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NEWCASTLE FARMER.

VOL. I.—NO. XII. COBOURG, JULY 1, 1847. TERMS.—2s. 6d. PER YEAR.

From Bell's Weekly Messenger.

THE TILLAGE OF THE SOIL.

It is an observation of an excellent Surrey farmer, the result of long-continued and successful practice, that "a farmer should never be contented until all his land has been trenched, and turned over with the plough a foot in depth."—The evidence in favour of this almost universally applicable advice is every season becoming more decisive, and it is at such a period of the year as this, when the rain has now penetrated in some degree through the hard substratum, when the labour of accomplishing this deepening of the soil is thus reduced, that such improvements may be best accomplished. It is hardly needful, in this advanced period of agricultural knowledge, to explain the scientific reasons why deepening the soil increases the productiveness of the land. That the roots of most of the farmer's crops penetrate in deeply loosened ground to a much greater depth than in the shallow soils of former generations of cultivators, and *profitably* too, is a conclusion to which few persons with whom we have to do will dispute. It is now about a century since the great Jethro Tull (he died in 1745) first laboured to establish in England a deeper and a better tillage of the land. His proposition was met, as a matter of course, with all the arguments that the indolent and the bigoted could collect together. It was said that to plough deeper would merely bring on to the surface the inert subsoil—that it would let in the drought—that the land would be *chilled*—that the seeds of new varieties of weeds, hitherto dormant in the soil, would be ploughed up—the labour of ploughing increased, and that the deeper the soil the more manure would it require. It was in vain that Tull laboured, amid the ill-informed cultivators of those days, to show that his own experience was an answer to all these objections. The day had not yet dawned when science was able to show the pretty general correctness of Tull's conclusions, and the baseless nature of the objections with which he was met—objections, it may be remarked, that we still find occasionally employed by the few remaining sticklers for that state of agriculture so tersely described by an honest yeoman of Dorsetshire, when he said of some farmers who thus reasoned and acted, "They are too fond of letting things be as they be."

The chemical researches carried on during the present century have demonstrated that, with few exceptions, the proportions of the earthy portion of the surface soil, and that of the substratum on which it rests, are nearly identical. That, in fact, as most cultivated soils are composed of merely the more finely divided earths of which the substratum is composed, so the chief distinction between the two is, that the surface soil contains a much larger proportion of organic and decomposing matters than the rock on which it rests. When, therefore the objection is raised as to the *inertness* of the subsoil, it may be pretty safely concluded that, in the far greater majority of instances, this deficiency arises from the subsoil not being furnished with decomposing organic matters, a deficiency speedily supplied by its being so far broken up as to allow the roots of plants to gradually penetrate into it. It is also a well *ascertained fact* that, by deepening the soil, its temperature is raised even at a distance from the surface, an advantage to the *roots* of the plant, on most soils well understood by the farmer. In some experiments of Mr. Parkes made on Chat-moss, in Lancashire, this fact was clearly demonstrated (Jour. R.A.S. v. 5, p. 141.) His observations were made at nine o'clock in the morning, in the month of June, 1837. He found that on the *unstirred soil* the constant temperature from 12 inches to 30 feet was 46 degrees, but on the *well and deeply stirred soil* the temperature was at different depths as follows:—

	At 7 inches.	At 13 inches.	At 19 inches.
June 10	53 0	50 0	48 6
—— 15	57 6	53 0	50 6
—— 17	53 0	55 6	52 8

Stirring the soil, therefore, raises its temperature; and this effect is produced only by letting into the soil the warmer air of the atmosphere. And we may note that by so doing another good result is produced, since this more copious *root* supply of the gases and aqueous vapour of the atmosphere increases the health and the vigorous growth of the plants with which the improved soil thus is tenanted. They are better supplied with the carbon which they chiefly derive from the atmosphere; and they are, to an increased extent, preserved from the ill effects of long-continued dry weather. That plants, in fact, derive their chief supply of moisture at such periods from the insensible vapour always copiously present at all seasons in the atmosphere, is a truth not nearly so well understood by the young farmer as the value of the practical application of the truth renders desirable.—Admitting then the correctness of the principle that in the far larger proportion of soils the increase of their depth materially adds to their productiveness, it remains only for the farmer to consider how that deeper tillage can be accomplished in a *practical* and *profitable* manner. On many soils the better use of the ordinary plough is only needed to deepen the soil to a much greater extent than at present. It is but on a very limited extent of land that the bringing a portion of the under soil on to the surface is productive of so large a growth of weeds, such as the white mustard, or charlock, &c., as to injure for a time the farmers' crops: On the majority of lands, the raising the substratum with the surface soil *does not* produce results like these, and it is easy to avoid the error of raising too much to the surface at once. In any case, however, where this effect is apprehended—where, from *want of air and warmth*, the seeds of other crops are suspected to lie hid in the subsoil, without the power of germinating; or where, from want of deeper and better drainage, water, and that, too, perchance, surcharged with mineral substances, is known to exist. In either of these cases, all these difficulties and dangers may be readily surmounted, by the use of some implement by which the subsoil is effectually broken up, *without being raised to the surface*. For by this plan the seeds which the subsoil may contain vegetate, and are destroyed, and the saline or other mineral substances are in the course of a season or two drained off (for it is idle to talk of deepening the soil, if, for want of drainage, we only deepen it into *water*); and, as this recedes from the surface, the roots of the cultivated plants penetrate deeper into the soil, and these gradually supply by their death and decomposition a supply of those subtances so necessary to the fertility of all soils.

From the Berwick and Kelso Warder.

HIGHLAND AGRICULTURAL SOCIETY.

Mr. MILNE briefly alluded to the various theories propounded, and gave reasons for thinking that the failure could not be ascribed to insects, parasitic fungi, or degeneracy in the plant. Insects of the description referred to did not generally prey upon healthy plants; and at all events they had not been seen on the potato plant till after it had shown symptoms of disease. The advocates of the fungus theory had never been able to decide whether the fungus was the cause of the disease, or whether the diseased plant produced the fungs; and the recent discovery, that in the diseased leaves and stem there are five or six different species of fungi, and nearly as many in the tainted tubers, renders it very improbable that the malady is caused by any one of them. As to the dying out of the potato, the majority of botanists deny that such an event has ever occurred in regard to any species of plants; and the notion that the potato may have degenerated from over cultivation, is contradicted by the fact that potatoes grown in this country from Chilian and Peruvian seed were affected last year like all others. The only alternative, therefore, is to suppose that there was something in the atmosphere which specially caused the disease in the potato crop. On examining the subject more narrowly, this supposition will be found to be confirmed by many circumstances, incapable of any other explanation. (1.) Thus it was well ascertained, that in 1845 and 1846,certain other plants and shrubs were affected simultaneously with the potato. This was the more remarkable, in the year 1846, when, from the fineness of the season, vegetation generally was most luxuriant; and whilst these effects on particular shrubs and even trees, were, in 1846, observable in the Highlands as well as Lowlands, they were in 1845, not observable in the Highlands, in which part of the country the potato disease was, in 1845, also unknown. There can be little doubt, therefore, that those other plants which were injured simultaneously with the potato, were injured by the same agents, and this must have been atmospheric.

(2.) The parts of the potato and other plants which were *first* affected were those exposed to the air. The disease in the potato was early ascertained to have commenced not in the tubers, but in the upper parts of the plant—in the *leaves* of the finer varieties (which were the most common), in the stems of the coarser varieties.

(3.) The only cases in which the potato plants were generally saved, were either when the shaws had been cut over or pulled up, before the plants became diseased, or when they had been effectually screened from the blowing on them of the external air. Many cases were quoted in which potato plants well covered over with weeds, Savoy cabbages, Indian corn, and other tall plants, in garden and cucumber frames, and in outhouses, through which there was no draft of air, had been saved. In some of these cases it was mentioned that two or three plants, next the broken panes of a cucumber frame and the open door of an out-house had become spotted, whilst the rest, which were not exposed to the blowing of the air, had been saved. Under this class of cases, it was mentioned that particular fields had been *streaked* with parallel bands of blight, which bands were found to have been coincident with the direction of the wind, and to have been produced by single hedge-row trees on the windward side of the fields.

Having, by these and other facts, established that the destroying agents had been in the atmosphere, the author proceeded next to inquire into the nature and properties of it. (1.) He showed, by elaborate meteorological tables, that it could not be ascribed to any of the ordinary elements of the weather. As to *humidity*, which was believed to be the cause by many persons, and in particular by Professor Harting, of Amsterdam (who had published a memoir of a hundred quarto pages on the subject), it was stated that in 1845, the quantity of rain which fell was, in England (where the disease was worst), rather less than usual, and in the Highlands (where the disease did not appear), rather more than usual; and that the moisture suspended in the air was less than usual all over Great Britain. There had also been many former years in which the rain and moisture had been much greater than in 1845. As to *temperature*, though it was true that in 1845 it had been in England 5 deg. to 7 deg. and in Scotland 2 deg. to 3 deg. less than the average, yet when it was considered that the potato grew equally well in Orkney with an average temperature of 46 deg., and in the south of England with an average temperature of 58 deg., it was evident that it could stand much greater variations of temperature than had occurred in 1845; and this theory was completely put at rest by the weather of 1846, which in Great Britain, during the summer months, was from 3 deg. to 4 deg. warmer than the average. If this atmospheric agent was not to be identified with any of the ordinary elements of the weather, the only alternative was, that it must be some foreign matter diffused through the atmosphere. This presumption was strengthened by several well-established facts.

(2.) It had been ascertained that, near the copper-works of Swansea, which gave out not only abundance of smoke, but copious fumes of sulphureous and arsenious acids (to such an extent as to blight the pastures), the potato crops of the miners had remained absolutely intact. The same exemption had been observed on a farm surrounded by lime-kilns; and it appeared that along the sea-shore the potatoes were less and later affected than elsewhere. Coal smoke contained much sulphureous acid, and the exhalations of the sea-air contained much chlorine. Now all gases, though themselves injurious to vegetation, had antiseptic properties and some of them were commonly used to destroy or prevent contagion. From these facts it might b inferred that the atmospheric agent was some matter capable of being neutralized in the noxious effects by the gases above mentioned, and that it was probably some compound organic body, similar to what miasmatic exhalations are supposed to be.

(3.) Perhaps the farther properties of this deleterious matter might be inferred from the following circumstances:—A gentleman near Elgin stated that his field contained a number of basin-shaped hollows, which, though composed of the same soil as the rest of the field, were the most affected. Then it appeared that generally the low grounds were the first and most affected, the higher parts of the county the last and least affected. From these facts it might be inferred that the deleterious matter was heavier than atmospheric air. It could not be that the low grounds were most affected, because wettest; for the evidence went rather to show that on the best drained soils the disease was worst. The other circumstance was the appearance of a fog or mist simultaneously with the appearance of the blight, which in some places gave out a sulphureous odour, and deposited a peculiar looking substance.

(4.) The inference from these facts is, that the atmosphere in 1845 and 1846 had been, over a large part of the earth's surface, impregnated with some subtle or highly comminuted matter, which was of such a nature as to be injurious to particular plants. It was shown from experiments by Dr. Christison, made some years ago, that sulphurous chlorine, and certain other gases, when mixed, even in so minute a quantity as not to be perceivable by the smell, would injure and ultimately kill plants; and it was interesting to observe, that the effects produced by these artificial means were precisely similar to what occurred in 1845 and 1846, the injury being shown first by spots in the leaves, and then descending by the footstalks. This coincidence is the more remarkable, as one of the gases operated with (the sulphurous) is heavier than atmospheric air, and might therefore have been expected to have attacked the stems before the leaves.

(5.) If the foregoing theory be correct, it might be presumed that the matter impregnating the atmosphere would be to some extent also injurious to animal life. This corollary is verified by the experience of the years 1845 and 1846. During both years there had prevailed pulmonary complaints among human beings, as well as among cattle and sheep, to a much greater extent than usual.—The mortality of the population of England and Wales had for the three months ending September last, exceeded by 30 per cent. the average of the same quarter during the eight years that the registration of deaths had been carried on—in some of the counties on the west coast, the mortality had been more than double of what is now stated.

As to the *origin* of this anomalous and noxious matter in our atmosphere, it was impossible to conjecture. It certainly could not be of local origin, judging from the great extent to which it prevailed. It appeared to have moved over this part of the earth's surface, in the year 1846, in a direction from S. W. to N. E. (at least in the British Islands), judging by the dates of its arrival at different places, the streaks of the blight in fields, and the sides of plants first affected.

Though the cause of the disease might thus probably be inferred—yet, as there was no absolute certainty of it, it would be injudicious to suggest any practicable remedy, even if the case was such as to admit of any.

How long our atmosphere was to continue in this state, of course, no human being could tell. The failure of the potato during two successive years, proved, if the foregoing views were correct, that our atmosphere had become entirely unsuited to the plant. This fact ought to be a warning not to persist in the culture of it. To do otherwise, would be only striving against the God of Nature, and those beautiful adaptations which are discernible in all His works. For wise and beneficent reasons, no doubt, this visitation had been sent; and, after these purposes had been served, its cessation might be looked or hoped for. But until then, and till it had been ascertained by experiments on a small scale, in different quarters, that our atmosphere had again become purified—it was alike the duty and the interest of rational creatures to submit to the dispensation.

POTATO DISEASE.

To the Editor of the Berwick Warder.

SIR,—It must prove a source of deep regret and concern to all classes of the British community, that the potato disease is likely to prevail this year again. Notwithstanding the numerous theories that have been advanced on the subject, as to the cause and prevention of that dreadful calamity, there seems to be no satisfactory conclusion arrived at. I now solicit permission to address you on the subject of a new theory, which I have some reason to think will be found correct. It will be recollected that many unfavourable peculiarities marked the season of 1845 throughout. The extreme coldness and humidity of the atmosphere, the almost total absence of thunder, along with other concurring circumstances, tended to confirm the opinion that some unaccountable derangement existed that year, and that a superabundance of nitrous particles were generated in the atmosphere. These particles would, therefore, descend in solution with the long continued rain, by which the ground was completely saturated; and I fearlessly assert that the potato disease, under whatever circumstances it might be aggravated, was wholly occasioned by the septic powers of nitre. The ground being, therefore, strongly impregnated with that substance during the summer and autumn of 1845, the early attacks of the disease in 1846 are at once satisfactorily accounted for. In order to prove that nitre is the cause of the potato disease, I shall direct you to a simple experiment, which, as only the application of nitre to a potato is required, is conveniently accomplished by the following process:—Take a bit of coarse calico, 8 or 9 inches square, soak it well in a solution of crude nitre in river water, spread it out on a table or other flat surface, and if the disease is required to smite quickly, strew over it a little crude nitre finely powdered, then take a potato, perfectly free from taint, and lay it down on the middle of the calico, gather up the corners together, so that the nitre may remain in contact with the potato, tie a bit of packthread tight round the neck of it, and lay it in a cool place. The disease will be gradually excited, and may be viewed both in its incipient and spotted form, and in the advanced stages of decomposition. The calico should be occasionally sprinkled with the nitrous solution. The properties and effect of nitre being powerfully septic, the ground, as being impregnated with that substance, must of course have a putrescent tendency, and the use of strong antiseptics is indicated. Salt is, therefore, the most proper application, as being conveniently incorporated with earth, and is the only effectual remedy for restoring the ground to its former state of fertility. Numerous instances are recorded of the beneficial effects of salt as an antidote to the potato disease, and its operation is by neutralizing the nitre already in the ground, and thereby rendering it innocuous. As another proof of its utility in this case, I beg to observe that, in some of the northern counties, where kelp and seaware form the chief manures, the potato disease has been either wholly unknown, or but partially felt. In Aberdeenshire, a kind of shell-sand from the sea beach has been long used with satisfactory results, and there is no doubt that even marine sand, impregnated with the saline properties of the ocean, would be found an auxiliary of no despicable kind. I would, therefore, recommend three Winchester bushels of salt to be sown on every acre of potato land, and slightly harrowed in. As soon as the salt is dissolved and carried into the ground by succeeding showers, let the same proportion be repeated, and when the potato sets are deposited, let two bushels more be sown over the drills. When the stems are two or three inches high, a discretionable quantity may be applied in like manner. If this plan is steadily persevered in, it is probable the potato disease will soon disappear. The various instances of applying compounds to the potato sets are in no way calculated to eradicate the cause from the ground; they may operate as palliatives, but salt will remove the cause, and the effect will cease of couse.

I am, Sir,
Your obedient servant,
SAMUEL HOPE.

Coldstream, March 2, 1847.

From the Scottish Farmer.

At a meeting of the Chemical Society some time ago, a communication from W. M. T. Chatterly, Esq., was read respecting some experiments with saline manures, containing nitrogen, conducted on the Manor Farm, Hovering-atte-Bower, Essex. The experiments were suggested by the prevailing opinion that the fertilising power of some animal manures, and of the salts nitre, nitrate of potash, nitrate of soda, and sulphate of ammonia, depend upon the proportion of nitrogen they contain. The salts mentioned are all from their low price within the reach of the cultivators of the soil, and the quantity of the last thrown into the market is greatly increasing, from the extension of the new mode of purifying coal gas from its ammonia, by washing the gas with dilute sulphuric acid. The interest also of experiments with salts is greater than with mixed manures, both to the cultivator, who, from the nature of former substances, may depend on their uniformity, and to the chemist as their composition is necessarily known to him. A field of wheat was chosen, which presented in the spring a thin plant, the salts were top-dressed over the land, by hand, on the 12th of May, and the crop mowed on the 10th of August. The soil was rather poor, consisting of a heavy clay, upon a subsoil of the London clay:—1, no manure—corn per acre, 1418 lbs.; 2, with 23 lbs. of sulphate of ammonia—corn, 1612 lbs.; 3, with 140 lbs. of the same salt—corn, 1999 lbs.; 4, with 112 lbs. of nitrate of soda—corn, 1905 lbs.; 5, with 112 lbs. of nitrate—corn, 1939 lbs.; the increase of the straw was also considerable, except with the small proportion of sulphate of ammonia. The profit on the outlay, was, with the small dose of sulphate of ammonia; 294 per cent.; with the large dose, 212 per cent.; with the nitrate of soda, 138 per cent. The principal conclusions drawn are, that the increase of the nitrogen in the crop is greater than is accounted for by the nitrogen of the manures; shewing that these manures have a stimulating effect, or enable the plants to draw additional nitrogenised food from the soil and atmosphere, the considerable superiority of sulphate of ammonia over the other salts, and the greater proportional efficiency of a small than of a large dose of that salt.

It is admitted by chemists that nitrogen is of essential service to the nutrition of plants, because this element exists in every part of the vegetable structure; and although they may differ about where the supplies come from, gardeners should study to have it in such a state as will prove an advantage to the crops they cultivate. And although some should say that nitrogen can only be obtained by plants in the form of ammonia, and others that nitric acid contributes as well as ammonia to the production of nitrogen in plants, it is the gardener's business in feeding his crops, that it should not be awanting in their food.

Another substance should not be left out of the bill of fare of vegetation. Although there may be different opinions held regarding it, it will be found to be useful: the substance is charcoal.—Fromberg says, "the well-known fertilising action of charcoal requires indeed no other explanation than its characteristic property of condensing gases, thro' which a large quantity of atmospheric air, being condensed within a small space, and in a condition as yet unknown, a far larger proportion of oxygen and nitrogen are afforded to the putrefying matter; hence, therefore, it has no direct relation to the production of carbon in plants." Again, we are informed, that for a long time it was generally believed that charcoal, as an inanimate body, incapable of decay, contributed in no degree to the nourishment of plants, and that charcoal dust could only serve, at most, to make the earth looser and warmer. But M. Lucas found, from his experiments, that the charcoal in which plants grew, undergoes decomposition, and at last becomes a sort of humus. This obviously takes place, because the charcoal dust acts as humus, and, with the co-operation of water and air, continually gives out to the plant oxide of charcoal or carbonate, together with the saline particles which are in the charcoal, and remain in the ashes after burning.

From the Genesee Farmer.

CORN CULTURE.

According to the census of 1845, there were 595,135 acres planted with corn the preceding year, in the State of N. York, which gave an aggregate of 14,722,115 bushels. The average was a fraction less than 25 bushels per acre. Small as this crop appears, it was larger by 3,636,-973 bushels, than that returned at the census of 1840. This is a large gain in five years, and will be taken as evidence that still greater improvement in the culture of this great American staple is attainable.

We have long entertained the opinion that New York soil can be made to yield an average of 50 bushels per acre; or twice as much as it now does, with a three-fold larger profit. How is this result to be attained?

First, by manuring well with those elements that nature uses in making a large crop of corn, so far as they are lacking in the soil to be planted. This application of fertilizers is indispensable; for no amount of hand work with the plough, hoe, and cultivator, can possibly create one particle of the ingredients that form the substance of corn plants. A soil may contain in an available form, 99 parts in 100 of all the elements necessary to produce 80 bushels of corn per acre; yet the lacking 1 per cent. will limit the crop to one-half that amount. No one has ever seen kernels of this grain that did not contain some 45 or 50 per cent. of *phosphoric acid* in the ash left when the kernels were burnt. Suppose your cornfield possesses enough of this substance, combined with lime and other bases, and in an available shape, to form the stems, leaves, roots, and cobs, as well as the seeds of this plant, up to the limit of 40 bushels per acre? Unless nature can organize kernels of corn without the presence of *bone earth* or phosphate of lime, it is obvious that the presence of every other ingredient in never so great abundance, to form 80 bushels of grain, must all go for nothing at the harvest! In this case, without any additional ploughing, hoeing, or manuring, the addition of a few pounds of bone dust would double the crop.

Suppose your soil was deficient in gypsum, as well as in the ingredients that form the bones of your domestic animals. Then bone dust alone would not answer the great purposes of nature. As no animal can elaborate its brain without plaster or *sulphur*, nature, with infinite wisdom and foresight, refuses to cheat animals by the production of cereal plants in which *sulphur* is not a constituent element. If then your soil contains enough of sulphates to give 30 bushels of corn, and no more, how much tillage will it require to create one grain of sulphur out of nothing, that nature may have all the materials necessary to form a crop of 60 bushels per acre?

Suppose that common salt, (chloride of sodium) be lacking? Your land may furnish enough for two-thirds of a large crop. How will you supply the absent chlorine so indispensable alike in the economy of vegetables and animals? It may happen that your corn plants need five times more chlorine than your stable or barnyard manure will furnish. Will you foolishly waste four-fifths of your most valuable manure to supply what chlorine your crop requires,—or will you add a little of "the *salt* of the earth" to your dung heap and thus give it a five-fold greater productive power?

In the *ash* of cornstalks and cobs we invariably find a good deal of potash.—Suppose your soil possesses all the other ingredients required to form a crop of 80 bushels per acre except this alkali; but of that the supply is equal to the demands of 40 bushels per acre, and no more?—Barn-yard manure contains salts of potash, but the per centage is small. If you have a goodly quantity of manure and little land to plant in corn, you will need no additional potash for this crop. But suppose you have but 100 loads, to ten acres of corn ground? Ten loads will not give your plants all the potash they need. Hence, the mixture of good wood ashes with gypsum, bone dust, and salt, in addition to a small dose of manure, may give you a double crop.

The relative proportions of ashes, salt, gypsum, and bones boiled to powder in strong lye, or ground, may be left to the good sense of the corn-grower. If the bones cannot be had, the ashes, salt, and gypsum should still be used, where the land is not so rich as it should be to give 60 or 70 bushels per acre. A bushel of salt and a like quantity of gypsum to two bushels of unleached ashes, would be a fair proportion under ordinary circumstances. In a soil that naturally lacks lime, or where leached ashes are used instead of unleached, we should invariably use twice as much lime to the compost as salt. If the compound is to be applied in considerable quantity—and it should be if the soil is poor, and the materials not too expensive—it may be spread broadcast over the field just before planting.

From experience we are satisfied that it is much better to apply ashes, salt, &c. on the hill immediately on covering up the seed, than to wait till the corn is up, or weeded. A single handful should be spread over a square foot or more surface. The rains and dews will dissolve these salts, and take them down within reach of the needy roots of the plants cultivated.

We advise *deep* and *fine* ploughing for corn. The roots of this plant in a mellow, pervious soil, will seek appropriate nourishment at the distance of 30 or 40 inches from the upright stem.

REMAKKS ON CROPPING.

From a Treatise on Agriculture by Jas. Jackson.

We have now finished the subject of cropping, both as respects grain and green plants or vegetables, and the attentive reader will not have failed to observe what extraordinary improvements have in every instance been accomplished in this large and chief department of farming. By means of rotation of cropping, manuring, and introduction of those green crops which have been above noticed, the quantity of produce from any given district has, within the last eighty or a hundred years, increased at least tenfold.—This is strikingly exemplified in the following statement, taken from a paper by Mr. Oliver of Lochend, an intelligent practical farmer, and which is quoted in M'Culloch's Statistical Account of the British empire:—

"The mode of cropping at the former period (1823) was—first, peas; second, wheat; third, barley; fourth, oats; the produce being about three seeds, but, to prevent all cavil, say four seeds. This, taking the seed for each acre at one boll, over a farm of 100 acres, is 400 bolls. The quantity of straw for each boll of such a crop could not exceed 15 stones, which, on 400 bolls, gives 6000 stones, or 42 tons 15¼ cwts. of straw, to be consumed by the stock, and returned to the land in the shape of manure. But upon a farm of 100 acres, cultivated as at present, namely, a fourth turnips; a fourth wheat or barley; a fourth clover or ryegrass, pastured or made into hay, and consumed on the farm; and a fourth oats or wheat—the account would stand thus: 50 acres of wheat, barley, and oats, at 8 bolls per acre, which, we are convinced, is not above the average crops of the best district of East Lothian (and such only was cultivated when Lord Belhaven wrote); this, allowing as above 15 stones of straw for each boll, gives 120 stones per acre, which, over 50 acres, makes in all 6000 stones of straw, or 42 tons 15¼ cwts., being equal to the quantity produced by the whole 100 acres under the old system. Now, suppose that the 25 acres of clover and rye-grass are made into hay (which, however, is not the mode always practised, nor the best mode of obtaining the greatest quantity of manure, and keeping up the fertility of the soil) and that each acre yields 200 stones, the total quantity will be 5000 stones, or 35 tons 14 1-10th cwts.; and add to this 500 tons of turnips, being the produce of 25 acres at 20 tons per acre, which is by no means above a fair average crop.—Upon these data, the weight of materials produced annually for manure under the old and new systems, will be as follows:

Old system,

Straw, 6,000 stones = 42 tons 15½ cwts.

New system,

Straw, 6,000 stones = 42 tons 15½ cwts.
Hay, 5,000 " = 35 " 14 1-10th cwts
Turnips, 70,000 " = 500 "

Thus making the weight of materials to be converted into manure under the new system, in round numbers, 577 tons; while, under the old system, the quantity is only 42 tons, leaving a balance in favour of the new of 533 tons per annum, being *more than twelve times the whole quantity produced under the old!* Nothing more is necessary to show the superiority of the new system, in as far as *keeping up the fertility of the soil* is concerned: and upon this depends the progress of agriculture. And as to the question of comparative profit, it would be easy to show, from unquestionable data, that the new system is as superior to the old in this respect as it is in the supply of manure; but this, we think, must be abundantly obvious to every one who contrasts the almost imperceptible advances made in agriculture, and in the accumulation of agricultural capital, for many centuries, with their extraordinary progress during the last seventy years, or since the new system was introduced."

From the Farmers' Gazette.

DRILLING TURNIPS ON THE FLAT.

"A Member of the Maidstone Farmers' Club" has favoured us with the following:—"Being among those who have ventured to doubt the general applicability of growing turnips upon raised ridges, in the south-east of England, where the climate is so much drier than that of the west and north of this island, I beg to extract from the 'Journal of the Royal Agricultural Society' (vol. 4, p. 76,) some observations of that eminent Agriculturist, Mr. Pusey on that point:—'Having lately ventured to express an opinion, founded on the experience of south-country farmers, that the system of growing turnips upon raised ridges, however well adapted to Scotland and to the north of England, could not be universally used in the south, I am glad to find that view strengthened by the paper of Mr. Almack. (Prize Essay on the Drill Husbandry of Turnips, R.A.S. Journal, vol. 4, p. 49.)—Mr. Almack intimates that, since the dry summer of 1826, the ridging of turnips has diminished in Yorkshire, at least upon shallow soils. I should rather have anticipated that the climate of Yorkshire would have produced a conformity of practice with Scotland; but it must be remembered that, besides the difference of heat and cold arising from situation towards the north or the south, there is a very great difference in the quantity of rain which falls on the eastern or western coast of this island. In Cumberland, I believe, the average quantity of water falling in rain doubles the general average of England. Lancashire again is a rainy county, and hence, though it is in the same latitude with Yorkshire, the ridge system I believe answers there. It is not, however, the mere quantity of rain that may assist the growth of the turnip on our western coast. Even though the amount of water which falls in the year be the same, it rains there, I believe, oftener; and the same quantity of water being thus distributed more equally, preserves the ground from being thoroughly parched. There is also, I believe, more invisible vapour dissolved in the air towards the west coast; and besides these differences, the sky, even on fine days, is more covered with a general canopy of light cloud, which alone would preserve the turnip from mildew produced even by one day of glaring sunshine, when its root is at all dry. But, at all events, there is now no doubt that in many parts of England, the turnips, if drilled at all, should be drilled flat.'—To this I shall merely add, what has been frequently urged at our club, that where the soil is at all of a stubborn nature, and consequently difficult to properly pulverize, the objections to the ridge system are even of greater force, the plough, when covering in the dung, doing so chiefly with the small clods, which roll in upon the dung, and thus forming a very improper bed for the reception of the seed, particularly, which is often the case in this part of our island, should the weather remain drp."

From the Farmer's Gazette.

LENGTH OF THE ROOTS OF A POTATO.

Professor Phillips, in his elaborate and valuable paper, on the "Nature and cause of the potato disease," states that the potato plant has generally 16 main roots, and add:—"The main roots have numerous lateral ones, which again have their laterals. Each fibre is terminated by a spongiole, or mouth for absorbing water and inorganic matter from the soil. In a young plant, I carefully measured and counted the roots in order to ascertain the number of absorbents and the length of the roots as well. The plant thus examined was a mere germ. I had 6 stolons and 24 main roots. The length of these roots varied from 9 to 12 inches, giving rather more than 10 inches as the mean length of each root. The lateral roots springing from the main roots varied from 1 to 3 inches in length, and averaged 10 to every inch of the main roots. Taking the mean length of the laterals at 2 inches and their number at 10, we have 4800 inches, or 400 feet for the length of roots in a young plant barley more than a germ. To the roots of this plant there would be 2424 distinct mouths or absorbents for feeding the plant, a number apparently great, considering its size. But great as this extent of roots and number of spongioles in the young plant may appear, it is only a fraction of what exists in a full grown one. In a healthy plant of the shaw kind in a state of maturity there is at least 10 sets of main roots with 4 to each set. The length of the main fibres average 12 inches each, the laterals 10 to every inch, with a mean length of 4 inches for every lateral. Assuming these data correct, we have 19,200 inches, or nearly one-third of a mile for the length of the roots of a potato plant when at maturity. The number of mouths or absorbents to this extent of roots is very considerable; for the main roots and all the laterals terminate in spongiole, and as new filaments appear, so do absorbents also appear with them; consequently the length of roots and number of mouths are increasing with the growth of the plant until nature has exhausted her powers by a completion of the products the plant was destined to form. Calculating, therefore, at a low average, the number of mouths in each lateral of 3 inches length at 5, and taking the number and extent of the roots as already shewn, we have 24,000 absorbents for the whole plant, which, while in health, are actively employed in seeking water and inorganic matter from the soil for its sustenance. Great as this number of absorbents may appear, it will be found by examination to be underrated, for all parts of the roots abound with them.—They are so minute that many of them cannot be discerned by the unassisted eye, and their web-like filaments are easily broken."

ALSIKE CLOVER.

Mr. William Taylor, F.L.S., of 314, Regent-street, London, having communicated to the Council at a former meeting a statement relating to the *trifolium hybridum*, or Alsike Clover, the attention of the members on the present occasion was called to the following particulars contained in that communication:—The plant is indigenous in Sweden, where it has been cultivated in the native pastures of that country for the last hundred years, and has in some cases been known to grow to the height of five feet, although in England it attains only that of 2 feet. The root is fibrous, and the heads globular. The plant bears a greater resemblance to the white than to the red clover; and although its stems are recumbent, they do not root into the soil like those of the white clover; in short, it may be described as a "giant" white clover, with fresh-coloured flowers. The first sample of seed received by Mr. Taylor was collected by Swedish peasants from their pastures, and sent to him by Professor Rauch in the year 1836. This sample was in husk, and mixed with various other Swedish grass-seeds. In 1838 a doubt was raised whether the Alsike clover was a hybrid between the white and red clovers, or a distinct natural species, when it was submitted to the inspection of Professor Don, who pronounced it to be the latter. The plant yields two mowings annually. Linnæus observed the Alsike clover growing in poor, bare, obdurate clays, in the Morea, where no other plant could be made to vegetate; and yet, under such unfavourable circumstances, this clover flourished with an uncommon degree of luxuriance, and yielded shoots as tender and succulent, although not so abundant, as if reared in the most richly manured fields. Michelt mentions the plant as growing in open situations on a clayey soil, and as being, in his opinion, worthy of cultivation.—Sturm says it is found in Holland, and that he tried its cultivation along with that of a great number of other clovers placed under the same circumstances, and that the result convinced him that there is no other kind of clover equal to it for the purposes of feeding cattle.—Ehrhart also refers to it as a plant in his time but little noticed, but well worthy of trial by farmers, on account of its abundant crop and its value as food for oxen and sheep. Mr. Taylor concludes his paper with the following observations: "If the soil is in good condition, a field of this clover will last many years in prime; but every other year it will be necessary to bring on a moderate coat of manure. By this means the future crops and the duration of the plants in health and vigour, will be greatly increased.—The red clover will last only two years in perfection, and often, if the soil be cold and moist, nearly half of the plants will rot, and in the second year bald places will be found in every part of the field; besides that, in September and October many crops left for seed are lost in consequence of the heavy rains during that period; while the Alsike clover, on the contrary, ripening its seed much sooner, and continuing in vigour much longer, much risk and expense are avoided, and a large profit accordingly accrues. Further, when this plant is once established, it will remain for a great many years in full vigour, and produce annually a great quantity of herbage of excellent quality.

From the Genesee Farmer.

BONE MANURE.

The use of bones as a manure, is but little known or appreciated in this country. It has become so important in Europe that even the battle fields have been ransacked for the last remnants of those human beings whose trade was war and desolution. There is nothing more fertilizing than decaying animal matter; it contains all the elements, but two or three, required in vegetable organization, and earth, air, and water supply those.

I was astounded at the loss sustained in this county alone, as set forth by the figures of our friend Robinson, the superintendent of the County Poor. It is certainly singular that no one in this city, where water-power, capital, and mechanical ingenuity are so abundant, does not enter into the grinding of bones, as a matter of profit and of service to the country, and giving employment to the poor in gathering the material. It could not fail of being a profitable investment.

Bones, to be serviceable, should be pulverized to a fineness, from the size of a kernel of corn to the size of a wheat kernel, and even much finer for some crops. But in the absence of the ability to grind them, they should be crushed with the hammer, and if no finer than the size of "a piece of chalk," it is an improvement over using them whole, as they are more disseminated in the soil and brought in contact with the roots of the plant. As a substitute for a mill, a cast iron block, 16 inches square and 6 inches thick, with a hole through the centre 8 inches in diameter, having slats or recesses made to drop in pieces of Russia bar iron, in the form of a grate, upon which the bones are broken with a cast iron sledge and hammer. The spaces should be about half an inch, consequently no portions of the bone could pass less than that size, and many much smaller, and could be performed by very cheap labour; even the inmates of the Poor House might be profitably employed, or old persons and children. The manure would not be as immediately effective as if finer, but would be more durable and require more to the acre.

Some twenty-five years ago, I was concerned in mercantile establishment in this city, and in sending our articles of eastern manufacture to sell, I forwarded a dozen of the patent Dung Forks; for which act of folly, as my partner said, I was ridiculed and abused for my ignorance of the fertility of the western country. "Why it was as much as to say that they used or needed manure on their land." But I believe that idea is now obsolete, and that farmers have made up their minds that, to insure good crops, they must manure their land in some way; and it is almost frightful to think what a waste of this most valuable food for plants is submitted to. What a fountain of wealth in the bones of this city, in the horn piths of the tanneries, and in the boiling houses, where 10 to 20,000 sheep are killed annually for their hide and tallow: and which is a total loss, or worse, poisoning the Genesee River, or filling up vacant lots and disseminating poisonous and deleterious gases!

Bones can be dissolved by sulphuric acid, (oil of vitriol,) retaining and bringing into immediate effect every valuable property they contain. About one third of the weight of the bones of acid (which is a cheap article,) is required, diluted with its own weight of rain water, to dissolve them, which may be done in a wood cask. The liquid is then mixed with soil, or wood ashes, and sown on the land as a top dressing, with great benefit. This process develops the entire quantity of the *super phosphate of lime*, in a soluble form, and in which resides one of its principal virtues. This process is, however, so out of the way to common farmers operations, that it can only be valuable to gardners and amateurs.

Rochester, March, 1847. L. D.

Remarks.—Our correspondent should have said that to dissolve bones in oil of vitriol at least six parts of rain water to one of acid should be used, instead of "its own weight." The excess of acid, after the bones are dissolved, should be neutralized by lime or ashes.

We are happy to inform the public that Mr. M. F. Reynolds, of this city, will soon put in operation an excellent mill for grinding bones.

Farmers, collect and save all the bones you can. Don't forget that the urine of all animals, and especially of the human family, contains a good deal of phosphoric acid—the element most valuable in *bones*. To waste bread, milk and meat, or the things which Providence used to form human food in our cultivated plants, is a sin—an offence against His goodness.

Gradations of Animal Life.—Change of some kind is the law of the universe. Everything which God does is progressive; and the present question is, whether any of his progressions, having reference to human beings, appear to run on into infinitude? Now, in seeking for an answer to this question, we are encountered by an apparent law of the organised, or, at all events, of the sentient creation, of a truly remarkable character; a law which, though discernible only in fragments, and interrupted by seeming exceptions, holds with sufficient consistency to disclose the general method of nature, viz., that in proportion to the excellence and dignity of any form of existence, is it long in coming to maturity; that the cycles of things are great in proportion to their worth. It is needless to say, that there is no other criterion of the worth of a being than the magnitude of its capacities and the number of its functions. In glancing our eye up the chain of animal races, however difficult it may be to arrange them symmetrically in an ascending series, the outlines of this law are surely sufficiently obvious. The creatures which, by universal consent, would be placed at the lower end of the scale, seem to come into life perfect at once, or if they grow, to grow only in quantity; as if, of an existence so inferior, no part could be spared as preface to the rest. The perfect formation of creatures of a superior order divides itself into several distinguishable stages; and the greater the number of faculties and instincts, the longer is the period set apart for the process of development. The lion has a longer infancy than the sheep, and the sagacious elephant than either. The human being, lord of this lower world, is conducted to this supremacy through a yet more protracted ascent; none of the creatures that he rules have an infancy so helpless or so lasting; none furnish themselves so slowly with the knowledge needful for self-subsistence; as if to him time were no object, and no elaboration of growth were too great for his futurity.—*Rev. J. Martineau.*

Newcastle Farmer.

COBOURG, JULY 1, 1847.

The long continuance of chilly weather will be found to have great effect on both the grass and grain crops, and the bulk of both hay and straw will be proportionably diminished, and much delay will be caused in the time of haymaking; the crop, with some few exceptions of clover, will scarcely be ready before the usual time of barley harvest; and had it not been for the very recent warm showers, the crop throughout a large portion of this District would have been, not only late, but very deficient in quality. The deferred period for this operation will afford an opportunity for working fallows, and hoeing the root and corn crops; and although at present the latter looks backward and anything but flourishing, there is no crop that improves so rapidly under culture, by repeated stirrings of the soil, or that will more largely repay for the amount of labour expended.

We may naturally expect that, after such a long continuance of dripping weather, a dry and favourable season for haymaking will follow; and the state of the atmosphere most desirable for that operation, will also hasten the maturity of the grain, and all diligence will be needed to secure in good season the former crop.

There can scarcely be found a climate so favourable as a Canadian summer for the process of curing hay; notwithstanding which a considerable portion is got in with a great loss in the quantity, and a vast deterioration of quality. Clover, in particular, is too frequently allowed to remain uncut until much of its valuable properties are lost, or when cut is disturbed so frequently and unnecessarily, first in what is called the making, and then, should it be subject to showers, it is moved so frequently for the purpose of drying it sufficiently to house it safely, that by the time it gets to the mow or barn, it has lost its leaves and flowers (by far the most valuable portion), and is reduced to a mere stringy fibrous stem, whose saccharine matter has been lost by evaporation and exposure, and is not so valuable by 50 per cent. as good sound oat straw.

On the other hand, the meadows of both natural and artificial grasses, are left until their seeds have long past maturity, thereby exhausting the soil to a great extent; and this is done under the expectation of getting an additional hundred weight per acre, or about 5 per cent. in quantity, at a deterioration of 25 per cent. in quality.

Then the mode of making;—it is not merely cured, it is positively cooked,—stewed, under the joint influence of heavy dews (perhaps rains) and a burning sun, and thus gives all its really nutritive properties to the winds. The least possible exposure (consistent with such sufficient curing as is necessary to prevent overheating and mustiness in the stalk,) in all cases the better; and every quantity spread each day should be put into cock every night to be again spread the following days, until sufficiently made to carry in safety; a slight degree of fermentation will take place while in the cock, and the natural juices of the grass will be fixed and retained in the hay.

If more grass is mowed in a day than can be spread out and afterwards cocked up, it is better to leave a portion in the swath unspread even for a day or more, as in such case the amount of surface exposed is much less than when tedded, and even should rainy weather follow, it would be best to turn the whole swath without breaking, and may be thus so far advanced in the curing as to require merely one spreading on a fine day previous to being drawn to barn.

Clover should invariably be treated in the latter method—the swath on no account to be broken; and when, after a few hours exposure to the sun, the upper surface is wilted and perfectly dry, it should be completely turned over and remain in as compact a state as when it came off the scythe; two or three such turnings will sufficiently prepare it to be rolled into heaps lengthwise of the swath, and may be stacked or put in the barn with perfect safety, by salting each layer of about a foot at the rate of half a bushel of salt to every ton of green hay.

The prospects of the Canadian farmer in regard to a price for his grain for the current and ensuing year, are certainly encouraging. The granaries of the old world have not for many years been so cleanly swept as they are at the present time, and in some instances too short a supply has been retained, and sellers will have to become buyers for home consumption: and although it is certain that some considerable parcels of grain may be held by speculators, still there will be barely enough to meet the actual demand until the new wheat can be manufactured for food; and as our wheat will be in flouring condition before the usually protracted English harvest is brought to a close, and American wheat will be in request to mix with the new wheat of English growth to render it fit for grinding, it ought even in our markets to command a high price.

That the farmer will have the full benefit of the state of the English market is much to be doubted, as we have found by experience the past year, that no higher price has been given here for wheat when it brought 12 or 14 shillings per bushel in the English market, than when the same description of grain realised with a market price of little more than half that sum. Tens of thousands of bushels of wheat were sold last Fall and winter at prices varying from 3s. 6d. to 4s. 6d. per bushel, on which the purchasers will realise 100 per cent. profit; in some instances much more. The flouring mills are in too few hands; there may be enough of them, but they are monopolised, and the large capitalist thrusts the smaller out of the market, or make it worth their while to join the confederacy by placing their mills at his disposal for the time being; either mode acting most prejudicially to the farmer, whose hard-earned profits find their way into the plethoric purses of the capitalists; for by their control over the provincial banks they can be supplied with cash to buy, while the issues to the farmer are too meagre to enable him to hold his grain. And this, while the market is so distant, and the combination of the mercantile and shipping interests rule the price, and at the same time command high freights, will preclude the possibility of the farmer benefitting (as he ought to do) by prices, however high they may be at the place to which such freights are ultimately consigned.

Where would be the difficulty of the

farmers having mills of *their own*, in various localities, for the purpose of flouring up their own grain, and consigning it to the nearest shipping port, or even to England at once, if deemed expedient?

Farmers! think of this, and remember that wheat in nearly every instance is worth more in the Spring than in the winter.

It appears that in many parts of the United States the wheat is suffering very much from the depredation of an insect of some description, probably the Hessian fly; but the statements are very conflicting as to the mode of attack,—and we hear also complaints on the same head from parts of the neighbouring Townships of Clarke and Haldimand. We should be glad to hear from some of our readers at what part of the plant it is first observed, and the time at which it commenced.

To the Editor of the Newcastle Farmer.

Cedar Cottage, Clarke,
June 28, 1847.

Mr. Editor,—As the following statement may possibly be of importance to some of our fellow agriculturists in the ensuing seed time, I hope you will have the kindness to insert it in the *Newcastle Farmer*.

A friend of mine wishing to change his seed wheat last year, purchased half of it from me and the remainder from another neighbour, the latter being considerably eaten by the worm that was so prevalent last harvest, the former not any. Both samples were sown on the same day on summer fallow, the land having laid in grass a number of years previous to being broken up. Having heard several complaints about wheat being destroyed by an insect in the stalk, I went over the field with the owner, and found on examination that the part sown with the injured seed was almost ruined; whilst in the other, although only separated by a furrow, we could not find one! I may also state that the other person from whom he got his seed, has had his crop totally destroyed, and mine is not in the least affected. I cannot account for the above in any other way than that the worms, which were so numerous in some wheat last harvest, are in some way connected with the present insect. If any of your correspondents have another way of accounting for it, I hope they will communicate it, as in the present crisis it must be considered of vital importance.

I am, Sir,
Yours, &c.,
John J. Robson.

For the Newcastle Farmer.

HINTS FOR JULY.—TO FARMERS.

The destruction of weeds should continue a main object. Let them be kept in entire subjection.

Keep the plough and cultivator running between the rows of corn, potatoes, carrots, ruta bagas, and all other hoed crops, destroying weeds, stirring and mellowing the soil, and producing rapid growth.

Hoes ground sharp once a day, if used on soils free of stones, will do one-third more work.

Grass beaten down by the tempest, should be cut early. Timothy grass, continuing to flower for several weeks, should be cut soon after the main part passes out of flower. Clover should be dried in the shade to preserve its quality, which is affected by drying in small cocks, the slight fermentation assisting by its heat.

Every farmer should use a horse-rake who uses a plough, the former exceeding a hand-rake as a plough exceeds a hoe. The common horse-rake may be used on small farms, and is useful for drawing hay to the stack.

Apply salt to hay as it is put in the stack or mow, to preserve it from moulding and render it better for cattle.

Keep the ground deep and mellow round young fruit trees, by spading or otherwise.

THE SMALL FARMER'S MOTTO.

My purse is very slim, and very few
The acres that I number,
Yet I am seldom stupid, never blue,
My treasure is an honest heart and true,
And quiet slumber.

G. C.

To the Editor of the Newcastle Farmer.

Sir,—Can any of your readers and correspondents inform me whether land laid down with timothy grass seed in the Fall would answer, without a crop of grain being sown with it, and if so, whether an additional quantity of seed would not be necessary, and how much per acre it would require to sow it. And also, supposing it to need the shelter of an accompanying crop, whether rye to be fed down in the Spring would be the best for that purpose, and the quantity of rye to be sown with the grass-seed.

A Young Farmer.

We presume the object of "A Young Farmer" is to get a crop of hay within the year, which would not be possible if sown with a grain crop intended to ripen. We have never heard of the experiment being tried, but have no doubt whatever that by sowing thickly, say half a bushel of timothy per acre, a good plant of grass would be obtained without the shelter of any grain crop. It should be sown as early as the first week in October, to ensure its getting firm hold before the frosts. We do *not* think a crop of rye necessary, but if such a method is adopted it must be mowed rather than fed off, as the young timothy would be so much sweeter, that any Stock would take it in preference to the rye, and so effectually prevent its coming to hay that season.—Ed. *N. F.*

A Hint to Farmers on Buying Bluestone for their Wheat.—As this is the period when a large quantity of bluestone is bought by agriculturists, with which to prepare their wheat for sowing, it may not be amiss to point out to them one of the tricks of adulteration, which are sometimes practised on buyers who may be supposed incapable of detecting them. Blue stone, or, as chemists call it, sulphate of copper, costs about 50s. per cwt; green stone, or sulphate of iron, costs 12s. per cwt. These two substances can be made to crystalize together; that is to say, the dearer sulphate of copper may be adulterated with the cheaper sulphate of iron. Pure sulphate of copper ought of course to consist solely of sulphuric acid and copper; without a particle of iron.—In proportion as iron is mixed with it, is it rendered useless for the farmers' purpose. To detect this adulteration is exceedingly easy. Dissolve a little of the bluestone in water, fresh rain-water, is best, and apply to it any one of the tests for iron. If the farmer orders of the druggist, at the time that he orders his bluestone, two pennyworth of prussiate of potash, or the same cost of nut galls, he will probably, get his bluestone pure! It is still as well, however, that he should test it. Let him, then, bruise some of the nut galls into pieces, and pour boiling rain-water on them. When this water is cold, let him strain the liquor through a piece of blotting paper, or clean fine linen. If the liquor in which the blue stone is dissolved contains any iron, immediately, on adding some of the liquor of nut galls to it, it will become black. Let the prussiate of potash be dissolved in like manner; adding this to the bluestone liquor will cause a dark blue precipitate to fall if it contain iron. Or simply drop a little liquor ammonia on the sample; if pure, it will shew a dark purple; if mixed with iron, a brown rusty appearance.—*Maidstone Gazette.*

Preservation of Potatoes.—Potatoes at the depth of one foot in the ground produce shoots near the end of spring; at the depth of two feet, they appear in the middle of summer; at three feet of depth, they are very short, and never come to the surface; and between three and five feet, they cease to vegetate. In consequence of observing these effects, several parcels of potatoes were buried in a garden, at the depth of three feet and a half, and were not removed till after intervals of two or three years. They were then found without any appearance of germination, and possessing their original freshness, goodness, and taste.—*Ann. Soc. Agric.*

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