which would rise from seed of the choicer varieties. If turnip seed be mixed with the seed of other plants of the genus Brassica, or have been obtained from plants of small roots and degenerate character, it will probably produce the merest and most wretched apology for a crop.—*(To be continued.)*

SHEEP-SHEDS AND BOX-FEEDING.

From the [illegible]ford Times.

The backward state of the Turnip crop this year, and the scarcity of keep for stock, during the coming winter, has had the effect of lowering some of the cattle markets, although it is well known that the actual quantity of stock in the country is small. Under this combination of circumstances an increased interest becomes attached to that branch of agriculture which may be called *the manufacture of beef and mutton;* and any suggestion really calculated to produce a better economy in the manufacture will be acceptable to the farmer and useful to the community.

For there is a great deal of delusion on the subject of feeding stock: the profits appear larger than they really are: and, especially in those particular counties where the breed is celebrated, the sort of gambling pleasure in mere buying and selling, and seeming to pocket a few pounds *in cash* by the transactions, has a tendency to blind men to the expense and waste with which the animal has been fed; and what is more to be lamented, is apt to pre-occupy a good deal of the attention that should be given to a better cultivation of the soil, as the *direct* source of food *for man*. But it is not uncommon to hear those who have more closely calculated the small profit that is really derived from stock, say that if it pays in no other way, the farmer is reimbursed by the manure left by it for the land. By this argument many are induced to employ a large capital, in time, as well as money, in buying and selling, and attending fairs and sales, while their Wheat crops and the state of their arable land exhibit a miserable want of even ordinary outlaw in both, and a ruinously erroneous application, after all, of the manure which is to be the paymaster of all this gambling.

I call it gambling, because as long as the arable land of a farm is left half cultivated, the capital laid out upon stock, if it ab-

sorb the farmer's means, is invested in the *more hazardous* speculation in preference to that which is less so. If a single animal die, or become diseased and expensive, the small margin of *clear profit* upon all the rest, in a small herd after the value of their food, attendance, and interest of money is deducted, is reduced almost to nothing: and the same applies to large as to small herds, because the liabilities are on a larger scale. This remark is of course pointed to those too frequent cases where the capital is entirely spent upon stock to the detriment of *cultivation:* I need not add, to the injury of the labourer, and the ultimate loss of the public at large. But, on the other hand, if the land be fully cultivated (to a much greater depth than is commonly done;) the manure made in *the best manner*, and applied in *the right way*, then the more stock can be kept, the more cheaply the land will be manured: and only then.

In order to understand the truth of this, the first thing to be done is to disabuse our minds of the absurd notion that the manure has any fertilising properties that were not contained in the food which the animal consumes. A common idea it is; but ignorant, and mischievous in its effects upon farming practice, beyond what would be readily imagined. Far from having become richer, the food has become considerably poorer, by the loss of what has been taken up to supply *animal heat* (which is the greatest because the most unseen robbery of all): secondly, what has gone to create *fat*; thirdly, what has become *flesh*, and supplied the waste of muscular action; and fourthly, the mineral part which has gone to produce *bone, horn, hair, milk*, &c.

When the animal is driven to market, the substances which it has for these four distinct purposes, abstracted from its food, are virtually *sold off the farm*. The first is what the chemists call CARBON, the second HYDROGEN, the third NITROGEN (the most valuable of all, for it is a main essential in Wheat flour), and the fourth consists of LIME, SULPHUR, and PHOSPHORUS.—And all of them, except the second, were lost in combination with OXYGEN. But these same substances, carbon, hydrogen, nitrogen, and oxygen, form *the whole organic elements of fertility and vegetation*, all the world over: and what the animal has appropriated, the soil has lost.

Now it is well known that when a field is out of condition, the quickest and cheapest restorative is *to plough in a green crop*, as of Vetches or coarse Clover. It is practised to a great extent in America, and on the continent; but in England the demand for animal food, added to the intense love of buying and selling stock, has confirmed the practice of always eating off (where it is not mown), under the idea that the increased price obtained for the fattened stock is all pure profit; and this again has led to the notion that the manure left on the field after the crop is consumed, is more valuable to the land than the crop itself if ploughed under. Nothing can be more contrary to truth.—What the animals have gained in weight and quality, the field has lost; and that is not the whole loss: *every breath they have taken has exhaled a portion of their food into the atmosphere:* for breathing is the combustion of carbon in the body, and the breath proceeding from the lungs is the smoke from the furnace that sustains the vital heat of a living animal. The chief bulk of the growing crop was derived from the air: the act of respiration restores a part of it to the air again. To plough it under is a direct nutrition to the soil; and I speak, of course, of a soil that needs enrichment.

Such are the facts which have been *proved* by practice, in corroboration of chemical investigation of a somewhat modern date. They are well known to men of science; my object is to translate them into intelligible language; for chemists write and talk (and I verily believe *think*) in an unknown tongue, until they begin to forget that the true use of words is to communicate ideas.

And now for the application of these facts.

If a farmer's wife were to try to make her husband's tea in a tea-pot without a lid, and with a gaping crack in the bottom of it, she would show him the best imaginable picture of his own farm-yard, and its manufactory of manure. And if he were, previous to eating his dinner, to place it out of doors for half an hour, (and there chanced to be a brace of hungry pointers at hand) he would carry out, in a very striking manner upon his own proper person his usual mode of applying nourishment to his land.

If even the best-made manure be *minus* that portion of the food which has gone to build up fat, muscle, bone, and bodily warmth, what must be its condition when its has been exhaled by the thirsty sun of summer—(*no lid to the tea pot!*)—and washed down the nearest ditch, by the pelting storms of winter—(*the crack in the bottom*)—and again exposed piecemeal on the dry fallow in August for the sun and wind—(*those two hungry dogs*)—to make away with. and yet this is the process pretty commonly adopted by the exposure of the manure for days and *weeks* before it is ploughed under the soil. I use these homely comparisons in order to exhibit the mischief in its strongest light, to those who may not be accustomed to consider it with attention; and I now add a short, and I trust intelligible, description of the latest and best mode adopted for preventing this waste, upon some of the best-managed farms in England and Scotland.

The remedy consists in the *box feeding* as it is called, of the larger cattle, and the *shed feeding* of sheep. Along *the walled side* of a shed, about 13 feet wide runs a gangway 3 feet in width; the remaining part being dug out a foot or a foot and a half deep, and the sides of the sunk part battened with brick-work rising 6 inches above the surface of the ground: the bottom should be pitched, or laid with coarse stone-work. Allowing for the brick-work, this leaves a kind of shallow pit 9 feet wide, running the whole length of the building: this is divided into stalls or boxes 9 feet square by means of wooden slabs nailed upon bars fixed into posts, in the ordinary manner in feeding-sheds, to separate the cattle, which are left loose, each in his own box.

All the straw upon the farm should be cut into chaff, (except what is used for litter to the horses.) The chaff is scattered under the animal every day, by a boy, (who is able to attend to a great number.) It is trodden down by this means with the manure int a compact mass, and is so absorbent, that the stock are kept *perfectly clean and dry*, and no drainage whatever is required. The accumulation is found to rise about 3 inches in a week. There is scarcely any escape of ammonia, in consequence of the same absorbent power of the cut straw continually forming a fresh surface. If sprinkled, however, occasionally with sulphuric acid well diluted with water, the value of the manure would be much increased and a perfectly pure atmosphere insured at all times, with little expense. The manure is ready for immediate use *at any time*, and is much smaller in bulk for carting to the field; it requires, of course, no turning. The manger of each box should be in the corner, and a water-trough between every two.

The sheep-sheds are somewhat different in plan, arising from the different requirements of the animal: the first of which is, that it should be kept high and dry, and *not too warm*. Naturally it is the inhabitant of mountains and high downs; and this should never be forgotten by those who would keep it in health. The sheep-shed, therefore, should have no wall on either side. A light thatched roof supported on Larch poles about 6 feet high, with wattled hurdles running down the outside of the shed, a gangway in the middle, and pens about 7 feet square on each side; the ground hollowed out 2 feet deep, floored over by a framework (level with the surface) on which, narrow boards are nailed *leaving interstices three quarters of an inch wide between each board.*

This is Mr. Huxtable's plan; and those who have endeavoured to improve upon it, by erecting more substantial buildings, have not found them answer so well. There is an open space of 2 feet for free ventilation under the eaves of the thatch, which projects over a little, to protect the pens from rain. The sheep-sheds are, of course, most useful on heavy-land farms, where the treading of the flock is not desirable on the soil.

The advantages of these modes of feeding stock need no recommendation beyond the reports of those who have tried them. The consumption of much less food, quicker fattening, and complete preservation of manure in the best state for the land, are points worth the consideration of every farmer; and have been the uniform results attending them. It is a pity, therefore, that any should be ignorant of them: and it is for this cause that I

have made them the subject of this letter, which I heartily dedicate through the useful columns of the *Hereford Times*, to the farmers of a county whose beauty and fertility render worthy to be, as I hope to live to see it, the best-farmed county in England.

From the Scottish Farmer.

ON THOROUGH DRAINING.

The first question that presents itself regarding the drying of the land is, What is the best course to adopt for *cheapness, efficiency* and *permanency?* and the many various and opposite opinions entertained on these points induce me to think that theory is now going a-head of practise; for where we have such men as Mr. Smith of Deanston, and Mr. Mechi of Tiptreehall, advocating principles of draining directly opposite to one another, and each affirming his own plan to be the best and most efficient under every circumstance, and on all soils and subsoils, whether mixed with clay, gravel, or iron ore, either for surface water or bottom springs, &c., the inexperienced drainer is left in a dilemma, not knowing which course to adopt as the safest and best way of drying his land. Now, with all due deference to the valuable opinions of Mr. Smith and Mr. Mechi, I beg to state, from my own experience in draining, and observations on soils and subsoils, that no definite rule can be laid down (in this country at least) for the thorough drainage of land; and the attentive observer of the strata of the soil will readily perceive, that different methods of drainings must be resorted to, in order to give opportunities for the water to escape freely from the various descriptions of soils, and also the absurdity of laying down fixed rules regarding the depths of drains, and the distances they should be made apart. For instance:—the one side of a farm, or even a field, may, by the Deanston system (two-and-a-half to three feet deep, and from fifteen to twenty-five feet apart,) be rendered sufficiently dry for all agricultural purposes, and the healthful growth of vegetation. But on going over to the other side of the farm, Mr. Mechi's system (from four to six feet deep, and from forty to sixty, or even eighty feet apart,) find it more economical, and better suited for effectually drying the land there. As in the case of bottom springs, I have often seen one deep drain, properly marked off, and perfectly executed, render several acres of land thoroughly dry to a sufficient depth, for allowing the roots of any ordinary crops to extend their fibres in search of food with perfect safety. Therefore, to mark off drains on a field requires an experienced person, with a general knowlege of the properties of soils and subsoils, to go over the ground carefully, and study the nature and lay of the strata, which may be known by digging holes, or examining any contiguous bank, where a section of the layers can be seen. After ascertaining the nature of the land, and whether the principal mischief arises from surface water or bottom springs, such a person will then be able to determine pretty near what course of draining should be adopted for permanently drying the land, and at the least possible expense.

In stiff tenacious land, much infested with surface water, and where no porous bottom could be got at a depth of five or six feet, I prefer the Deanston system of drainage—eighteen feet apart and about thirty-three inches deep, five inches wide in bottom, and filled with stones (of from two-and a-half to three inches diameter) to a depth of ten inches. But where an open or gravelly bottom can be reached, even at the depth of five or six feet, I should consider Mechi's system of deep drainage well adapted, and capable of being performed at much less expense. The deep drains with pipes are the thing for moss or boggy land,—in fact, it is almost useless to put small drains with small broken metal into such soils.

In all cases where stones are anything like easily got, they should be used. Pipes may answer very well for a time, but stones will be the most lasting, and when clean and carefully put in, are very likely to prove the best working drain.

It is almost needless to add, that all drains should be cut clean and straight forward, with uniform slopes on sides and bottoms, and the greatest possible care should be taken in filling in the stones free of all refuse; for unless these rules are strictly attended to, parties may rest assured that their draining of whatever description will give no satisfaction for any length of time.—*P.*

From the Scottish Farmer.

THE RISE, PROGRESS, AND PRESENT STATE OF AGRICULTURE IN THE NORTH OF SCOTLAND.

In the course of last summer the Earl of Devon, late chairman of the Irish Land Commission, paid a visit to the North of Scotland, and devoted part of his time to an inquiry into the rise, progress, and present state of Agriculture in Aberdeenshire. In the progress of his visit he spent much of his leisure with Lord Aberdeen, and was taken by the noble lord over a great portion of his lordship's estates, where he had the privilege of seeing some of the finest farms in the country, and becoming acquainted with all the circumstances under which they had grown up from a state of the rudest husbandry to their present condition of high perfection. Let us follow his lordship over some of these farms, and mark the progress of their interesting and important history.

When the late Lord Aberdeen was led from various causes, to turn his attention to the improvement of Agriculture, his first study was to encourage the settlement of practical Farmers on his estates, who were possessed of some capital, and had spirit and enterprise enough to conduct such improvements as circumstances might suggest. To these he gave leases, and right to add to their farms such crofts and grazings as were held in yearly tenancy by a number of cottars, who were to be each and all allowed to die out. The size of the new farms he fixed at from 200 to 350 acres.

Standing one day on the top of one of the hills near Haddo House, Lord Aberdeen pointed out to the Earl of Devon a wide expanse of cultivated land, observing, 'that was heather—and that was moss;' 'and that,' added his Lordship, pointing to a splendid field of yellow waving corn, 'was stones.' And then the Farmers who accompanied them could tell how the heath was taken in—the moss improved—and the 'blue heathens blown from their inheritance.' Hear his story:—

When my father entered on this farm fifty years ago, he had only fifty out of nearly 300 acres under crop. This he called his infield, and his first care was to see this infield improved.—It was his conviction, that the great thing to be gained was depth of soil; and for this end he used to dig large quantities of turf from the outfield, cutting it off so as to leave a plain surface; and this turf he put into a large hole near the byres, where it was mixed with the wash and stable dung. He thus formed a compost, which he spread over the infield, dug part of it over with the spade, and ploughed in the rest with a plough, which now a-days would be considered a very rude implement. He next endeavoured to increase the breadth of his infield by trenching and the spade, using the stones which he gathered from the outfield to form fences as his parks became enlarged. Then he cultivated the best of the outfield with a view, in the first place, to get more grazing, and ultimately to improve his green crops. In taking in the outfield, his plan was to collect all the moveable stones and put them into the hollows, until they brought the hollow to within—say two feet of the surface, which was filled up with turf and moss, and covered over with the farm-yard compost. A course of cropping gradually suggested itself, and such was the effect of this system of farming, that when my father died, I succeeded to the farm under his lease, and with about 120 acres in an arable state. Since I entered on the farm, I have taken the whole of the outfield in, and added two or three crofts, the crofters having died out, except one, who lives in his little hut down on the hill-side there, and is employed on the farm. The younger natives of these cottars' families are either farm servants, or employed at some trade. The first improvement I conducted was draining the moss, which is now under a heavy crop of oats. In conducting my draining operations I used up all the stones I could collect, and having assisted my father to fill up the hollows, as I have described, I now assisted myself by opening them up again, and taking the stones to make my drains. The next step was to

clear the land of the 'heathens'—a name we apply to those large boulder stones which have no root, and which are yet to be seen in many parts of Scotland. These stones I blasted, and required them all to build fences and improve my farm steading.—And then with trenching, draining, and plenty of compost, I got the outfield into good condition, and had very fine crops. But it was not until I applied lime to the clay soil that it became friable; nor until I got bone-dust for my green crops, that my turnips were such as induced me to turn my attention to the breeding of stock; and then it was only left for me to apply a fair proportion of guano in order to have a farm which I think cannot now be well excelled on his lordship's estates.' To this the Farmer might have added, 'and but for the lease which was given to my father, which has been renewed under liberal terms to the son, the farm would yet have been a barren moor; and the rent, instead of fifteen shillings an acre would have been too high at half-a-crown.'

From the Agricultural Gazette.

TUSSAC GRASS.*

Professor Balfour read the following communication on Tussac Grass, addressed to the Secretary by Mr. Bruce, of Sumburgh, residing at Sand Lodge, in Zetland:—

In the month of May, 1845, Mr. E. Standen brought to these islands two plants of Tussac Grass (in small flower pots), which he had procured from the Royal Botanic Gardens of Kew, being two out of nine plants that had been raised there that season for seed. One plant he presented to Mr. Edmonstone, of Buness, in the Island of Uist; the other he gave to me, and I immediately transplanted it into a warm border in the garden, where it soon took root, and rapidly increased in size. In the month of October following, the garden door having been carelessly left open, two or three ponies got in and walked straight to the Tussac Grass (for the marks of their feet were hardly to be traced elsewhere); they tore the plant up by the roots, nibbled at, tossed about, and separated it into three parts. The largest of these I again planted in the border, with the intention to leave it there to seed; the other two parts I further separated, and planted some in flower-pots, some in the garden, and some along the sea-shore; they all readily took root, but the latter disappeared during the winter, having been destroyed by sheep or cattle. In April 1846 I again separated the roots of all the smaller plants, and had from them 180 offsets, some with roots, and some without showing the least vestige of a root; these I planted, 2 feet apart every way, in a small outside garden, where they soon took root, with only one exception. This garden had formerly been the site of a peat stack, so that the soil on one side had a greater proportion of peat moss, while that on the other side was principally composed of a stiff whitish clay. The plants on the peat moss side have thriven best, are larger, and bore a number of offsets: they measure round the root just now from 16 to 18 inches, with blades of Grass from 16 to 24 inches long, and have about 30 offsets to each plant. Early in next spring, if all goes well, I intend to remove every other plant, divide the roots, and plant out the remainder of the garden, so as to have each plant 4 feet apart every way. By this arrangement I will have next summer about 2800 plants, the produce of one half of the original plant. The other half, which had been left to go to seed, had disappointed me this year, as not a seed-stalk appeared. It measures about 4 feet round the base; with leaves about 6 feet long. The plants have now kept green and fresh for two winters, and were very little affected by frost, wind, or rain. The experiment has led me to the following conclusions:—1st. That where a plantation is to be formed, the ground must be enclosed, so as to keep cattle out: the leaves are strong and tough, and afford a firm hold to cattle, who toss them up by the roots, even when six or seven months old. 2d. That, from a few good year-old plants, a large piece of ground may be readily planted out, by dividing the roots, and replanting each individual offset. 3d. That cattle may be fed from the plants at any season of the year, by cutting the Grass for them as it is wanted, without the trouble and risk of making into hay. The crop from my largest plant, just now cut down to within a foot of the ground, weighs 7lbs.—Mr. Charles Lawson, jun., stated, that of the several packages of seed received through the Society and Dr. Hooker, very few plants were raised. After trying every possible manner, he found the most successful was first to damp the seed a little (not to steep it), and sow it in a peaty soil, keeping it in a moderately moist temperature till the plants were about 1 or 2 inches in height; then putting them singly into pots 3 inches in diameter, and gradually removing them into cooler situations till about 3 or 4 inches high, when they safely may be planted out in the open air; and when once fairly established, they may be easily propagated by slips from the roots. Mr. Mathieson of the Lews, made a small plantation by way of experiment near Stornoway. Mr. Lawson visited it in september last, and found the plants in a very thriving condition; they were about 4 feet in height, with graceful drooping leaves of from 5 to 6 feet in length. Several had seeded in the month of April, and young plants were coming up all about the enclosure. In Orkney Mr. Traill, of Woodwick, has several plants in his garden at Westness. He has also made small plantations in different soils and exposures. His plants had also seeded about the same time as those of the Lews, but unfortunately some sheep had got into the garden and had attacked them, in preference to several vegetables growing there. He was at Westness in August last, and measured some of the specimens, the best of which was about 3 feet in height, the blades about five feet in length, and the root measured four feet round, having a sweep with the leaves of about eight feet; all around was seen the Grass coming up thickly, owing to the disperson by the sheep. Mr. Traill is of opinion that the climate has much greater influence than the soil, as he has them growing in soils of every description. Mr. Lawson and his father were desirous to obtain every information as to the properties of this Grass, and had submitted specimens from their own nursery, and from the Lews, to Professor Johnston for analysis. He found those plants from the Lews contained a greater proportion of succulent matter than those from the nursery; also, that the under portion contained much more nutritious matter than the upper. He also found that potash extracted a considerable additional quantity—which water did not take; this he believed also to be included in the proper nutritive matter of the Grass; in protein, or muscle-forming compounds, it is also rich; in fact, as much so, in a dry state, as dry Wheat or Oats. The plants in Messrs. Lawson's nursery, though pretty strong and bushy, have not attained the height and luxuriance of the Lews and Orkneys; the smoke from the city seemed rather against them, and it was found that the sweetness of the stem attracts the grub. Messrs. Lawson have tried them in every description of soil, but find they thrive fully better in peat. Tussac Grass will grow in undrained land; still a partial drainage is found advantageous, producing much larger and firmer stems. Their own plants have never seeded, but they have growth from seed saved in the Orkney and the Lews. Small plantations, by way of further experiment, are being formed in various localities: by the Duke of Sutherland at Tongue and Scourie; Lord Abinger, at Torlundy; also by several parties in Wales and the south and west of England, and several parts of Ireland.

* Tussac Grass, a plant indigenous to the Falkland Islands; the seed was first imported to England about 4 years since, at the price of 10 dollars per pound.

Scouring in Lambs.—Powdered chalk ½ oz.; ditto Catechu, 2 drachms; ditto Ginger, 1 drachm; ditto Opium, 15 grains; Peppermint water, 4 oz. To be carefully mixed, and a small table-spoon-ful to be given to each lamb. It will be prudent to change the pasture. If on opening the first stomach of a dead lamb you find a quantity of coagulated milk, then 4 drachms of carbonate of magnesia dissolved in warm water should be given previous to the above medicine.

A Monster Turnip.—A turnip, forty-two inches in circumference, and containing a goose, with a sufficient quantity of apples to make sauce, and also a letter, expressing a hope that the present would be acceptable, was forwarded to a resident in High-street, Colchester.

From the Farmers' Gazette.

A REPORT

OF THE RESULTS OF THE EXPERIMENTS MADE IN 1847, ON M. ZANDER'S METHOD OF PROPAGATING POTATOES FROM SEED.

(Under the Patronage of the Royal Dublin Society.)

COMPILED BY WM. HOGAN, ESQ.

On the 5th of November, 1846, the Royal Dublin Society resolved to print, as an appendix to their proceedings, a letter on a new method of propagating potatoes from seed, and the council procured a number of copies to be circulated in every part of the country.

M. Zander, of Boitzenberg, in Prussia, was the promulgator of this method, by which he stated that full grown potatoes would be procured from seed in one year, and that hitherto seedlings raised on his plan had resisted the prevalent disease.

I now proceed to announce the result of the experiment, so far as it has yet been ascertained.

Seed was procured from Germany, from M. Zander, and also from M. Göringer, of Rippoldsau, in the Grand Duchy of Baden. This seed was distributed very generally; and it, as well as English, Irish, Scotch, and French seed, was sown in various sorts of soils and climates, from the county of Donegal to Cork. M. Zander's plan was followed sometimes closely, and occasionally only partially. In general, success was proportionate to the adherence to the method he recommended.

The experiment was also made in various parts of England. One in Worcestershire was under my directions, and in a great degree under my superintendence, and very fair and promising specimens of the result were produced at the recent exhibition of agricultural produce. The soil was a loamy sand, well pulverized and in good order—I should suppose similar to such as M. Zander has under his care.

Before I enter into detail, I will state what is new in the history of potato culture, but is now abundantly proved, that fine, full-grown potatoes may be procured from seed in one season. Hitherto the general opinion was, that it required three years to obtain full-sized potatoes from seed, and that only a few plants out of a large number would produce potatoes of any value, or worth the time and labour bestowed on them.

There were upwards of fifty competing lots at the late exhibition, and they demonstrate to every one how easy it will be, by this mode of cultivation, to replace old, worn-out varieties, and to supply others which are new and valuable. The produce was abundant; four lots at the exhibition weighed, when taken from the ground, about 2 stones: they were certainly the best which 60 plants produced. The rest of the produce weighed upwards of 4 stones, of which about one-half were small; one stone of the 4 was boiled, and those who ate them assured me that they never ate drier, more mealy, or better potatoes; some roots produced 5 and 6 lbs. each, but the average produce was about 1½ lb. per plant, or, more accurately, 1 stone from 10 plants. An Irish acre contains 7,840 square yards; 6 plants grow on a square yard, so that the produce, at the rate of a stone to 10 plants, is upwards of 29 tons to the acre. Those potatoes were dug out in my presence; I am, therefore, able to speak more decidedly as to the results. Mr. George Roe, to whom I had given about 150 seeds, weighing less than 1 scruple, had a produce from them of 18 stones.*

Most of the lots at the exhibition were very fine, but some few were small and poor, and the very great inequality of the lots encourages the hope, that with more experience in this new method of cultivation, even the best of this year will be surpassed at the next exhibition; for it is probable that in many, and, perhaps, most of the instances, there may have been some mistake as to the mode of management, and some trifling circumstances which escaped attention. Dr. Lindley, in the preface to his valuable work on 'The Theory of Horticulture,' page x., makes the following judicious remarks:—"The difference between failure and success in practice usually depends upon slight circumstances, very easily overlooked, and not to be anticipated beforehand, even by the most skilful; their importance is often unsuspected, until an experiment has failed, and may not be discovered until after many unsuccessful attempts;" and the very unequal merit of the lots of seedlings at the exhibition, all derived from the same seed, and, as the exhibitors supposed, all cultivated on M. Zander's plan, fully justify Dr. Lindley's caution. Some of the lots, had they stood alone, would have sanctioned the assertion that the plan had failed, while the majority would be considered fine specimens under any method of culture, but even in the most successful experiments hitherto made, instances of failure arose, which it is difficult to account for. I have preserved one instance—a plant which was sent to me by Dr. Daly, of Ramelton, which was killed a few days after it was put out, and had seven perfect tubers; it has four small tubers still attached, which are quite sound, and apparently fresh. I have another, in which the plant died about a month after it was transplanted; there was no sign of disease, and the tubers are quite sound. Perhaps there are many other instances which are at present inexplicable, but which, when understood, may throw much light on the theory of the growth of seedling potatoes.

As to liability to disease, in this variable climate there have been instances of diseased seedling potatoes, but I hope to show that the seedling, as a plant, is naturally stronger, and more perfect than that which springs from the tuber, and that, by attention to its peculiarities, and good husbandry, it may be reasonably expected to be a hardier, as well as a more perfect plant, and as free from disease in this country as in Germany.

I shall now proceed to give an account of the experiment made under my own superintendence, premising that, from all the accounts I have received, it will be a fair and general report as to all others which were tolerably successful.

The seed was sown on a moderate hotbed in March, and the plants were put out in drills when they reached a height of four inches. The seed sprouted very unequally. In general, English and Irish seed was fit to put out two or three weeks before the German, but in other cases, the German seed came up as quickly and as well as any other, if not sown too deeply.

There were two drills of potatoes grown from sets, of a good and healthy sort, in my friend's garden, which had just come above the ground, when the seedlings were ready; and two drills were planted along side of them. The plants from the sets grew, as every one must have observed in a potato field, when the plants are vigorous and healthy—they shot up stalks, and bore strong leaves; but the growth of the seedlings was very different. They bore large and numerous leaves, and the stalk did not shoot up until those from the sets had obtained the height of a foot. I pulled off some of the finest leaves from both; those from the sets were ten inches long, but those on the seedlings were fourteen, and broad in proportion—The young seedlings without stems, with their large succulent leaves, looked more like fine turnips. I believe it is generally considered, that leaves act not only as the lungs of a plant, but also in some respects as the stomach, in imbibing and assimilating nutriment. The flax, for example, extracts a large portion of the constituents of its fibre from the atmosphere. Dr. Lindley, in his work already alluded to on the theory of agriculture, page 41, says, "the leaf of a plant is its lungs and stomach;" and in page 55, "the leaf is an organ of digestion and respiration, and nothing more." Here, then, we have already a marked difference between the plants; and, as plants, the seedlings have an advantage.

When the plants from sets, which for convenience I shall in future call setlings, had attained the height of a foot, the seedlings began to shoot out stalks which were very thick and short-jointed, and not more than a third of the length of the joints of the setlings, but the plants soon reached the same height and came into blossom together. The setlings, as I believe is generally the case, bore a stem from each eye of the set, but no branches; the seedlings shot out branches in all directions, as

* By the report of Mr. Robinson, the steward, it appears that the soil in which Mr. Roe's potatoes were planted, was rather worn out; that no manure was used, and that the only preparation for the crop was good trenching; about three weeks after the plants were put out, the space between the hills was dug a foot deep, and some rotten tan dug in, to open the ground. *The crop was occasionally watered during the very dry weather*, and M. Zander's directions were followed as closely as possible.

large and strong as the continuation of the parent stem, and those branches blossomed freely and bore berries. The difference between them as plants continued, therefore, as marked as at first. Of course the seedling had more than twice as many leaves, and were, therefore, in a state to assimilate twice as much nutriment; but it may be said that this was no advantage, for it is found that the heaviest and largest tops do not bring most tubers. This is true with setlings, for the stem is comparatively weak, and the roots few, and Dr. Lindley at p. 196 of the same work, says:—"He supposed that the rankness of the vegetation from the whole tubers to be the cause of the diminished crop, for the stems were unable to support themselves, and were blown about, laid, and broken by the wind."

As the disease appeared in 1846, when the plants came into blossom, I thought it might be of use to examine and compare the setlings with seedlings in this stage of their growth. I therefore selected the best setling and had it taken up, and also a seedling which was about as far advanced in bloom. As it happened, it was not either the best or most promising plant.—This was on the 9th of August. I had now an opportunity of comparing the roots, as I had hitherto the leaves and stems, and the contrast was still more striking. I have the roots here carefully preserved, and it will be perceived that the seedling has more numerous roots and that they extended much farther, thus proving that it requires a deeper and better tilled soil for its development, and that it is not so dependent on manure for a vigorous growth. It is said that over-manuring had injured the potatoes in this country—the seedling is certainly independent of this foreign aid, though it is more dependent on good tillage.*

I believe that the difference between setling and seedling is still more strongly marked. The seedling is an original plant, perfect in all its parts. The setling is only the prolongation and continuation of the parent plant, as the graft is of the original apple tree, which only lasts for a limited term of years. The fact as to apples is well known and admitted, and I believe that every one who has lived fifty years will agree with me in saying that the different varieties of the potato which were common in his youth, are now rare, and almost unknown. He must remember when the apple potato yielded to the cup for general use, when the red nose, kidneys, and long flat whites were in their mealy prime, when they were produced in abundance and were in every market; but the case is now altered, and those potatoes are seldom seen in our markets; the obvious reason is, either that they are not now worth cultivating for general use, or else that they cannot be made to grow well and abundantly as they did formerly.†

A specimen of a seedling which produced suckers will elucidate what I have said as to the setling being a continuation of the original plant. The fibre which produces the tuber is not the true root, but rather an underground branch, hence the advantage of earthing up the setlings, and planting seedlings deeper in the ground than they grew in the hotbed, in order to increase the number of underground branches; when freshly taken up, the difference is obvious, the tuber-bearing fibre is thicker than the root, and white, though it soon dries and shrivels up; if it happens to come to the surface it produces leaves and a stem, but in general no branches. Occasionally when the tuber has obtained some size, it bursts an eye, which in the ordinary and usual course would not shoot until the following year; the tuber then has the appearance as though the fibre which bore it ran through it, entering at one end and going out at the other. The shoot thus formed soon finds its way to the surface, and becomes a stem, as in the instance now produced; the underground portion throws out roots and bears potatoes, and the stem bears leaves but no branches, and becomes, in short, a perfect setling, though, perhaps, not so strong or prolific as if the eye had not burst until the following year. I broke off the setlings from this specimen, that I might show them more distinctly; but they still retain the end of the fibre of the parent branch on which they grew. I also cut away half the root from the parent plant; we have thus a seedling and setling in juxtaposition and contrast—one is a branching plant with numerous and spreading roots, the other a stem with few roots. As far as my observation extends, the same distinction is general, though occasionally a setling may be found with a few small branches. I never saw one which bore branches at all like a seedling.

One seedling in the row which I measured was three feet high; it had 12 branches, each at least two feet; all bore blossoms, and there were several smaller branches and suckers; the stem was triangular; each side near the earth measured 5 8th of an inch. Many other plants in the row were as good or better.

The overground stems will sometimes produce tubers, of which I have an instance; such tubers make excellent seed. Sir W. Betham sent a much finer and more interesting specimen to the agricultural museum In support of what I have said respecting roots, I would again quote Dr. Lindley's book. He says, p. 205—"It is no doubt true that we constantly propagate plants from pieces of what are called roots, as in the potato; but such roots are in reality the kind of stem called a tuber, and in like manner other cases of similar propagation are also successful, because that part called a root is in reality an underground stem."

I have now, I think, proved that, as a plant, the seedling is superior to, and has many advantages over, the setling, as to roots, stem, branches, leaves, and flowers, and may, therefore, be reasonably expected to be stronger and healthier.

The late exhibition has fully proved, that seedling potatoes are not inferior to an ordinary crop in size or form; so far, therefore, the experiment has been eminently successful, and a new mode of raising full-grown potatoes from seed—of restoring lost varieties, and introducing new ones, has been successfully introduced into the country by the Royal Dublin Society; and I hope that next year the committee of agriculture will be able to acquire sorted varieties of seedling potatoes in all cases, and that one duty of the judges will be to select such as ought to be brought into use for general cultivation, in order to replace those varieties which have been lost or worn out, as well as to furnish new sorts for farming purposes. I would, from the exhibition of this year, refer to one exhibitor, Mr. H. Barton, who sent nine lots of sorted seedlings, and Mr. Moore has sent, from the society's gardens, some very fine specimens—one long, flat, white potato seems peculiarly promising; also, to one specimen produced by Sir Robert Shaw, which obtained a medal as well adapted for feeding cattle: the produce was at the rate of upwards of thirty tons an acre.

THE EARL AND THE FARMER.—A farmer called on Earl Fitzwilliam and complained that in his hunting excursions with his hounds, he had trodden down a field of wheat so as to do it damage. The earl said that if he would procure an estimate of the loss he would pay it. The man informed him that he had done so already, and it was believed that the damage would be £50. The earl paid it. But as spring came on, the wheat which had been trodden down grew up, and became the best in the field. The farmer honestly returned the fifty pounds. "Ah," said the earl, "this is what I like. This is as it ought to be between man and man." After making some inquiries about his family, the earl went into another room, and returning, gave the man a check for one hundred pounds, saying, "Take care of this, and when your eldest son is of age present it to him, and tell him of the occasion that produced it."

---

*Mr. Cooper, of Markree Castle, in the county Sligo, had the kindness to send me the following report from his gardener:—"I put the plants one foot apart in the drill, and the drills two feet apart; they soon made rapid growth—about the middle of July they far surpassed those planted from tubers. On one root I got 150 tubers, some as large as a hen's egg. I consider that the soil I used was too rich. All vegetables raised from seed grow more luxuriantly than from cuttings, consequently require poorer soil. I have observed this year that the poorer the soil, the less susceptible was the potato in taking the disease; a great deal depends on soil—still I think that the disease was in the air."

†Dr. Daly, of Ramelton, informed me that many varieties, in certain localities, had entirely disappeared; for instance, in his neighbourhood the cup is almost the only existing variety, and the seedling will be the means of renewing the extinct species; and in a subsequent letter he says, I think this is the only way of procuring new varieties. I have 6 or 7 species which had disappeared from this locality for upwards of 15 or 20 years.

From the British Colonist.—(Concluded.)

The effect of intense frost upon a soil saturated with moisture, is to expand it, by means of the water it contains, to a much greater extent than the earthy particles themselves contract; thus surrounding the roots with globules of ice, and at the return of spring, either by alternations of temperature, gradually "throwing them out," or enveloping them when the ground is thawed, in the same stagnant and exhausted medium in which they pined months before. Again, a soil containing much water is longer thawing than one well drained; and even when thawed induces, by the evaporation of the water, a degree of cold, which has been found by the most extensive and accurate experiments to retard the progress of vegetation from two to three, or even four weeks. In well drained soils, the small amount of water they may contain does not expand by being changed to ice, in greater proportion than the minute earthy particles contract, under the influence of the same degree of cold; the return of spring thaws the water and expands the earthy particles—the mutual equilibrium, with respect to volume, is restored—evaporation takes place slowly, and the ground becomes warm—the first rain percolates through the soil, being carried off by the drains, fresh portions of atmospheric air, with its unfailing admixtures, carbonic acid and ammonia, are brought within reach of the roots of the plants, whose functions are called at once into exercise in unison with those of the leaves, under the revivifying influence of sunlight and warmth. It is evident, from these facts, that the *chief* cause of wheat plants being "winter-killed," or sickly, is the presence of too great a quantity of water in the soil—the remedy is effectual draining.

It appears, from numerous observations made, both in this country and in England, that the *baneful* effects of the Hessian fly are generally confined to sickly plants. That insect may live and come to maturity upon the stem of a strong and healthy plant, without materially retarding its progress; but it scarcely ever fails to induce the decline and death of a weak and sickly vegetation. On imperfectly drained lands, the plants must necessarily be in an unhealthy condition, and observation shows that it is almost exclusively *there* that the effects of the Hessian fly are, in general, to be dreaded by the agriculturist.

Elaborate investigation on the part of scientific men in Europe, has satisfactorily exhibited the necessity of the presence of certain mineral substances in the soil, for the due formation of the seed in wheat. A peculiar property possessed by plants, is that of sending out roots in all directions, and when they meet with noxious or unsuitable substances, they shun them, and take another course. In imperfectly drained lands, the water, in the course of the summer, retires several inches below the surface of the soil, until it is protected from the evaporating influence of the heat of the sun; it there remains in a stagnant state; some of the roots of the wheat plant penetrate to the surface of the supermoist soil, but refuse to advance; the presence of the water decreases, in effect, the depth of the soil accessible to the roots of the plants. Those substances which more especially conduce to the formation of the seed in wheat, namely, the phosphates, are diffused throughout the soil in very minute quantities. It is evident, therefore, that the greater amount of soil the roots have access to, the more opportunity they will have of seizing upon those substances which are necessary to the due formation of the seed. Now, in imperfectly drained lands, the roots penetrate only to the surface of the supermoist soil, and are consequently deprived of those phosphates, &c., which the soil so situated may contain. If this unnecessary moisture be drawn off by effectual draining, the soil is deepened in effect, and the roots of the plants have a new and extended range, in which they can search for the necessary substances they require, in order to produce large and plentiful seed. It becomes manifest, therefore, that effectual draining is the most feasible remedy for "chaffy wheat," and "an abundance of straw with comparatively little grain."

A proper application of farm-yard manure, together with a thorough system of draining, will doubtless tend to prevent, for some time to come, the occurrence of similar failures in the wheat crop, without the application of any artificial manures containing the phosphates, such as bone, earth, &c., so much used at present in England upon their more impoverished soils. The effect of draining is to add to a field of ten acres the same amount of applicable mineral substances, which, on undrained lands, is only afforded by twenty.

The opinion appears to prevail among a large portion of the farming community of this Province, that when wheat is injured by the effects of frost, it turns to what is termed "chess."—To those acquainted with vegetable physiology, this formation will appear in direct opposition to the laws of vegetable production. Wheat always remains wheat, but from the effects of culture, climate and soil, its exterior appearance may be materially altered, nevertheless, it always retains those peculiar characteristics which identify it as wheat. The vegetable, whose form and characteristics diseased wheat is supposed to assume, is the Bromus mollis (London.) a species of grass. In consequence of its peculiar nature, it thrives upon those undrained lands which prove destructive to wheat, and until it throws out the flower, it requires a very experienced eye to distinguish it from wheat. The chief difficulty with the farmer, is the appearance of this weed in his fields, after they have been sown with what he considers to be clean wheat. The source of the seed is, however, to be traced, in most cases, to that circumstance. The effect of high winds may, in some instances, occasion its appearance, and where it has *room* to grow, it throws out abundance of offsets, or in technical language, "it tillers" and produces an excellent crop. Similar *apparent* transformations are continually occurring in the vegetable world, on a much more extended scale. In parts of continental Europe, the burning of the pine forests leads to an immediate springing up of birch and other trees; and in this country the oak succeeds the pine in certain soils, in such abundance as to excite both conjecture and wonder as to the sources from which the seed was derived. The action of the plough on arable land, brings to the surface numerous seeds which for years have lain beyond the reach of atmospheric and other influences; and this, coupled with other causes mentioned above, may account for the appearance of "chess," when least expected. The presence of the noxious weed, usually known by the name of "twitch," depends upon other circumstances. What is generally considered the root in that vegetable, is nothing more than an underground stem, which, when cut by the plough, gives rise to two or more plants instead of one. The only effectual method of getting rid of that troublesome weed, is by carefully collecting the plants, and then *burning* them.

If the meteorological signs of the times are to be depended upon, the wheat crops, on undrained lands, will perhaps suffer this winter from the want of a sufficient covering of snow to protect them from those alternations of temperature which take place during the days and nights throughout the winter months. A light covering of litter or fresh stable manure, would tend—by preventing the radiation of heat from the earth and obstructing the rays of the sun—to ameliorate the condition of the plants. This precaution was taken by some intelligent farmers in the neighbourhood of this town last winter, and attended by very beneficial results.

I am, Sir,
Your obedient servant,

* * * * * * *

Toronto, 3rd December, 1847.

Newcastle Farmer.

COBOURG, CANADA WEST, MARCH 1, 1848.

The object and intent in the formation of Agricultural Societies, is to compass and effect measures unattainable by individuals or smaller bodies; such as the importation of articles of every description useful and beneficial to Agriculturists at large, requiring funds not generally at the disposal of individuals; to collect and disseminate all such information as shall be acquired by "the few" for the benefit of all; to foster and encourage all laudable endeavours, and check and denounce all errors of practice and theory; to incite to industry and skill, by the award of premiums for the best measures and operations, or for the exhibition of mechanical ingenuity in all matters connected with Agriculture; to create a spirit of generous rivalry and emulation, and stimulate to increased exertions both of intellect and manual performance in the tillage of the soil, and the practice and management of Agriculture in general; so that a larger amount and better description of the necessaries of life for the whole community, may result from their labour and inquiries; and by a combination of talent and knowledge, and an union of purpose, to adopt such measures as shall bring before the public, and place in its true position, the paramount importance of Agriculture, and its claim to the support of every class of the community.

Such being the object of these institutions, it must be evident to every unprejudiced mind that they have a legitimate right to universal support. Food is the first want of man, and the necessity for its production is pre-eminent and irresistible; luxuries may be dispensed with; but life-supporting nutriment must be supplied, and for *that*, in its most compact form, and most beneficial state, the whole world must look to the Agriculturist.

Agriculture is an art of such importance to mankind, that their very existence, especially in a state of society, depends upon it. The strength of nations is in proportion to their skilful cultivation of the soil. And their independence is best promoted and secured, and their patriotism animated, by their obtaining from their native soil all the necessaries for their comfort and happiness.

The Agriculturist of the present time, stands in a widely different position from that of his great progenitor, when in the days of his sinless innocence it only devolved upon him, as a source of healthful recreation, in his paradisaic state, to "dress and keep" the well stored and ever-teeming garden of Eden; for on the lapse of his obedience, a new injunction was laid upon him, to "till" the ground. Recreative pleasure was exchanged for arduous toil, and craving necessity demanded unceasing exertions. Spontaneous plenty lapsed into scanty supply, and this only to be procured by constant and careful assiduity.

The Agricultural Societies of Great Britain have greatly contributed to the advancement of both theoretical and practical Agriculture, and have the support of the highest and the most enlightened men in the kingdom, receiving the sanction and assistance of the Legislature, and the patronage of Royalty; and the prudence and wisdom of granting such support to Agriculture and all its adjuncts, has never been called in question by those whose opinion is worthy of regard.

We have been led into the above remarks from the circumstance of the refusal of aid by the Council of this District to the Agricultural Societies of the Counties therein comprised. We do not for one moment, question the sincerity of the motives or conscientious principles which governed the majority on that vote, nor have we the slightest doubt but that the result would have been otherwise, had the subject been more maturely considered, and the arguments which might justly have been employed in support of the claim, been adduced.

It would appear that the *comparative* magnitude of the sum sought to be obtained, had its influence with some, while the establishing a precedent for such a divergence of its funds from the usual course, had its weight with others; while at the same time there were those who doubted whether such a grant would not be at variance with legislative enactment, and consequently a misapplication of the District funds, which, however praiseworthy the object, would still be a breach of the trust reposed in them as a District legislature.

Reverting to the first of the above considerations (the amount requested), we would submit, that the sum is, when properly viewed, inconsiderable in the extreme. The Newcastle District contains, in round numbers, 130,000 acres of land; so that a tax of *three fourths of a farthing* per acre would have furnished the one hundred pounds. And as it is more than probable that an occasion for such a grant would not occur again under five years, the annual tax would not exceed the *seventh part of a farthing* on the acre per annum.

Again, the amount of real and chattel property, rateable throughout the District, is not less than £600,000; so that a rate of one-sixth part of a farthing on the pound, would be more than sufficient for five years, or *the thirtieth part of a farthing* per annum!

It may be contended, that it was not so much the *amount* sought to be obtained, as the principle involved; for that, what would be wrong in "a pound," would be equally wrong in "a penny." We are not about to draw invidious comparisons between one act of the Council and another, for we are fully satisfied of the honesty of intention and integrity of purpose of that body; but there is still a possibility that, however pure their intentions and inflexible their determination to do justly, they may yet be mistaken, and we must take the liberty to state our belief that, had the requisition been for a smaller sum, (say twenty-five pounds,) a different result would have ensued; even as in the eye of the law a wide distinction is made between a grievous offence and a slight peccadillo, although the moral turpitude may be of equal amount.

The question of establishing "a precedent," abstractedly considered, is of no moment, as such are necessarily furnished in every session of the Council, whenever new channels are opened for the diffusion of the District funds; and it resolves itself simply into the enquiry, as to whether such precedents are expedient or not; and we believe it needs no argument to shew the expediency of the matter in question.

To legislate satisfactorily to all parties will be found impossible; the enlightened and thinking portion of the community will necessarily differ in their views from those of more limited comprehension; and this is sufficiently evinced in the manner in which a general tax for Education, and the building of school-houses, has been received; some withholding their assent from sordid motives, some from *comparatively* indigent circumstances, and others from conscientious principles; for, while it is generally admitted that "the peasant" has a *moral* right to aspire to even the higher offices of the state, still we have yet to learn

that it is just to compell *all* to assist in elevating him to such a position.

The main question to be considered is, whether such an appropriation of the funds would be good and beneficial, and at the same time legal; for if so, the precedent established must be good, and consequently worthy of adoption.

Now, as to the legality of the question of such an application of the District funds, although this particular appropriation may never have been contemplated by the Legislature, still our laws (unlike these of the Medes and Persians, which alter not.) are open to amendment, and such amendments may emanate from the Council, since it was in their power to have legalized their own act, by passing a By-law for the occasion; for if such By-law was not annulled or negatived by the higher authorities within a given time, it would to all intents and purposes be a legal act.

It must be remembered that the mass of the community are Agriculturists, and the District Councillors are their especial chosen representatives; and if they (the Agriculturists) choose to tax themselves, then the appropriation would be not only legal, but just,—an anomaly of but rare occurrence.

That such would be the expressed wish can scarcely be doubted, and this opinion is corroborated by the manner in which the Agricultural Societies of Northumberland, Durham, and Peterborough have come forward on the occasion, out of whose funds not less than three hundred pounds will be voted for the payment of Premiums at the approaching Exhibition. All are unanimous,—there are no petty jealousies, but all are animated by the same spirit, and commendable rivalry merges into the most laudable "*esprit du corps*" to place our Districts (full of generous impulses and patriotic feeling,) in the very foremost rank of philanthropy as conservators of the best and most important interests of the Province.

Disclaiming all idea of casting blame or odium on any of the Council, and earnestly desirous that they should weigh the subject thoroughly, we do indulge the hope that, should a necessity exist for extra assistance, they will, at their next Session, cheerfully and generously render such aid as the importance of the subject demands, and they can lawfully bestow.

We have received a couple of numbers of *The Agriculturist and Canadian Journal*, formed by a matrimonial alliance of the *Cultivator* and *Canada Farmer*,—and a very respectable, useful paper it is, containing a goodly amount of readable matter and useful information; but it is fast losing its Agricultural character, and with a few exceptions is filled with literary and scientific intelligence, but remotely connected with Agriculture.

The fact is, that a paper purely Agricultural does not meet with sufficient support to keep it afloat, and unless combined with extraneous matter does not interest the majority of readers, who look for something of a lighter nature than is usually supplied by Agricultural topics. We regret that such should be the case, for where the mass of the community are engaged as tillers of the soil, and in this Province especially, where such occupation is new to thousands who for the first time engage in the pursuit, it might reasonably be expected that, at the very moderate price at which such journals are published, all who necessarily have much to learn, would avail themselves of the assistance such papers afford them,—containing, as they do, not merely the local practice of the Colony, but information of the best description from the various English and other Agricultural publications.

It is certainly to be regretted that the proprietor should deem it necessary, in order to cater satisfactorily for his subscribers, to make its Agricultural articles so like angels' visits, "few and far between"; for if it continues diverging in its present ratio, it will be "The Agriculturist" but in name,—the play of Hamlet, with the Prince of Denmark left out (by desire).

We wish our contemporary every success, and are fully certain that with the abilities and talent of its present Editor, his paper will fully deserve it.

Early lambs, the result of previous neglect or inattention, will soon be dropped. Fear nothing from the cold, but keep them out of the wet, and spare not the turnips to the ewes.—"No milk, no mutton," remember that.

The *Newcastle Farmer* would make a most excellent vehicle for Agricultural advertisements. We are already hearing enquiries of "where can I get seed grain, potatoes, clover and grass seed," &c. &c. Cattle have strayed and are found, and their owners would be glad to hear of them. Some have farms to let, and others are desirous of renting; but the parties seldom come together in season, and often after a great deal of useless mis-spent labour. This need not be the case, if through a local medium of extended circulation, the wishes and wants of the community were declared.

We think if our readers considered the subject thoroughly, they would advertise such articles as they may need, or have to part with, and they would assuredly find it greatly to their advantage.

For the Newcastle Farmer.

PROCEEDINGS OF THE FIRST ANNUAL MEETING OF THE TOWNSHIP OF CRAMAHE AGRICULTURAL SOCIETY, IN CONNEXION WITH THE COUNTY OF NORTHUMBERLAND AGRICULTURAL SOCIETY.

The Meeting was held at Hodge's Hotel, Brighton, on Wednesday, the 12th January.

J. M. Grover, Esq., D. C., was re-elected President; Donald Campbell, Esq., Vice-President; W. Coulson, Esq., Treasurer; J. P. Scott, Secretary.

DIRECTORS.—Wm. Dunnett, Henry Pomeroy, Isaac Welton, A. T. Maybee, G. S. Burrell,* A. Yerrington,* Chas. Fiddick,* R. Garbutt,* R. Stephens, Esq.,* James S. Strong, Wm. Lane,* J. W. Cryderman, D. C., Charles Short, Esq., Peleg Wood, John Brien, Thomas Simpson,* H. N. Casey, Joseph Clark, Avery Perry, Peter Alger, Sen'r, James T. Scott.*

* These Gentlemen were elected Directors for the County Society at its Annual Meeting in Grafton, on the 19th.

1. *Resolved*, That there be held four Quarterly Meetings of the Officers of this Society during the ensuing year, as follows:

1st, at McDonald's, Colborne, on the last Saturday in March.
2d, at A. F. Maybee's, Vanwicklin Hill, " " June.
3rd, at Hodge's, Brighton, " " Sept'r.
4th, at Welton's, Percy Road, " " Dec'r.

2. *Resolved*, That the thanks of this Meeting be presented to J. M. Grover, Esq., for his zeal and efficiency as President for the past year.

J. P. SCOTT, *Secretary.*

Cramahe, 20th January, 1848.

BY-LAWS OF THE TOWNSHIP OF CRAMAHE AGRICULTURAL SOCIETY.

1st. This Society shall be called the Township of Cramahe Agricultural Society, in connexion with the County of Northumberland Agricultural Society.

2nd. The Officers of this Society shall consist of a President, Vice-President, Secretary, Treasurer, and a Board of Directors, to the number of 11, with power to add to their number, which Officers shall be members of the Society.

3rd. The Officers shall be chosen annually at the Annual Meeting of the Society, to be held on the second Wednesday in January of each year.

4th. It shall be the duty of the Officers of this Society to meet

quarterly, at some convenient place within the Township, and at such meetings transact such business as may appear requisite and necessary for the prosperity of the Society, at which meetings 5 shall form a quorum.

5th. Any person paying the sum of 5s. to either of the officers of this Society (for that purpose), shall be constituted a member of the same for one year.

6th. The time and place for holding the quarterly meetings of this Society shall be determined at each preceding meeting, unless otherwise agreed upon.

J. P. SCOTT, *Secretary.*

The amount of funds of this Society for the past year is—

For subscriptions of 90 members at 5s., - - -	£22	10	0
One-third of which goes to County Society, - -	7	10	0
The available funds, - - - - -	£15	0	0
Of this sum there has been drawn out of the Treasurer's hands - - - - - - - - - - -	6	0	0
Leaving a balance due to this Society from the County Society of - - - - - - - - -	9	0	0

of which sum there remains £7 2s. still unappropriated.

There have also been 3¾ barrels guano purchased by some five or six members of this Society, for £6 11s. 3d.

To the Editor of the Newcastle Farmer.

"'Tis folly in the extreme to till
Extensive fields, and till them ill;
Far more one fertile acre yields
Than the huge breadth of barren fields.
Advised, this empty pride expel,
Till little, and that little well."

"For oft engendered by the lazy north,
Myriads on myriads, insect armies warp
Keen in the poisoned breeze; and wasteful cut
Through buds and bark, into the blacken'd core
Their eager way: *a feeble race*, yet oft
The sacred sons of vengeance, on whose course
Corrosive famine waits and kills the year."

SIR,—Entomology, or that part of it which relates to Insects hostile to man, is the theme of my letter; and knowing you to be a picker up of little scraps, I send this Offering for 1848.

Providence seems wisely to have encompassed us with evils, as if to keep in constant and healthy exercise our higher faculties, to avert or remedy them; we are endowed with a capacity to search into, and understand, and render subservient to our wants, many important principles of natural science. We are admonished, in a thousand ways, to cultivate and improve this noble talent, and we seldom fail of realising the rewards of obedience, or suffering the penalty of neglect; for the gratification of the mere animal appetites are but mean debasing objects for man to fix upon as the goal of his ambition, and the limit of his desires. The labours of the statesman, the patriot, and the philanthropist, should be circumscribed only by the limits of the Province, or the welfare of the human family.

An accurate knowledge of Entomology, or the properties of insects, is of great importance to man, merely with regard to his own comfort and security. The injuries which they inflict upon us are extensive and complicated. It is somewhat startling to affirm that the condition of the human race is seriously injured by these petty annoyances; and it is perfectly true, that the art and industry of man have not yet been able to overcome the collective force, the individual perseverance, and complicated machinery of destruction, which insects employ. Insects make their way into the bark and external coats of plants, and deposit their eggs; these eggs when hatched produce larva, which by their peculiar juices often destroy the plants. A small ant stops the progress of civilization in many parts of the equinoctial zone. Spanish America cannot, in consequence of insects, shew a written document of an hundred years existence. A small species of beetle in South Carolina has killed the pines on a tract of 2000 acres; their natural enemy, the red-headed woodpecker, being wantonly destroyed because they occasionally resorted to fruit-trees. The larva of this family of insects is very injurious to seed grain, causing a total failure, as in the district of Halle, in 1812. The corn-wevil, a bug, can extract the flour from wheat, &c., leaving the husk behind, and is now in the large storehouses of Europe, eating the hoarded grain that starving thousands did seek in vain. The meal-worm and bug are members of the same family, found in sour flour. The wire-worm, which is the larva of the clock-beetle, so called from the sound emitted when caught, or when by accident it gets turned on its back, by a sudden click it rights itself. The striped bug on cucumber and melon vines; the pea bug, that unsightly, long-legged, hard-cased, stinking insect, so plenty on the squash and pumpkin last summer, for which I can find no name or place in entomology; the stench from them was their protection, for, like the skunk, the best way was to retreat. The cabbage or turnip fly, and its next of kin the potato-fly, both very destructive, and small insects of the bug family, and yet there is a smaller one belonging to the clover family of plants; these three, and what I am hereafter more particularly to describe, which affect our staple articles of food, are what we have most to dread and to guard against. Several writers on Entomology say, "there is a very minute bug attached to the clover family, and occasionally in favourable seasons it migrates to other plants; it occasions a diseased state of these plants and seeds, the effect of which on cattle are inflammatory disorders, fevers, black-tongue, &c." —*(Medical Society of England.)* It is said by some authorities, that the spurred rye and deformities in other grain, is the product of the larva of this insect, so small that it requires a good microscope to discover them. Every tree, shrub, and plant, has an insect family to prey upon it, and it is well known that the animal kingdom has theirs; even the lords of creation are not exempt.

Were I to talk to Farmers about rural economy, and ask them what crop they have found most profitable? they would probably answer, Wheat. How have you paid for your land and supported your family? by Wheat. Ask the emigrant on what kind of land he would wish to locate? On land that would raise Wheat. Then to keep our lands in the best possible condition for this crop, by freeing it from everything noxious, whether weeds or insects, and improving with preparatory crops and manures, should be the constant care of each individual. Then if I were to tell him that the wheat plant had no less than twenty different insects that attack it before coming to maturity, and if not from all, yet from some of these insects he must protect it, or

"The farmer, pleased, may boast aloud
His bushels sowed, his acres ploughed,
And pleased, indulge the cheering hope
That time will bring a plenteous crop;—
Shrewd common sense sits laughing by,
And sees his hopes abortive die,
For when maturing seasons smile,
Then sheaves by insects disappoint his toil."

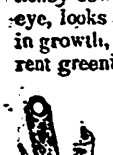
Here is a representation of the Wheat Fly, one of the enemies to the plant, known in Entomology as the Cecidomyia Tritici, its natural size, the fly, and its larva or maggot, taken from a Book on Insects, in the *Colourg Mechanics' Institute*, and *London Encyclopædia of Agriculture*, having the perfect insect before me.

Its history was first investigated by Marsham, and subsequently by Kirby, and several other naturalists, who all agree. The parent fly is very small, about one-eighth of an inch, not unlike a midge, of an orange colour, and wings rounded at the tip, and fringed with hairs; the female is furnished with a retractile ovepositor, four times as long as the body, and as fine as a hair, for depositing her eggs, which she does in the glumes of the florets of the grain. Mr. Sheriff, of Scotland, gives the following:—"The wheat-fly was first observed here on the evening of the 21st June; the eggs were visible on the 23d, the larva on the 30th of that month, and the pupæ, or inactive crysalis, on the 29th July. The parent fly was seen depositing eggs on the 28th June, and finally disappeared on the 30th July, thus having existed through a period of 39 days, which period is the fixed existence of a number of insect families." Another intelligent observer, Mr. Gorrie, found that by the 1st of August, all the maggots leave the ears, and go into the ground about the depth of half an inch, where they pass the winter in the pupæ state.—

(London Mag. Na'. Hist. 1829, *p.* 324 *and* 450.) These flies were observed to frequent the *Couch Grass*. and other varieties of the wheat family; they repose during sunshine, and are active on cloudy days without wind, twilight, and moonlight, without *radiation*, or cooling down to the freezing point, and on the shaded side near woods; they frequent the most umbrageous part of the crop, and shun that which is deficient of foliage; they prefer the ears just emerging from the vagina, to the further advanced; one side of the ear is only exposed, the other generally escapes. In the track of these insects may be seen two other flies; one of these is very small, black, and shining, the other is also black, with red feet and a blunt tail; each of them has 4 wings; the distinction between them and the wheat-fly, is obvious. These are the natural enemies of the wheat-fly, and destroy them; the *ear-wig* also destroys the larva, but in Canada I have not seen this insect. The whole of these flies are quite impatient of sunshine, and shelter themselves among the foliage. These experiments have been repeatedly tested in the United States, with the same results,—so this is the wheat-fly, the Cecidomyia Tritici of Europe.

This insect is not considered dangerous in England. on account of wheat generally coming into ear early in June, and the fly seldom appears before the 25th of this month; again, there is more wind in England than here during this month,—for the slightest agitation of the growing crop is a hindrance to the insect; and lastly, if the head is out of its sheath 48 hours, it is safe. The mean temperature of the South of England for this month is rated at 58° 9′; of Canada West, 61° 1′. (See Canadian Almanac for 1848.)

The Hessian Fly, so called, but known in books on Entomology as the Cecidomyia Destructor, of the order *Diptera*, was never a native of Europe, but very destructive in the Southern and middle States of America. In 1776 an alarm was excited in England that this insect would be imported in cargoes of wheat from America; the subject was discussed in the Privy Council, and by the Royal Society, during which despatches were forwarded for information, which, instead of affording any, only served to prohibit the importation of wheat. Thus France, Austria, Prussia, and America, furnished documents to fill 200 folio pages, (see Young's Annals of Agriculture, vol. 9,) and then they knew nothing of the insect. The same may be said now of the potato, —all as yet is theory. This insect is somewhat larger than the wheat-fly, more slender in the body, has longer legs, and is not orange, but black and fulvous, or black heads. tawny bodies. covered with fine greyish hairs, the wings black, but tinged with yellow at the base, and measures rather more than one-eighth of an inch in length; the wings expand upwards of one quarter of an inch; 48 hours after they burst their chrysalis case, or after they appear, they may be detected depositing their eggs upon the most vigorous blades of wheat, and in the centre crease of the leaf it appears of a transparent pale red colour; these eggs hatch in about seven days, the whole disappear in 15 days; the young larva is hatched head downwards, or towards the stem of the plant, to which it immediately descends, living upon the honey-dew of the now diseased plant, which, to the practiced eye, looks sickly during the May drouth; as the plant advances in growth, so does the larva. In 15 days it assumes a transparent greenish tinge; in a few days more it assumes a chestnut colour,—it now resembles flax-seed; the rapid growth of the plant demands extension of its parts, at this time no thicker than a knitting needle; these chrysalis, now inert, press the sap-vessels of the stem, which is nearly choked; in this state they are found at harvest, and carefully housed in the barn, or in the dung-heap At this stage of the insect's life, there is much diversity of opinion among writers and agriculturists in various parts of this continent, but from actual observation of the insect, and the various writers situated in different latitudes, it amounts to this: the insect travels from equatorial regions in all directions; it meets various climates and soils. They have been seen crossing the Delaware in countless millions; in the Southern States it is quite common from the 1st to the 10th of October, and as you proceed north the Fall insects become scarce; yet I have hatched them in a tumbler exposed to a southern aspect. They are not so active as the Spring insect, but some may show themselves, and I have found both eggs and larva upon the Fall sowed wheat, but the chrysalis of the Fall insect I have not found. The chrysalis now in the barns are alive, and will appear when the mean temperature of 55 degrees arrives. One reason why the whole did not appear in October is, they were removed from air and light, which was necessary to their existence. Thousands did appear at that period, but our climate disagrees with them; yet plenty remain, that will make their appearance again. But, you say, there should be some proof of this. Very true. I said that in Virginia the fly was common during the month of October; in the state of Ohio it is often seen during the months of March, April, and May.



The Agricultural Society of the State of Ohio gives the following result: Wheat sowed before the 9th of March, free from the attacks of this fly. Wheat sowed between the 9th and 15th, injured by the fly about the lower joint, produced an average crop. Wheat sowed from the 15th March to the 15th April, looked well until about to head; when about one-tenth headed, the remainder formed no heads; on examination, it was found that the fly had not lodged upon the under joints, but invariably above the upper joint. Wheat sowed from April 15th to May 16th, looked fine for 3 weeks after it was sown, when it began to perish. and soon all disappeared,—the fly caused a total failure.—*Albany Cultivator, vol.* 8, *No.* 4.

On this side of the lake the fly could not exist in March, and if April came in warm, to hatch the chrysalis, the fly would receive a check by the sudden change of temperature so prevalent about this time. The habits of this insect indicate that bright sunshine, wind, heavy cold rains, and the night radiation of heat from the earth's surface, kill or retard this fly; but in cloudy, warm, still days, and moonlight, this insect is busy. Now, if next May comes in warm and cloudy, with the full moon about the 17th, there is everything to fear from the effects of this fly on all kinds of grain, along this valley of denudation, and on a south aspect. In many parts of the States it is said to be of utility, rather than injury, as it makes it send up a greater number of heads from one root, which yields an abundant crop, but upon poor land, or by bad tillage, it proves a destroyer. It is necessary to mention that wheat alone is not chosen by this fly; barley, rye, couch grass, and quake grass, is occasionally attacked, and I have found the chrysalis in the pigeon, or swamp grass. Radiation, or the cooling of the earth's surface down to the freezing point, is a subject worthy of consideration; its effects are shown upon the highest parts of the field, and the centre of the ridges; ask the farmer, he says it is winter killed; I say it is Spring killed by the effect of radiation, and any non-conducting material would save it.

The natives of the upper country of Peru, who inhabit the elevated plancs of Cusco, are perhaps more accustomed to see their crops destroyed by radiation than any other people. They had observed that it only froze when the night was clear and the air calm; knowing, consequently, that the presence of clouds prevented frost, they contrived to make as it were artificial clouds to preserve their fields against the cold. When the evening led them to apprehend a frost—that is to say, when the stars shone with brilliancy and the air was still—the Indians set fire to heaps of wet straw or dung, and by this means raised a cloud and destroyed the transparency of the atmosphere, and hindered radiation.—*See Boussingault's Rural Economy.*

The wheat in Canada, say from 44 degrees of north latitude and 79 longitude,—the Fall wheat takes on the average 122 days from vegetation to maturity; it is alive during winter, but cannot be said to grow or increase; the Spring wheat 106 days, at a mean temperature from 63 to 68. At Cincinnati, U. S, it takes 137 days to mature, at a mean temperature of 60 or 61; it takes the same number of days in France, and the south of England. At a mean temperature of 75 and 76 degrees, it takes 90 days; this is the highest inter-tropical region of wheat. The temperature of 60 produces the best, the heaviest, the most gluten, the strongest flour, and the heaviest grain.—*(Boussin-*

gault's Rural Economy.) Now any stoppage in its short career, by bad tillage, or making land naturally cold, more susceptible of radiation, which will favour the insects,—which will, further, favour the spread of parasite plants, rust, mildew, and their train of evils,—the agriculturist should know how to obviate all these evils, and he should at the proper time prepare food for his growing crop; every plant artificially cultivated, should have its proper food abundantly in the soil; he who understands this is an agriculturist.

When a naturalist has discovered the habits, and accurately described an insect, Entomology is satisfied, the labour allotted to this branch is finished; it is not his business to seek their destruction. Man, the lord of creation, in his various occupations and subdivisions of his labours, finding himself incommoded by these insects, puts his superior powers into requisition for their destruction Insects are commissioned to consume some dead animal and vegetable matter; others have their existence in and upon those animals and vegetables while living; and so true are they to their trust, that they dispute the possession of the objects committed to their care with man when he attempts to appropriate them; so that the lord of creation is obliged to employ all the resources of his superior faculties, to invent means of keeping at a distance so minute and insignificant an enemy, every time he seizes on its destined food. But as this necessary, not wanton, usurpation of man on the food of insects is continual, his clothes, and indeed everything he makes use of from the animal and vegetable kingdoms, coming within the description, he is obliged to be incessantly on his guard, to keep off the right owners. This makes the study of Insects a necessary branch of economics, as it is difficult to guard against an enemy you scarcely know by sight, and of whose strategems, hiding-places, metamorphoses, &c., you are perfectly ignorant. As to the insects represented, and the increase and introduction of a host of others never seen here before, it may be an order of an all-wise Providence to send them, seeing that the avarice of man is excited by excess of cultivation over and above actual consumption,—straining lands to raise grain, in order to fill his coffers with a mineral substance which has a nominal value, and makes the possessor what he ought not to be, proud of accumulated wealth, while at one and the same time his fields, and the majority of his fellow-creatures, are in a state of starvation.

> How proud are we! how fond to show
> Our clothes, and call them rich and new;
> Though the poor sheep and silk-worm wore
> The self-same clothing long before!

The land that did once raise abundant crops of wheat, and that useless weed tobacco, will do so no more; the equivalents that were once in the soil have been taken out, nothing being returned; the land is worn out, and when corn-dealers have lost their thousands, and the corn-wevil eat up what is now in vast storehouses, (which they are doing,) and the starving population all dead, the present insect army checking the further accumulation of grain.—when all these things cease, perhaps the plague will stay its devastation. It seems likely that this generation must pass away before any remedy will be adopted. If this is not the case, some person will find an antidote; then to apply it, there should be *unity*.

An American in the south, being tormented by the Hessian fly, tried several methods to abate the nuisance; the most effectual was quite accidental. It so happened that a skunk was killed in or near his field of wheat, so that neither the owner nor anything else visited that vicinity, not even birds, beasts, nor insects, while other parts partially suffered. The hint was not lost; next season he procured another animal of the same kind, treated his exquisite scent with alcohol, saturated some cotton cord with it, and run it up and down through his standing grain; it effectually prevented all insects, while his neighbours suffered as usual. He sold this receipt for a good sum; but few availed themselves of it, on account of its stench, here unity was wanting. If these insects have an olfactory nerve, other things may be found equally efficient; perhaps the gas-house lime would be found efficient for the whole. As I am certain that the insect in the centre of the straw is of the bug family, this lime would be useful, being charged with chloride and ammonia, two things destructive to this family of insects.

A period of four years has shewn us a vast number of strange insects, never seen here before; others have multiplied to an alarming degree. We know the stated periods of the army-worm and the locust, but these we know little about. The stramonium or thorn-apple plant, a narcotic and poisonous plant, never before touched by animal or insect, has been attacked by the same insect that injures the potato; the two plants are in the same class in botany,—the insect is of the bug family. The cherry and plum trees have got a new visitor, which will in a few years kill the largest trees; these have been about 10 years coming from the Southern States to this place. The agriculturist, the horticulturist, the husbandman,—all are concerned in the destruction of these insects. *They* must find a remedy, and from no other source will it come. It is in vain to ask the sciences; even agricultural chemistry will never explain the diseases of plants, whose proximate principles or parts are injured by insects.

S. H.

Growing Wheat from Oats.—"If the gentlemen at the dinner of the Sittingbourne Agricultural Association, who met the observation of the Rev. G. B. Moore, respecting the wheat grown upon plants produced by the sowing of oats, with a burst of derisive laughter, had been asked Where is wheat indigenous? where is its native home? and after posing them by the questions, crowning their perplexity with a 'D'ye give it up?' they might in future be less disposed to laugh *at matters which were new to them*, when they were informed that *wheat is not known to be indigenous any where!* Consequently the reasonable presumption is, that, as in the case mentioned by Mr. Moore, it is a variety produced by some such accidental means as those mentioned by that gentleman. Let us *think* before we laugh.—Let us throw off the shackles imposed on us by an erroneous education. Let us consult—*if we dare*—such books as the one quoted by the rev. gentleman, and then, and not till then, shall we *think* before we laugh."—A Member of the Maidstone Farmers' Club.

Corn (Wheat) in the state in which we have it, when cultivated, does not grow wild in any country; and the field of Wheat, or Rye, of Oats or Barley, as well as the Maize and Millet crops of other lands, attest, whenever they are found, that man has been there, not as the roving Arab or the restless Indian, but as the tiller of the soil and the settled inhabitant of the Country.

How to make Hens lay all winter.—Now that eggs are at tenpence a dozen, it may be of importance to the Farmers' wives to know how to make their hens lay all winter. The following directions, if attended to, will secure that object:—Keep no roosters, give the hens fresh meat, chopped up like sausage meat, once a day, a very small portion, say half an ounce a day to each hen, during the winter, or from the time insects disappear in the fall till they appear again in spring. Never allow any eggs to remain in the nest for what is called nest eggs. When the roosters do not run with the hens, and no nest eggs are left in the nest, the hens will not cease laying after the production of twelve or fifteen eggs, as they always do when roosters and nest eggs are allowed, but continue laying perpetually. My hens lay all winter, and each from seventy to one hundred eggs in succession. If the above plan were generally followed, eggs would be just as plentiful in winter as in summer. The only reason why hens do not lay in winter as freely as in summer, is the want of animal food, which they get in summer in abundance, in the form of insects. I have for several winters reduced my theory to practice, and proved its entire correctness.—*Inverness Courier.*

Fermentation in Manure Heaps.—When a piece of paper, moistened with spirit of salt, held over the steam arising from a dunghill, gives dense fumes, it is a certain test that decomposition is going too far; for this indicates that ammonia is formed, and is escaping.

Gold is worshipped in all climates, without a single temple; and by all classes, without a single hypocrite.

Miscellaneous.

From the Saint Louis Reveille.

TO WHO! TO WHO!

'Twas on a cold autumnal night,
A dismal one to view;
Dark clouds obscured fair Venus' light,
And not a star appeared in sight,
As, the thick forest through,
Muggins—as usual, 'blue'—
Beat homeward, 'tucking' left and right,
When, all at once, he 'brought up' right
Against an old dead yew,
At which he 'rounded to,'
And, 'squaring off,' as if for fight,
Said, with an oath I shun't indite,
'—— infernal scoundrel, you,
'Light, an' I'll lick you, black or white!'
Just then above him flew
An owl, which on a branch did light,
A few feet o'er the boozy wight,
And then commenced '*Tu whoo—*
Tu-whoot—Tu-whoot—Tu-whoo.
Quoth Muggins, 'Don't you think to fright
A fellow of my weight and height
With your *Ter-whoot-er-who*,
You cursed bugaboo!
An' ef you're Beelzebub, it's quite
On-necessary you should 'light,
For Muggins ain't your 'due.'
My money matters are all right!
The printer paid up—honor bright.'
The reat the owl withdrew,
And Muggins mizzled, too.
But there are other chaps who might
Be caught out some dismal night,
Who hav'nt paid what's due,
They know *to who—to who.*

Novel Diversion.—The Duke of Devonshire and a distinguished party were recently on a short visit to Templenewsam, the seat of Meynell Ingram, Esq. Among the entertainments enjoyed on the occasion, it is said the gentle and fair were *not* forgotten; and it is owing, we understand, to the ingenuity of the noble duke, and the spirit of the ladies, that our fair readers will be indebted for an addition to their limited enjoyments and exercises in the open air. As the sport has not been heard of in this part of the country before, we shall take upon ourselves to term it "the eggs and ladle race." It is thus:—A number of wooden ladles are procured for behoof of the ingenious and distinguished nobleman. These have each an egg deposited in the bowl. Every fair competitor then takes a ladle, and being ranged side by side, with arm and ladle outstretched, waits for the signal. The distance is measured, say 100 yards, and the condition is, that the winner must arrive first at the goal without dropping her egg. On the interesting occasion referred to, a very spirited contest took place. The exact number of fair runners the reporter does not name; but when the signal was given, off started the high-bred and lovely dames, pushing each her ladle and egg as far before her neighbour as possible. Miss T——m took the lead and kept it nobly till within a few yards of the winning post, when she dropped her egg, and suffered Miss W——t to win the prize. The remainder were not placed by the judge, although it is said some *placed themselves*, and were at least their length behind. At the conclusion, the prize was formally presented, in the shape of a diamond ring, which the happy victor suspended from her neck by a massive gold chain. The ladle was, of course, suspended in—the kitchen.—*Leeds Mercury.*

Fishes tamed by a Child.—In a quarter of the town of Hingham, known as Rockynook, there is a pond where a little girl, not six years old, who resides near the bank, has tamed fishes to a remarkable degree. She began by throwing crumbs into the water. Gradually the fishes learned to distinguish her footsteps, and darted to the edge whenever she approached; and now they will actually feed out of her hand, and allow her to touch their scaly sides. A venerable turtle is amongst her regular pensioners. The control of Van Amburgh over his wild beasts is not more surprising than that which this little girl has obtained over her finny playmates. Visitors have been attracted from a distance of several miles to the spectacle she exhibits. The fishes will have nothing to do with any one but their friend. They will trust no one else, let them come with provender ever so tempting. Even fishes are not so cold-blooded but they will recognize the law of kindness, and yield to its all-embracing power.—*Boston Transcript.*

Signs of the Times.—Under the head of "Barter," two advertisements appear in the *Midland Counties Herald* of Thursday last, the one offering "leasehold premises in exchange for a ten-horse steam engine," and the other "piano-fortes for nails, ironmongery, or carpets."

A Valuable Hint to Cider Makers.—It seems of importance in the fermentation of some kinds of liquor, particularly cider, that the atmospheric air should, as much as possible, be excluded. This prevents the fermentation being in excess, and consequently insures a more pleasant, because a less acid beverage. Many, in order to procure this result, bung down their cider directly it is put into the cask; but as this is sometimes inoperative through the fermentation forcing a vent for itself, a simple and very ingenious arrangement has been hit upon by a medical gentleman residing in Radnorshire. This, he effects as follows:—A short syphon is formed, say of a piece of beer engine, or spirit pipe, of about ten or twelve inches in its whole length. One end of this is put *through* the bung of the cask, which is not quite filled; the other is turned into a pan filled with water, standing on the cask. Now, by this arrangement, while the gases which arise from the cider are allowed to escape, which they do in bubbles bursting on the top of the water, the atmospheric air is thoroughly precluded from getting into the cask by the interposition of the water.—*A Member of the Maidstone Farmer's Club.*

The Best Mode of Destroying Thistles.—That he who makes two blades of grass to grow where one has grown before is a benefactor to his country, has never been doubted: that he who makes one thistle to grow where two had grown before is *equally so*, because he destroys an enemy which robs a nation of its wealth. As your correspondent G. C. is desirous of knowing an effectual method of destroying thistles, I beg to submit the following:—After the top of the thistle is cut off, let a boy follow with some sulphuric acid, in a tin can, which discharges by a small stream, and pour a few drops into the centre of every thistle, which will effectually destroy the root. Should G. C. find this method of any use to him, or should it be the means of drawing from any of your other correspondents a means of effectually destroying thistles by a method less destructive in other respects, it would be highly gratifying to—Your New Correspondent.—*Maidstone Gazette.*

Proper Manures for Mangel Wurzel, Swedes, and Potatoes.—"Do mangel wurzel, swede turnips, and potatoes, all require the same elements of the soil for their growth? If so, can they be grown in continual succession with a liberal supply of the most suitable manures? What are the best manures for this purpose?—Agricultural Enquirer."—These crops all require alkalis and phosphates. A compost of wood ashes, bone-dust, and sulphate of ammonia, would probably answer well for either of the crops named. Mr. Pusey used 8 bushels of bone-dust mixed with 16 bushels of peat-dust, per acre, for turnips, with as great success as attended the use of superphosphate of lime.—*Ib.*

Cultivation of Onions by the Tartars.—The Tartars have a peculiar method of cultivating onions. Instead of raising them from seeds, in which they do not succeed, or which appears to them too long a process, they dry and smoke in a chimney those which they wish to propagate, and in Spring, when the time to plant them is arrived, they cut them diagonally into quarters, but so as not to separate the pieces entirely one from the other. They set their onions in rows, in good soil, fresh and well dug, but not freshly manured, at about 10 inches from each other, and two inches deep. These onions increase extraordinarily, and grow large and strong.

Published by H. JONES RUTTAN, at the Office of "The Colonial Star & Newcastle District Gazette," on the 1st of every month. Terms.—2s. 6d. per annum.