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NEWCASTLE FARMER.

VOL. I.—NO. III. COBOURG, NOV. 2, 1846. TERMS.—2s. 6d. PER YEAR.

AGRICULTURAL EXCURSION

TO THE FARMS OF MR. H. DAVIS AND MR. MECHI.

Report of the Deputation from the Maidstone Farmers' Club, to inspect the farms of Mr. Hewitt Davis, near Croydon, Surrey; and Mr. Mechi, at Tiptree-Hall, Essex.

Mr. Davis and Mr. Mechi having invited the members of the Maidstone Farmers' Club to inspect their farms, a deputation was appointed for that purpose at the meeting of the club in July. This deputation consisted of Messrs. G. Whiting (Hon. Sec.), W. P. Shirley, W. Fish, E. R. Hall, Maidstone; H. Hayes, Marden; E. Beard and T. Hayes, Boughton; G. Powell, Lenham; G. Viney and T. Knight, Headcorn; J. Hatch, Ulcomb; F. Day, East Farleigh; W. S. Avery, Boxley; J. Day, Barming; A. Stone, Linton; and — Young, West Peckham. The invitation having been subsequently extended to the members of the Weald of Kent Farmers' Club, the following gentlemen, members of that club, also accompanied the above deputation, and will make a separate report for themselves, viz.:—Messrs. G. Buckland (Hon. Sec.), Benenden; J. Hague, and J. Hague Jr., W. T. Neve, and — Collens, of Cranbrook; H. Wickham, Goudhurst; J. Large, of Staplehurst; and G. Hammond, of Horsmonden.

The following report of the deputation of the Maidstone Farmers' Club, is founded on the opinions of those members who are immediately engaged in agriculture.

REPORT ON THE FARM OF MR. DAVIS.

The deputation joined Mr. Davis on Spring Park Farm, on the morning of the 17th July, who evinced the most courteous attention—inviting and answering every inquiry.

For the use of those members who may not recollect the particulars of Mr. Davis's rotation and general system, it is here repeated from the report of the deputation who visited his farms last years:—

1st year—Rye and tares, for green meat and feeding off with sheep, in April, May, June and July; and followed by—
" Mangold-wurzel
" Swedes
" Cabbages
" Turnips
} With a liberal dressing of farm-yard dung.

2nd year—Oats or barley sown with clover.

3rd year—Clover, twice mown for hay.

4th year—Beans or pease. The beans have turnips drilled between the rows, and which come into feed, in Sept'r and Oct'r 5th year—Wheat.

The quantities, and periods at which he sows, are the following:—

Rye—1½ bushels—in August and September.

Tares—1½ bushels—in three sowings, in August, September, and October.

Mangold-wurzel—6 lbs.—in April.

Swedes—1 quart—in May.

Turnips—1 quart—in July.

Cabbages—1 every 3 feet—in June.

Oats—7 pecks—in January, February, and March.

Barley—6 pecks—in January, February, March, and April.

Wheat—3 pecks—in September and October.

Pease—8 pecks—in December, January, and February.

Beans—8 pecks—in September and October.

Mr. Davis's rye and tares for green-feeding are sown in rows at nine inches apart; all his white crops at 12 inches; his pulse at 27 inches, as are also his root-crops and cabbages on the ridge.

The principles on which Mr. Davis professes to farm are the following:—

1. Never to be contented until all your land has been trenched and turned over by the plough a foot in depth, nor until—

2. The wet land be made dry by deep draining, and consider no land effectually drained unless the drains be four feet in depth; that is to say, unless the water-level be so far below the surface, that corn shall have at least a foot of dry earth to root in, unaffected by capillary attraction of moisture from below, and the chill that water nearer to the surface causes; this can be done only by having the drains four feet from the surface, and within forty feet of each other.

3. For sowing of spring corn, consider the season commences with the new year, and have no other fear than that of being too late. When the ground is dry enough and fine enough, the sooner it is in the better; it will yield more, and the liability to blight, or to be beaten down, will be less.

4. In sowing, drill or dibble all; and have the rows not higher than a foot between them; so as to admit of hoeing either by horse or hand, and hand-weeding at late periods.

5. Hoe and hand-weed all corn; let not a weed in flower be seen amongst it; ever recollect that weeds occupy space and consume nutriment, displacing corn, and robbing the land.

6. Never sow two crops of one genus in succession: legumes or pulse may follow cereal grain, and cereal grain may follow legumes or pulse; but never cereal after cereal, or pulse after pulse. Recollect, rye grass is a cereal plant, and unsuits the land for white-straw corn.

7. In apportioning the rate of seed per acre, do not lose sight of the bad consequences that must ensue if too much be sown. Bear in mind that if so much be sown as to produce more plants at first than the space will afterwards allow to attain maturity, the latter growth of the whole will be impeded, and a diseased stage will commence as soon as the plants cover the ground, and remain till harvest.

8. Manure should be applied only to green or cattle crops, and never to corn; by giving it to the former, the earth derives the advantage of the extra dressing that the extra growth returns; but when applied to corn, the earth is so much the more exhausted by the extra growth of straw, and frequently, too, the grain is thereby positively injured by being beat down and blighted in the straw, that it is always made more hazardous by dressing.

9. Were farmers to buy all their manures, they would find that the cost of maintaining their land in fair heart would be about one pound per acre per annum. This quantity of dressing, every farm in fair productive cultivation would supply of itself, if a proper use and economy be made of its material to form manure, and a due care taken of it afterwards; but from misapplication and waste of the straw and fodder, and from neglect in the preservation of the dung and urine, at least half is usually lost, and the arable land of England may thus be said to be prejudiced to at least 10s. per acre.

10. Were no other injury done to the crops by trees and hedges in small enclosures, than that which arises from their mischievous shade and shelter, it would be equivalent to the ordinary rent of such fields; but the farmers sustain a further loss in the additional time occupied in its tillage by the more frequent stoppages and turns they cause, and by the encouragement to idleness in the men that their cover affords. I believe arable fields, with large hedges and hedge-row timber round them, whose dimensions are under eight inches, are seldom or ever worth a farmer's cultivation. I see much poor open down land in profitable cultivation, and large districts of enclosed land of far better quality, ruinous to the occupiers; and I have not a doubt but to the difference in the size of the fields this may be principally, if not entirely, traced.

The deputation visited every field on

the farm, and give the following description of what they saw, in a different order from the course over which they passed; so that other persons visiting the farm, may more easily find, and identify, the respective fields visited.

On entering Spring-park farm, the deputation first saw a rye gratten, of about eighteen acres, which appeared, from the stubble, to have borne a good crop, and which was now having manure ploughed in for turnips. The manure had been carted out between the shocks of rye. These had been carried on the previous day, and it was calculated that the turnip seed would again be in the land within three weeks of beginning to cut the rye. The soil was an exceedingly poor, pebbly, beach gravel, and such as without subsoil ploughing and careful cultivation could never have been expected to grow either wheat or turnips. The whole of this piece of rye, according to Mr. Davis's system, ought to have been fed off in the spring, and succeeded by mangold-wurzel, and a part of it had been so treated. The green crops had grown so rapidly however, through the mild winter and the early spring, and the demand for sheep had been so great, that Mr. Davis had allowed the rye to run to seed, giving the land an extra coat of manure to compensate for its different treatment from the other. The mangold-wurzel plant, where the rye had been fed (excepting in a small hollow which had formerly been an osier bed) was, considering the soil, exceedingly good.

A field of similarly gravelly soil of about twenty acres, next presented itself, which had borne an excellent crop of peas.—These had been carried, and were afterwards seen in good condition, in the stacks and barns at the homestead; these peas were so well podded as to have been considered a good crop on average land and in ordinary seasons—but in the present season, peas have failed almost universally, and the appearance of so fine a crop here excited much attention. Mr. Davis attributed his success principally to his having put in his seed before Christmas, and thus enabled the plants to get well into bloom before the drought came. Mr. Davis considers that early sowing is also a complete protection against the dolphin, which he says never attacks his crops.

On the left of the carriage-road, was a field of twelve acres, now bearing a crop of buckwheat, which had been sown at the end of May; after cow-grass, mown twice last year, and fed off this spring. This piece, according to Mr. Davis's regular system, should have been put in with beans last September.

The adjoining field is a tenacious clay (but nothing like the Weald of Kent clay in stiffness), in wheat, which, though it must have promised a much heavier crop previously to the storm that had beaten it down, was still a good crop. The effect of draining was here singularly perceptible. Mr. Davis had drained four feet deep, and at a considerable distance apart. That portion of the wheat over the drains, and for some distance on each side of the drains, was at least six inches higher than in the land midway between the drains, and the ears were proportionably better. Mr. Davis had put the drains at so great a distance apart, by way of experiment, and now intends to put another drain between each of those already laid down.

The adjoining field bore a crop of beans, just cut, with young turnips between the rows. This crop of beans is also a remarkable exception to the almost general failure of the crop, the haulm being abundantly podded, and the crop a large one. The turnips here did not appear to have taken so well as in some other fields.—Adjoining to this is a field of clover, now luxuriant with a second growth, which looked remarkably well.

On the upper side of the road is a field of about fourteen acres of a rather tenacious clay, which had been in tares, the remaining portion of which was now being consumed. A part of this field had been sown with turnips on the ridge, which showed a promising plant. The remainder of the field, however, had broken up too dry to allow the rest of the turnips being sown, and was waiting for rain.

Next adjoining to this field were about fourteen acres of oats, which promised to be a very superior crop.

The next field comprises about seventeen acres, was in white wheat, apparently the "Chidham white," which was estimated at a very high produce, and is of the finest quality. This piece was a very striking instance of the success of thin sowing. Below this is a field of eight acres, bearing a very luxuriant crop of clover; and adjoining to this, about seven acres of beans, an excellent crop for the season; the turnips between which were a remarkably good plant.

Next to the beans is a gravelly field of very bad quality, consisting of about 12 acres, in oats; and although the dry season had been very much against them, still the crop promised to yield a very fair average.

On the opposite side of the road, is another hungry gravelly field of twenty-four acres, which had borne a good crop of peas, and which were afterwards inspected in the stack-yard. The advantage of Mr. Davis's system of early and thin sowing and deep ploughing, was fully manifest in the yield, the peas being well podded.

Above this is a field of thirteen acres, of a second growth of red clover on a hungry, sandy soil, showing an excellent plant, which appears to be the case with all Mr. Davis's clover, of the present year, probably in consequence of his deep culture.

Adjoining the clover is a field bounded by the woods, of about fourteen acres of similar soil, in barley, which promises an average crop, although partially suffering from the drought, and from rabbits.

Adjoining to this, is about fifteen acres of a soil almost wholly composed of white sand, and which probably never would have been sown with wheat at all by any body but Mr. Davis. A sand-pit was open a few feet from the wheat plants, which offered a good opportunity of inspecting the soil, which consists of alternate layers of white and red sand, and gravel, to the bottom of the pit. So springy was the sand at about five feet from the surface, although near the top of the hill, that the sand-diggers had dug the sand in squares, about four feet deeper, and had scarcely finished each square before the excavation had become spit deep in water. This 15 acre piece had been once ploughed after peas, and drilled with wheat a foot apart. Mr. Davis had of course calculated on a small yield, but the crop was much more than might have been expected on such a wretched soil.

A singular instance of the tendency of wheat to tiller out, till it has furnished as many ears as the soil can bear, was witnessed on walking through this poor piece of wheat, into the adjoining field of wheat below, where the soil became gradually better. Although both the straw and the ears were few and far between on the upper piece, on entering the lower piece the roots had tillered out, and had become so studded with fine ears, as to strike every person present. The getting of even a slight crop off such a piece of poor land, is evidently more difficult than getting double the quantity from ordinary land.

The stack-yard contained already two stacks of clover, three stacks of peas, a double-bayed barn, and two bays of the other barns filled with peas, and the remainder holding the rye. Mr. Davis uses the Kentish plough, which, he says, is the best implement he ever used for deep ploughing.

The deputation visited, and have now described, every field on the farm, in order that it might not be said that they had not seen the whole, and that their report was consequently inaccurate.—They have also preferred making their most detailed report on the worst farm under Mr. Davis's system, as affording the severest test of its merits; and feel bound in fairness to bear testimony to that gentleman's great success in its application.

The most conspicuous points of success in Mr. Davis's system appear to be—

1st. The raising of superior crops from inferior land. Indeed, many of the deputation who had not visited the farm before, were much surprised at the contrast between the land and the crops. The farm had evidently been intended, at some time or other, to be converted into ornamental property, clumps and belts of trees having been planted in different places; but although some of the firs and other trees had probably been thirty years in the ground, they were scarcely long enough for hop-poles, hav-

for allowing the same circular space for the roots.

This is a rule applied to trees growing singly, when there is occasion to transplant them.

You may, perhaps, say, "how can this be, for we have seen a tree growing in the cleft of a rock, where its roots could not possibly have struck out to such a wide space as the boughs overhung?"

But recollect, that this tree, if a large one, had probably no near neighbours, whose mouths were to be fed; it had all the food to itself which it could reach, by stretching its root downwards, and in whatever direction they could find their support.

Though the roots (unless it were entirely a tap-root tree, in which case there is no room for dispute at all) would have grown in open space, in the extended manner above stated, they would in the particular case supposed, accommodate themselves to circumstances, and follow their food straight downwards, or in any direction. But, who ever saw a full bodied tree in such a position?

By crowding cabbages, turnips, cattle beet, &c., you will, of course, have twice or thrice the number of plants that you would have, if they were set at double or triple the distances from each other—but bring them in their full season to the scales, and then at least you will admit, that the principles which have been glanced at are well founded.

But that you may understand, in some degree at least, the nature and qualities of the elements on which plants subsist, the earth, which is their store-house, must be opened to your view.

Popularly speaking, the earth consists of every material found in nature—in the mineral, vegetable, and animal kingdoms—constantly passing, by a process of decay and reparation, through those three grand divisions.

Earth, according to the ordinary sense, is any compound body, capable of giving a position and nourishment to a plant. But this is a much more extensive definition than that which is given by chemists. They limit the term earth to the union of a metalic elementary body, with oxygen gas—for example, an atom of the metalic element aluminum, united with an atom of oxygen gas, forms the earth called alumina; an atom of magnesium, with an atom of oxygen gas, forms magnesia, which is also an earth, or more properly speaking, an alkaline earth; and so of other elements.

To avoid confusion, I shall use the term *soil*, to express the compound substance which farmers and gardeners understand by the word earth, and because it is most likely that none of the class whom I am addressing are at all acquainted with the principles of chemistry, but only young farmers, desirous of learning the *reasons* for doing and avoiding many things in the course of husbandry, of which they may now be ignorant, and of tracing, in their minds, the effects pro-

The practice of picking out and transplanting cabbages, and such plants, into fresh, loose, and nourishing soil, causes an increase of their roots and mouths, and also a corresponding enlargement of the stomach and lungs; for in whatever proportion you increase the roots and leaves, (preserving always a proper equality between them,) you will also promote the size and health of the plant.

You can now see the reason why it is a stupid practice to crowd plants which naturally require a great deal of room for their roots and leaves; for by so doing, you will cripple their lower extremities, lessen their means of obtaining food from the earth, while you compel the roots to encroach upon each other's feeding ground—for all the roots seek the good soil, and avoid the bad—and also, by refusing them elbow room above ground, and forcing them as they grow to jostle against each other, and struggle for breathing space, you render them half-fed spindled things, instead of their becoming portly in the girth, with sound and expanded lungs, insuring them health, weight, size, and solidity in their due degrees. Besides, being as it were, half suffocated from want of fresh draughts of air, the exposure of the leaves to the light is obstructed by their being huddled together. In such case, one plant shades another from the sun's light, on which depends the health and green colour of all plants.

The free motion of a plant by moderate wind, is also necessary to its health, by stimulating its action, producing heat, and so increasing and promoting the growth and organization of the several parts.

Having shown you this well grown cabbage, as an illustration of the parts and constitution of a plant, as far as it is necessary for practical purposes, I shall make use of it in illustration of the opinion that such plants ought not to be crowded, and to furnish a general rule by which you may regulate the distances at which they should be placed from each other. Look at the large circle to which the leaves stretch out, and at the great bulk and solidity of the head and stalk. Compare this cabbage, (which has had its due allowance of room in the field,) with other cabbages of the same kind, planted out at the same time, and in the same soil—but much more closely—you will find those cabbages to be smaller and weaker in every respect, and of course less weighty, drawn up to an unnatural height, at the loss of their bulk and strength, so as only to be able to support a paltry head.

Even as to the second point, you may see that the outer leaves—those great organs—extend all around in a large circle, which is the boundary line to which the horizontal roots reach; knowing then that the leaves of a plant, if allowed space enough, will extend say twelve or eighteen inches in every direction from the stalk, you will understand the necessity

ing apparently been unable to pierce through the concrete mass of gravel and sand which forms the subsoil.

2nd. The absence of fallows, every field on the farm being covered with as good a crop as its soil seemed capable of bearing. Mr. Davis's rotation appears to be one which keeps the land in a constantly improving state. It will be seen that that gentleman obtains by it twelve corn crops within twenty years, whilst under the Norfolk system, only ten corn crops are gained within the same period; the latter rotation also appearing, from its less varied character, to be a more exhaustive one than Mr. Davis's.

3rd. The general cleanness of the land, which reflects much credit on Mr. Davis, as the soil is of a character generally much subject to weeds, if not well cultivated.

4th. The absence of a single failure; not a crop being below what the soil might have been considered capable of producing, and very many being above what anybody might have estimated as its maximum power of fertility, particularly after so dry a summer.

5th. The general self-supporting character of Mr. Davis's system, it having been carried out by him before the introduction of the use of artificial manures, and being entirely independent of them; Mr. Davis's plan being to sell his hay, for which the position of his farm enables him to procure the highest price, and to lay out the money in oil cake for feeding off his green and root crops.

Mr. Davis only manures once in five years, and it was the opinion of some of the deputation that although Mr. Davis does generally get a good plant of swedes and other root crops, yet that these would be forwarded and benefited by a little guano.

The deputation was accompanied by Mr. Davis over Shirley Park Farm and Haling Farm, which were under precisely similar management; the poor land producing better crops than could have been at all expected from it, and the better land, although none of it could be called rich, bearing crops which were admitted on all hands to be first-rate. Shirley Park is in Mr. Davis's own hands; of Haling Park he has the management.

From the Farmer's Gazette.

THE NATURE AND ORGANIZATION OF PLANTS.

LETTER II.

To the Young Farmers of Ireland.

My Friends,—We left our patient, the cabbage, in the horrors of indigestion: those who know the miseries of that unhappy state will, for mere humanity sake, visit the *bed* of the sufferer, to afford it timely relief.

Many persons, when setting plants in the ground, trim off a portion of the leaves and roots, for which there does not seem to be any rational cause; it is, in point of fact, diminishing the powers of the plant.

duced by certain operations to their causes, I may compare my position, in the present instance, to that of the late Mr. Cobbett, on the occasion of a popular election. Knowing that he was addressing a meeting of the people only, he thus humorously commenced his speech —"I perceive that there is not a *gentleman* among you. You know well, my respected and excellent friends, that you are *not gentlemen*,—that you are only ragamuffin and bob-tail—as such, then, I shall talk now to you." I may venture to suppose that there is not an agricultural chemist among you, my *readers*, and, perhaps, if there were, I should feel fidgetty, from finding myself in better company than I have any right to enter; and I shall, therefore, endeavour to suit my observations altogether to the minds of those who are disposed to receive, at my hands, some of the simpler elementary truths—the knowledge of which may tend to render you more judicious tillers of the ground than you would otherwise be.

The soil, then, being compounded of ingredients, drawn from the three great kingdoms—viz., the animal, vegetable, and mineral—must necessarily be a mixture of all the elementary bodies discovered; but widely differing in their proportions to each other; it contains, likewise, many varieties of the principal ingredients. The soil is to its cultivator what the raw material, of any craft, is to the mechanic; and, according as the soil can supply the elements which crops require for their support, is it to be valued.

In former days, when chemistry was altogether unknown, or little understood, earth was considered one of four elements—the other three being air, fire, and water—whereas each of those supposed elements is, in itself, a compound body, formed of different elements.

The chief ingredients found in soils are alumine, silex, lime, and magnesia; but besides these, there are five other substances—viz., barytes, glucina, strontia, yttria, and zirconia, which it is unnecessary to notice farther, for they are either found to a considerable depth, or in very trifling quantities; and the farmer has no need to press his enquiries farther than the spade or ploughshare can penetrate. Those nine substances, none of which are destructible by fire, were formerly named the earths, but erroneously, as I have intimated.

Next week I shall pursue this subject further, but here for the present I must stop. I remain, your faithful friend,

MARTIN DOYLE.

From the Scottish Farmer.

ON THE FORMATION OF COMPOSTS.

In our last article on this subject, we stated that since the introduction of what are designated the portable manures into the Husbandry of this country, the necessity for the formation of composts has in a great degree ceased to exist. Nevertheless, this method of augmenting the quantity of manure upon a farm should not, we think, be in any case neglected; for, however convenient, cheap, and really efficacious some of the fertilisers of commerce may be, it must still be the interest of Agriculturists generally, and particularly those remote from towns, to turn to useful account all the materials of an enriching character to which they have ready access; and thus, so far as possible to dispense with extraneous manures. No doubt there is a considerable amount of manual and horse labour necessarily attendant on the formation and application of compost heaps; but it is obvious that when advantage is taken of the opportunities which from time to time occur on every farm, for collecting together and mixing the materials, the expense actually incurred will be inconsiderable, in comparison with the value of the substances thus accumulated. Almost every farm abounds with materials for the formation of excellent composts; and the more numerous and heterogeneous the ingredients of the mass are, the better. Some of these have been enumerated in our last paper.

In selecting the constituents of composts for particular purposes, some consideration is, however, necessary on the part of the Farmer. Although this is one of the simplest branches of farm management, yet errors are not unfrequently committed in the choice and application of the most suitable manures. In the formation of composts, regard must always be had to the nature of the soil to which it is intended to apply them—since they should be considered more as a means of altering and improving the texture of the land, than as directly furnishing food to plants. Thus a compost for a light incoherent soil is best formed with the sediment of ponds and stagnant pools, the scourings of ditches, cold tenacious earth, and the dung of ruminating animals; while a compost for strong adhesive soils should, on the other hand, be composed of light, sandy earth, bog stuff, calcareous matters, &c. Road scrapings, from their gritty quality, form an excellent alterative for clay soils, particularly when combined with a large proportion of horse dung. Street manure is also valuable for heavy lands.

Farmers are strongly recommended by most writers on Agriculture to mix a large proportion of earth with farm-yard dung, for the two-fold purpose of increasing its bulk, and of imbibing the gaseous matters evolved during the process of fermentation. There can be no doubt of the propriety of adding earth in which there exists much inert vegetable matter to farm-yard dung, as the fermentation of the latter converts such inert matters into soluble substances, capable of nourishing plants; but we cannot conceive what advantage can be gained by mixing large quantities of earth taken from cultivated fields with farm-yard manure.—The *bulk* of the heap is no doubt increased, and so also is the labour of applying it to the land; but it is obvious that no additional element of fertility is supplied. We consider it far more judicious to improve the *quality* of the manure of the farm-yard, by preventing the escape of the urine and other liquid matters with which it is impregnated, than to enlarge its bulk by the admixture of arable soil destitute of dead vegetable matter. In our humble judgement, then, it cannot be advantageous to mix earth and dung together, unless where an old bank is convenient, when a portion of it may be placed on the site of the dunghill, in order to absorb any juices escaping from the manure. It is also advisable, after turning over the heap in the field in spring for the purpose of accelerating fermentation preparatory to its application, to cover the sides and top with a slight coating of earth, taken from the adjacent land—which serves to protect the manure from the drying effects of the sun and wind, and to retain the volatile gases generated by the rapid fermentation that ensues after the mass has been loosened and turned over. But here it is proper to observe, that the pressure of too weighty a covering of earth, by excluding the atmospheric air, tends to retard the process which the Farmer wishes to promote.

Another injudicious practice—not yet altogether abandoned—is the mixing of dung, earth, and quick-lime together, which can never be advantageous, because the lime will render some of the most valuable parts of the dung insoluble. According to chemists, quick-lime forms insoluble compounds with almost all animal and vegetable substances that are soft, and thus destroys their fermentative properties; or, in other words, it tends to render the extractive matter of dung insoluble.

We next proceed to advert to the various materials which may be beneficially combined with lime in the formation of composts; but in order to comprehend the efficacy of this invaluable fossil as the fermentable agent in the compost heap, or when applied by itself to the land, it will be necessary to premise that it has two distinct and peculiar modes of action: first, it acts *mechanically* on both light and heavy soils, imparting a greater degree of cohesion to the particles of the former, and diminishing the natural tenacity of the latter; and secondly, it acts *chemically*, in accelerating the decomposition of inert vegetable matter. Lime also removes the noxious effluvia arising from putrid animal substances, and is efficacious in neutralising an excess of ferruginous matter in the soil. Keeping these well known properties of lime in view, we are enabled to judge with tolerable certainty of the cases in which its application, either by itself or in combination with other substances, is likely to be followed with beneficial results. We shall again return to this subject in our next number.

THE ANALYSIS OF SOILS.

To make a rough and very simple analysis, which may be done at any time and which will enable you hastily to form a tolerably correct opinion of a soil, you may adopt the following short process:

Take a handful or two of the soil to be judged of, and dry it before the fire until it is about as dry as soil is upon the surface of the ground in summer, where exposed to the sun—that is, until it feels quite dry to the touch; immediately it is thus far dried, remove it from the fire.—Rub it through the fingers to pulverize it. Weigh four ounces of this soil, and put it on a plate in an oven or over a gentle fire—having dropped among it some dry shavings or bits of paper, keep stirring it till the paper or shaving just begins to turn *brown*—it may take from half an hour to an hour. You must not allow it to *burn* at all—your object being merely to expel all water or moisture without *burning* it. When thus perfectly dry, weigh it;—what is lost will be the moisture which the soil is capable of retaining after it appears *perfectly dry to the touch*. A very good soil will retain an eighth of its weight, and would consequently loose half an ounce of the above four ounces; a medium soil will not loose more than a sixteenth consequently would loose a quarter of an ounce in four ounces—poor, sandy soils will not loose more than two or three per cent.

This first process tests the absorbent powers of the soil which is one considerable indication of fertility in all cases except in *very stiff, clay lands*;—a stiff clay is frequently as retentive of moisture as a fine loamy mould, and must be carefully judged of; in every other case it may be taken as a rule that the greater the absorbent powers of a soil, the better is its quality for agricultural purposes.

The remining soil you throw on an iron plate or shovel, which heat *red hot*, and let the soil *burn* on it for 15 or 20 minutes. The object is to burn out *the organic matter*, either decayed and mixed with the soil, or undecayed in the form of woody fibre, roots, &c. After the soil is well burnt, *weigh it*. It will have lost considerable weight; nearly all the loss is organic matter. In a fine soil, this loss will amount to from the quarter to the half of an ounce in the four ounces. In poor soils the loss will sometimes not be more than one or two parts in a hundred.

Although this process gives you the amount of matter destructible by *heat*, which is nearly all vegetable matter—yet care must be taken in examining the soil with the eye to see that it was not a *peaty soil* or very full of rooty fibre; as in these cases the vegetable matter is not in a state useful to fertility, being undecomposed—and will require time, lime, expense, and culture, to bring such vegetable matter into *humus*. Except in the case of very rooty or peaty soils, *burning* in this way will give the operator a fair estimate of the amount of organic matter. Now if we knew the proportions of sand and clay, in what is left, we should get pretty near the *facts* of the soil under analysis.

The easiest way to do this is to throw the remainder of the four ounces under experiment, into some pure rain water and stir it well with a spoon or pestle, after letting it stand awhile to *soften*. The fine clay will float amongst the water and the sand will settle at the bottom. Pour off the muddy water—taking care to pour off no sand. Throw in some more water on the sand, stir it well up, and pour off the muddy water again. If necessary give the sand another water; our object being to get rid of the clay and leave nothing but *sand*. We wish, however, to preserve *all* the sand. Throw the sand on the iron plate, and bake off all the moisture. When perfectly dry, weigh this sand. Your four ounces will have dwindled down to about 1 or 2 oz.: part of the loss you dried off, part you burnt off; part remains as sand; and the deficiency may be set down as the *clay* or the soil which you have washed away.

This simple—very simple method will give you an excellent idea of soils. True, it is very rough and the experienced chemist would not adopt it—but it gives you three principal items in a soil—viz: the clay, the sand, and the organic matter—it is true it does not enable you to find the lime, but that you can easily supply by attention to the next method of analysis. It gives you the absorbent powers of the soil, by which you may form an idea of the condition of the vegetable matter in it. Thus, if a loamy soil looses an eighth of its weight in the process of becoming *really*, after it is *apparently* dry, you must conclude that its vegetable matter is mostly converted into humus, which is highly absorbent and retentive of moisture. If on the other hand, a loamy soil which will show a great loss by burning shows only slight absorbent qualities, proves that the vegetable matter is not decomposed, and therefore not so valuable.

Suppose we take a couple of handsful of the soil in your clover field. Here it is. It is not stiff and clayey, nor yet is it loose and sandy. It may be considered a stiff loam. There are no fibres in it, except a few trifling grass roots, which are nothing. We dry it, and weigh four ounces. Set that over the fire, on the oven top, and throw two or three scraps of white paper amongst it; stir it about until those bits of paper begin to brown; weigh it now; it weighs 3½ ounces.—We write down—"Water of absorption, ½ ounce." Throw the 3½ ounces on the shovel, and make it red hot; weigh it after its burning; it weighs 3 ounces: we therefore write—"Vegetable matter apparently decomposed ½ ounce—(we say "apparently decomposed," because we cannot *see* any appearance of undecomposed fibre in the soil, except a grass root or so.) Take the 3 ounces and throw into the mortar with some soft water—Gently rub it with the pestle and let it stand awhile to steep. Rub it up again, and gently pour off the muddy water.—Wash the sand again and again. There—now throw the sand remaining in the mortar on the shovel. Burn it over the fire, to get rid of the moisture. Weigh it—it weighs *one ounce*. There is, therefore, 2 ounces for clay and loss.

We therefore write out our report. 4 ounces of the "clover field" soil, by rough analysis, gave

Water of absorption—⅛, or 12½ per cent or ½ oz.
Vegetable matter, principally decomposed, one-eigth, or 12½ per cent, or ½ oz.
Sand, and Silicious particles—¼, or 25 per cent. or 1 oz.
Clay and loss—½, or 50 per cent, or 2 oz.

From such an analysis, every person who is accustomed to make or even to read analysis of soils, will at once get at the principal facts of this soil, in most of the essential particulars, except the *Lime*, which may be sought for by the following experiment, if thought necessary.

Take a couple of ounces of the same soil: dry it thoroughly; rub it to a fine powder in the mortar, pounding also the small stones into dust; over this dry powder pour diluted muriatic acid, (say half acid and half rain water;) if it contains lime there will be considerable effervescence. Stir it at intervals, and add more diluted acid until there is no effervescence produced; let it stand until the next day, when, if calcareous or limy matter is present it will have been dissolved; add more water and stir well up; let it stand till the liquor is quite clear, and then pour it off; add more pure water, stir, allow to clear, and likewise pour off; by this process the lime will be got rid of. You then drain the earth through a piece of blotting paper, and dry on a hot shovel or iron plate. When thoroughly dry, weigh it, and the loss will show the amount of lime in the soil, which ranges from the smallest possible per centage up to 35 or 40 per cent of the entire soil, according as the soil is calcareous or not.

If, on applying the diluted muriatic acid to the soil, no effervescence takes place, you need not pursue the remainder of the experiment, as it is evident there is no lime.

If the two ounces should loose ¼ of an ounce of lime, which would amount to 13½ per cent, of the whole, you may deduct 12½ per cent, from the "clay and loss" of the former experiment, and add the lime to the catalogue.

The best way to practice this method is—*in your leisure to fill a few bottles with various kinds of soil that you know—say a very good soil, a middling soil, and a bad soil—a clay, a loam, and a sand*; analyze them each once or twice over, and keep the results by you. When you want to analyze a soil you don't know, you can judge its results by those that you are intimate with. Besides, the experiments will give you practice and proficiency.

The mode is so extremely simple that any person may adopt it, even if his apparatus is of the most scanty and imperfect kind. It requires nothing but common patience, ordinary attention, and a desire to learn. It is, moreover, extremely useful for practical purposes.

In the next chapter, I will show the more perfect and minute modes of analysis. In the meantime, I should be glad to hear that you have been practising this rough but serviceable method at your leisure.

SALT AS MANURE.

To the Editor of the Farmers' Journal.

Sir—If I remember right, your correspondent "Sussex," asked for chemical as well as practical information about *salt*. Having waited long enough to give due precedence to practical respondents, I now send you a pretty full chemical exposition of the manuring properties and action of salt.

We must bear in mind that salt, like other fertilizers, is not the better for being used in excess; and, therefore, the nearer the sea, which supplies it in its spray and exhalations, the less good can be expected from its addition as manure.

I am, Sir, &c.,

J. Phidraux.

The Properties of Salt chiefly used in Agriculture are—

1. The supply of its constituents, soda and chlorine.

2. Attraction for moisture, and resistance of freezing.

3. Sharpness, without being acid or alkaline; solubility, and penetration of porous matters.

4. Promotion of putrefaction, when used sparingly; though the contrary, when used freely.

5. Mutual decomposition with lime and some of its compounds, as well as some other salts; giving rise to other, and often more active fertilizers.

Let us next see what are its known *effects*, and to which of these properti they may be owing; and, for our avowed purpose of distinctness, we will consider them in three divisions:

A. Effects of salt on the soil.

B. Its effects on other manures.

C. Its effects on the plant and seed.

A. Effects on the soil.

a. Keeps it moist in the heat of summer, and soft in the winter's frost (see above, prop. 2); thus suits dry soils and seasons, whilst most other concentrated manures require wet.

b. By this, and its penetrating quality (3) keeps everything in the soil in the softest and most soluble state, best fitted to work on each other, and to be acted on by the air and weather.

c. By its putrefactive power (4) it also promotes these reactions, thus *digesting*, so to speak, everything in the soil fit for vegetable nutrition, and preparing it to enrich the root sap.

d. Kills all vermin, and most weeds also, if used freely enough, by its sharpness and penetration (3).

B. Effects on other manures.

e. Dung with salt has been found more effective for turnips, than double the quantity of dung without; and 1-4th dung to 3-4th salted peat, worked into a rich soapy spit manure, which produced more turnips and potatoes than the whole 4 parts of dung alone. Both these cases appear due to the moistening and digestive actions already explained (*a*, *b*, *c*).

f. Worked with seeds, &c., kills all vermin, seeds, and roots, by its sharpness and penetration (*d.*) and rots them (4 *a*) to a soft smooth paste, fit for the dung-heap; as it does not waste the ammonia like lime.

g. Undergoes decomposition with lime and its compounds (5) producing soda or its combination with carbonic acid, or with humus; all more powerful digestives and feeders than the salt itself; and the muriate of lime, which has the strongest attraction for moisture of almost any thing known. Salt and lime work vegetable matters to decay quicker than salt alone.

With gypsum it will supply soda and sulphuric acid cheaper than any other material; besides the muriate of lime, so valuable for its moistening quality.

C. Effects on the plant.

h. It acts more favourably on some plants than others, those especially, which naturally contain much of it (1).

It benefits root and green crops generally more than those of corn, as might be expected from its moistening and digestive quality in the soil (*a. b. c.*)

i Pasture as well as roots are rendered more palatable and wholesome by its entering into the sap, by its solubility (3); and more nutritious by its digestive action in the soil and manures (*c. f*), enriching the root sap.

k. Sour pastures are sweetened by it, though it is not alkaline. but it becomes so by giving out some of its chlorine in the leaf (*m*).

l. Wheat and barley have less straw, but more ear and heavier grain (still apparently due to the digestive power and enriched sap *c*).

m. It does not force the young plant, nor deepen the green (though chlorine is given off by the leaf in sunshine); but strengthens the growth, by the enriched sap (*c*).

n. Germination seems rather even to be retarded by it, and the plant comes up small at first, due to its sharpness (3) and destructive tendency (*d.*); but the plant soon fetches up, and overpasses those which are not salted (again by the enriched sap c.); but implying also a stimulative action, due to its sharpness (3), exciting to strong plants, but overpowering to weak ones.

o. Peas and other plants are said to blossom earlier, and grain to come earlier to harvest: here again we recognise the stimulating action above alluded to, which excites vegetation when used in due proportion, though oppressive to it when in excess (*n*).

p. Salts are much more abundant in the vital sap before flowering (the chief vital action) than after; and more in the sensitive plant than in others. Hence salts appear connected with vital energy, which may explain the stimulative actions above noticed (*n. o*).

This stimulating action is the most important fertilizing property of salt; and seems to contrast remarkably with that of ammonia; each supplying the defects of the other. But this part of our subject is of so great practical importance, that it will fully occupy another letter. Yours, Sir, &c.,

J. Phidraux.

THICK AND THIN SOWING.

To the Editor of the Farmers' Journal.

Sir—In compliance with the request of "H. W.," in your Journal of the 17th ult., I beg to state that the quantity of land sown by me with wheat last year, one kernel in a hole, was 1 acre and 3 roods; the quantity of seed sown was 18¾ pints; the produce was 83 bushels and 1 peck; the holes were 7 inches square apart.

This year I sowed 4 acres with 1 kernel in a hole—the holes 6 inches square apart; the quantity of seed sown on the 4 acres, was 4 pecks and 5 pints; it was a remarkably fine crop, and I have no doubt there will be above 50 bushels per acre, but I have not yet thrashed it.

I now proceed to give you an account of two more single kernel crops grown this year, one of which is thrashed, and the other not quite finished.

Mr. Daniel Flitter, of this parish, sowed 4 acres, 1 rood, and 27 poles, 1 kernel in a hole; the distance from row to row 6 inches, and from hole to hole, in the row, 4 inches. The quantity of seed sown upon the whole was 6 pecks; he has not yet finished thrashing it, but considers he shall have from 45 to 50 bushels per acre.

Joseph Sell, also of Bassingbourn, this year sowed 24 poles of ground with 3½ pints of wheat, a single kernel in a hole; the rows 5½ inches apart, and 5 inches from hole to hole in the row. This crop has been thrashed, and the produce is 9½ bushels. I am, Sir, Yours &c.,

Thomas Sutton.

Bassingbourn, near Royston,
September 5, 1846.

ROYAL AGRICULTURAL SOCIETY OF ENGLAND.

The following communications, addressed to the Secretary, were received at the Society's office too late last week to be laid before the Council and included in the Report of its proceedings:—

POTATO DISEASE.

West Alvington, Kingsbridge, Devon,
August 4, 1846.

"Mr. W. H. Balkwill, Chemist, &c. of Kingsbridge, having made some care-

ful observations, and, as I believe, valuable discoveries on the subject of the Potato Disease, I have requested him to draw up a statement of his experience in that matter, which you receive herewith, and which I request you to lay before those members who may be present at the next meeting. Mr. Balkwill has devoted much time to the subject, and I feel convinced that his statements are every way worthy of credit.

(Signed) "DOUGLAS MACDONALD."

"Kingsbridge, Aug. 4, 1846.

"You will probably receive a note in a day or two from the Rev. Douglas Macdonald, respecting the fact to which I beg to call your attention; and that is, that the potato disease is spreading in this locality more, if possible, than last year; and as I imagine that I have, beyond a doubt, discovered the origin of it, I am desirous of putting you in possession of the facts, which I will do in as concise a form as possible. I planted some perfect seed in my garden, that had lain in the ground all the winter, and a potato, I believe, was never planted there before; so I determined to watch for any symptom of disease. I observed the stalk first eaten a little in the top, and soon after a number of green bugs, as large, or nearly, as a common house-fly, made their appearance. A few days after, I noticed the disease in that part where I observed the bugs; and after getting one or two stalks much diseased, it seemed to spread very rapidly. I then saw one of the insects void a greenish fluid; and I took a perfectly healthy leaf and smeared this over it. In 12 hours it was spotted in many places, and in 24 hours the spots were nearly as large as peas; and in double that time a mass of disease. I then practised the same experiment on a growing healthy stalk, and one apart from the disease. In a few days it was perfectly withered and rotten. I then mounted on horseback, and rode many miles into the country; and in every instance, for many miles, I found the insect wherever the disease appeared; but amongst perfectly healthy ones, there was not the vestige of one to be seen. I shall be most happy to afford all the information in my power on this most serious calamity; but from my experience, it appears to me quite evident that the disease is contagious; and that one or two stalks, and as many insects, are sufficient to infect an entire field. The insect leaves the plant as soon as it becomes diseased, which will account in a measure for its not being discovered before. If you wish I will procure the insect, and send it to you. I had many confined, but they are all dead.

(Signed) "WM. H. BALKWILL,
Chemist."

POTATO DISEASE.—"I am prepared," says a writer in the *Glasgow Herald*, "with proof, that the potato disease, both this year and last, *was produced by the assaults of insects*. I know, in my own district, a farmer who had a field of potatoes to a considerable extent safe, and they remained so; but the reason was plain: they were ripe by this time, and the insect could neither get nourishment nor shelter from a bare stem. I know another neighbour who cut the shaws from the potatoes for the purpose of digging for the Glasgow market, and left a small quantity of those cut in the ground till common digging time; these were all safe, but the others, where shaws were allowed to remain, had all become diseased. I know some cases in moorlands, and in low marshy grounds, where the potatoes were frosted to the ground about the 1st of September: they were not diseased, and the reason of it is plain, viz., the insect could not partake of a rotten shaw. Early potatoes, too, were all pretty safe last year, and that was on account of their being ripe. But they are nearly as bad as other potatoes this year. I am perfectly satisfied that if any person had potatoes at full size, and no disease amongst them, that cutting the shaws to the ground would save them; but if diseased, I have obtained proof that they will decay faster than those uncut. Potatoes are sometimes diseased, perhaps a day or two before it is visible to the eye, and this insect, though very small, appears to be of so poisonous a nature, as to affect the constitution of the whole plant at once. The insect is yellow upon the potato, blueish upon the bean, greenish upon the turnip, and a dark red upon the oats. It is about the size of a large mite; has two long horns, black eyes, six feet or legs, with a small tail somewhat like hairs; it has a small head and a large body, and varies in shape according to its age."

Newcastle Farmer.

COBOURG, NOVEMBER 2, 1846.

The first Exhibition of the Provincial Agricultural Association, took place at the Government House, Toronto, on Wednesday and Thursday, the 21st and 22nd October, and most gratifying was the display on the occasion.

The widely extended scheme adopted by the Committee, of increasing the interest by bringing in a multifarious description of articles not connected with agriculture, although greatly augmenting the difficulties of arrangement in a first exhibition, was productive of much benefit, inasmuch as it increased the number of competitors, and brought before the public specimens of handicraft and artistic skill, evincing talent and ingenuity, deemed by many, not in existence in Western Canada. We are free to confess that we were not over sanguine, and entertained some dread of a failure, but the result proved quite the contrary, and we were gratified exceedingly.

The show of Cattle was highly respectable in point of number, and would have been still more so, had not the character of the weather of the preceding days been such as to shadow forth a very unpropitious time,—and in regard to quality, such as to justify the supposition that the farmers in that department are steadily progressing, and are in no fear of foreign competition.

The display of the productions of the field, the garden, and the orchard, was splendid, the quantity very large, and the variety and excellence such as to give evidence of the care and skill bestowed on both the agricultural and horticultural departments.

The Dairy produce was such as to defy successful competition from any quarter, and afforded as general gratification as any department of the exhibition; equalled it might be,—excelled, impossible. The tools and implements used by the artizan and husbandman, presented a strange but most satisfactory contrast with the very indifferent articles of the same class, made and in use in this Province some 12 or 15 years since.

The articles of woollen manufacture, in great variety and of superior fabric, gave assurance that capital was being employed in a manner calculated to give support to the classes engaged in raising the raw material, and materially to benefit the public at large.

The Ladies' department, presented some very beautiful specimens of the taste and skilful management of the needle, in the various gorgeously wrought and embroidered articles submitted to inspection; while in the class of the fine arts, the room was well supplied with the productions both of the pencil and the palette.

On the whole, we must conclude that the expectations of the most sanguine were far exceeded, and it is evident that the result must be to cause a co-operation with the agricultural interest, of many of the most influential men in the Province.

The Dinner took place in the large room of the Government House, where full two hundred and fifty guests were present, at which, in addition to the officers and members of the Society, were, the Hon. the Chief Justice, Sir Charles Chichester, Mr. Justice Hagerman, Ge-

neral Hannon, from N. York State, the Hon. Jas. Crooks, the Hon. Adam Ferguson, the Hon. Robt. Baldwin, the Sheriff of the Home District, &c. &c., whose addresses, although not always in strict accordance of sentiment and opinion, were such as materially to enhance the hilarity and good feeling of the whole assemblage.

It need scarcely be said that his Honour the Chief Justice was most touchingly eloquent, and the most complete, undisturbed harmony, prevailed throughout the evening.

On Thursday, the rooms and grounds were again thrown open to the public. The Ploughing match took place in a field at some distance from the city; the judges in the various classes furnished their reports, and after a most excellent address from the Hon. Adam Ferguson, the awards were made known to the numerous competitors on the lawn.

Thus passed a meeting which, we firmly believe, will be memorable in the annals of Western Canada, as forming the nucleus of an Institution which shall, each succeeding year, add to its growth and strength; proving to all interested, (and who are not?) the vast importance of co-operation in a measure intended to produce a large amount of public good.

Absence from home, on the occasion of the Grand Agricultural Exhibition at Toronto, must be our excuse for the paucity of editorial matter in our present No. We would, however, congratulate the Farmers on the favourable state of the market for their grain, arising from the comparative failure of the crop on the European continent, and the nearly total extinction of that universal substitute for bread, the Potato. Under these circumstances, Wheat must, until the next harvest at least, command a high price; and at the same time, other grain and peas become more valuable. A fortunate thing, this, for the Canadian Farmer, at a time when, from the alteration of the Corn Laws in England, a great depreciation in price was anticipated. It will afford to the agriculturist a respite, a breathing time, during which it will be well for him to direct his attention to the acquisition of all the information attainable, and apply his energies in the endeavour to render every acre of his land productive, to the utmost of its capacity. What that capacity is, many have yet to learn, but there can be no question that in many instances it has not been rightly estimated, or treated in a manner calculated to develope the extent of its resources.

The Farmer, at present, is almost the only man in the community who has no regular vacation,—no day peculiarly his own,—nothing to look forward to as a relaxation. This should not be, and now that our Provincial Agricultural Association is formed, will not. Gathered from far and near,—from the wood-clad hills and valleys of the picturesque back country, and from the older settled, more populous, and better cultivated front, they will now meet at this great Agricultural jubilee. The old settlers will relate to the young their experience of the past, and give them such instruction in the backwoodsman's art, as will make

> Fair meadow lands to sullen woods succeed,
> And waving corn-fields to the marshy reed.

All classes will congregate together to celebrate this anniversary. The wives and daughters of the farmers will enliven the show by their presence, and decorate it by their industry. An interchange of good offices will attach all parts of the community together, and Canada will become what nature intended it to be, one of the finest farming countries on the face of the earth.

THE WIRE WORM.

At a meeting of the Farringdon Agricultural Association, Mr. Palmer, M.P., read the following extract from a letter from an agriculturist, detailing a mode of destroying the wire worm:—

"The way I use soda is to sow it broadcast; I have never found it fail. The chemist, your friend, must have been ignorant of the fact, that good soda ash contains 50 per cent. of free alkali. The last year I had a failure of beet carrots, which I attributed at the time to the season, but upon examining the soil carefully I found wireworm. As it was to be wheat this year, and my last sown wheat, I mixed it with soda ash. It is now growing faster than any wheat upon my farm, and not a blade missed. Until I adopted the use of soda ash, I suffered sometimes to the amount of £60 in a field. The discovery was accidental, I had sown a headland with it as a fertilizer, on the principle laid down by Sir H. Davy, that all alkalies were stimulants to plants; it certainly improved the crop, but upon the whole I considered it a failure. The following spring it was turnips, and a man hoeing them asked me if anything had been done to the headland. I asked him why. He said there was not a plant attacked by wireworm, and the rest of the field had 15 at a nest. I then determined to try it upon another field which was full of wireworm; I have never seen one in it since. The following year, I had 25 acres of oats attacked more generally. I happened to have a cask by me, and ordered it to be sown; from that day the ravages ceased, and within a week the whole field had changed its colour to a vivid green. I have since ceased to consider it as an experiment, and always have a cask by me ready in case of any appearance of the wireworm, and have not a patch as large as my hand from wireworm on my farm."—*Bell's Weekly Messenger.*

INSTRUCTIONS FOR MAKING UNFERMENTED BREAD.

BY A PHYSICIAN.

The following method of making bread, recommended by the writer of a small tract, with the above title, will be found highly useful; it is much more economical than using yeast, which, by inducing fermentation in the flour, converts a portion of it into carbonic acid, and thus produces a considerable diminution of the quantity of bread obtained:—

To make White Bread.

Take of Flour, dressed or household, ...	3 lbs. avoirdupois.
Bicarbonate of soda, in powder	½ oz. Troy
Hydrochloric (muriatic) acid, (specific gravity 1-17) . .	5 fluid drachms.
Water, about	26 fluid inches.
Salt, about	½ oz. Troy.

To make Brown Bread.

Take of Wheat-meal* . .	3 lbs. avoirdupois.
Bicarbonate of soda, in powder	4½ drachms Troy.
Hydrochloric (muriatic) acid, (specific gravity 1-17)	5 fluid drachms & 25 minims or drops
Water, about	30 fluid ounces.
Salt, about	½ oz. Troy.

First, mix the soda and flour as thoroughly as possible, which is best done by shaking the soda from a small sieve over the flour with one hand, and stirring the flour all the while with the other. In general this will answer sufficiently; but the end will be attained more certainly if the mixture be passed afterwards once or twice through the sieve.† Next, dissolve the salt in the water, and add the acid to it—taking care to perfect the mixture by stirring them well together. Then, mix the whole intimately as speedily as possible, using a wooden spoon or spatula for the purpose. The dough thus formed will make two loaves somewhat larger than half-quarterns. They should be put into a quick oven without loss of time. This is most conveniently done in long tins. The oven should be made hotter than for common bread. A portable one, where there is no other, and a common fire, will answer the purpose. About an hour and a half will be required for the baking.

* That is, wheat well ground, but retaining the whole of the bran.

† When the quantities are small, the mixing may be effected by rubbing the flour and soda together carefully with the hands.

TOWNSHIP CLUB MEETING.

The Township Club Meeting for November, will be held at the Town Hall, on Saturday, next, the 7th inst., at the usual hour.

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