Technical and Bibliographic Notes / Notes techniques et bibliographiques

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

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

- [ ] Coloured covers / Couverture de couleur
- [ ] Covers damaged / Couverture endommagée
- [ ] Covers restored and/or laminated / Couverture restaurée et/ou pelliculée
- [ ] Cover title missing / Le titre de couverture manque
- [ ] Coloured maps / Cartes géographiques en couleur
- [ ] Coloured ink (i.e. other than blue or black) / Encre de couleur (i.e. autre que bleue ou noire)
- [ ] Coloured plates and/or illustrations / Planches et/ou illustrations en couleur
- [x] Bound with other material / Relié avec d'autres documents
- [ ] Only edition available / Seule édition disponible
- [x] Tight binding may cause shadows or distortion along interior margin / La reliure serrée peut causer de l'ombre ou de la distorsion le long de la marge intérieure.

- [ ] Coloured pages / Pages de couleur
- [ ] Pages damaged / Pages endommagées
- [ ] Pages restored and/or laminated / Pages restaurées et/ou pelliculées
- [x] Pages discoloured, stained or foxed/ Pages décolorées, tachetées ou piquées
- [ ] Pages detached / Pages détachées
- [x] Showthrough / Transparence
- [x] Quality of print varies / Qualité inégale de l'impression
- [ ] Includes supplementary materials / Comprend du matériel supplémentaire
- [ ] Blank leaves added during restorations may appear within the text. Whenever possible, these have been omitted from scanning / Il se peut que certaines pages blanches ajoutées lors d'une restauration apparaissent dans le texte, mais, lorsque cela était possible, ces pages n'ont pas été numérisées.

- [x] Additional comments / Commentaires supplémentaires: Continuous pagination.

MAY.

The spring-time is the season when the advantages of thorough draining are especially manifest. At other seasons where the drainage is perfect, the Farmer is able to work upon the land a few hours after the heaviest rain ceases. Besides every kind of crop suitable may be cultivated at the proper time and in the best manner. You are assured of from double to four times the produce. We would beg to call the attention of our Readers to our article in this Number, page 200, and we shall continue from time to time to illustrate the advantages of this primary improvement—for we are convinced no enforcement of ours can be too strong—speaking as we do from a very large experience—for, wherever practicable, it should be the preliminary to all attempts at improved culture. We are convinced that thorough drainage and tillage—timely sowing, a judicious selection of seed, and its careful preparation before being committed to the soil—thus fostering its growth in the earlier stages, when it may be easily injured by unfriendly influences—will go far to ensure an unfailing and abundant return—unless in exceptional cases and seasons. The effects of insufficient drainage are preceptible at all seasons from the opening of spring to the conclusion of Fall-ploughing—in the sowing, ripening, and harvesting of crops, and our remarks especially apply to a very great proportion of the lands in Lower Canada.

During the cold weather of May, when no adequate provision is made, the stock suffer greatly. During the summer we find, in too many cases, the cattle running over the unseeded fallows—and they are fortunate if they have besides the privilege of a woodland tract. In winter they must live on dry and sapless fodder, in many cases only fit for the manure heaps, unless accompanied by roots, or artificial preparation, or feeding as condiment. While on this subject, we may strongly recommend to our Readers to seed a small portion of their ground with forage plants, for cutting and soiling when the pastures fail during the droughts of summer. By referring back to the past numbers of the Journal, they will find directions on this head. At present we would beg leave to recommend a trial of the *Alsyke Clover*—the seed to be had from the seedsman of the Board, Mr. Sheppherd, Notre Dame Street Montreal, which he has procured for the purpose of distribution amongst enterprising Agriculturists, with the view of encouraging a trial of seed growing of this valuable plant, besides his anxiety for their testing for themselves the value of its soiling properties. He would willingly repurchase the seed of their own growing—and he thinks that it might become—if the trial should prove surcessful—a valuable article of export. The Alsyke Clover possesses the combined properties of the Red and White Clovers—is a hybrid between them, a native of the south of Europe—was introduced by our friend, Mr. Lawson of Edinburgh, Scotland, Seedsman of the Highland Agricultural Society of Scotland. The great difficulty is in procuring the pure seed. Many failures have resulted from imposition in this respect.

The roots are fibrous,—it is a perennial, and it will no doubt prove a valuable acquisition. If the lands are too late prepared for the crop of grain, they should be seeded down with Indian corn, Oats, Buckwheat, Rye, or some other crop, to be cut green for forage. This would well repay the labour expended; and the land might be prepared in good time for a future crop. Surely this would be preferable to having a surface producing nothing better than weeds. When forage crops are cut in a green and succulent state, and properly saved or cured, and fed out to stock in winter, as a change, they will frequently prefer these to the best clover hay.

We have explained in a former number the action of alternate frosts and thaws on fall wheat. Drainage would do much to prevent loss from this cause. It is melancholy to see a promising braird killed off piece meal from this cause—especially when we reflect that so much could be done towards its preservation by thorough drainage. Ill executed ploughing—accompanied with too thick sowing—encourages a feeble growth, and frequently causes the laying or lodging of the grain crop—when deep and careful ploughing—on a well drained surface, might have ensured an abundant and vigorous crop. The strength of the stem is of great importance—not of too succulent and watery consistence, but well stiffened up with a due proportion of *silica*. You will then have a crop even and level as the floor,—ripening equally—and with a heavy ear. We are not addressing those whose practice corroborates what we are enforcing—but write for the majority of our friends, who disregard too much in their imperfect practice, their own best interest.

Drained land receives at once the benefit of the suns rays—may be planted a fortnight earlier than wet land; and though underdraining be now in its infancy, and the expense must necessarily prevent its adoption by many—we have a measure as we have already stated in preparation, which will provide the funds to the enterprising Agriculturist on easy terms; and we long for the realisation of our anxious desire to behold the application of the same advantages to the soils of Canada, which we had the satisfaction of applying to the soils of Scotland—so inferior to our own in native fertility.

It is a common error—because of the expense of purchasing them—to sow grass seeds too thin—thus leaving a large proportion of the surface to be occupied by weeds.

All the field crops should now be sown timeously, and in succession, selecting the seed, and preparing it carefully by pickling and drying with lime or ashes. Be careful in procuring as fine a tilth as circumstances will permit of. Take good care to have teams in excellent order. Take care to prevent unnecessary exposure of manures, as the temperature encreases. Keeping them closely covered up until about to be ploughed into the soil, to prevent loss of the more volatile ingredients. Have meadow fences thoroughly repaired, and top dress the poorer portions with any fertilizing substances which can be spared for the purpose. Do not allow the cattle to enter them too early, that they may not injure

and displace the plants by trampling upon. them—especially on a wet surface. Be generous to your stock of all kinds about yeaning—bearing in mind that a trifling neglect at this important period may disappoint your hopes, and your past labour and attention may go for nothing. For further directions, such are still applicable, we refer back to our last number.

J. A.

We beg to draw the attention of our readers to the following communication addressed to the Treasurers of County Societies, by the Minister of Agriculture. We shall have something to say on this subject in our next number.

BUREAU OF AGRICULTURE AND STATISTICS,
Toronto, March 28, 1859.

To the Treasurer
County Agricultural Society,

As the Legislative Grant to Agricultural Societies in Upper and Lower Canada is smaller than usual this year, and will not amount to the full sum provided by 20th Victoria, caps. 32 and 49, it is hereby required that all Treasurers of of County Agricultural Societies shall transmit their Returns, under Schedule B of said Acts, to the Boards of Agriculture for Upper and Lower Canada respectively, on or before the FIRST DAY OF JULY NEXT; in order that the Grant may be divided at a fixed rate, proportioned to the amount subscribed.

Societies omitting to send in their returns on or before that date, will be debarred from receiving any Grant for the year 1859.

By order,
WILLIAM HUTTON,
Secretary.

MANURES, AND THE PRACTICABILITY OF INTRODUCING THE MANUFACTURE INTO CANADA.

By F. Sterry Hunt, Esq.. M. A. S. D., Professor University of Laval, Chemist to the Geological Commission of Canada.

Before describing the results of some enquiries into the value of these manures, and the practicability of introducing their manufacture into Canada, it may be well to explain briefly certain principles which may serve to guide us in the appreciation of the subject. Modern investigations of the chemistry of vegetation have led to a more or less correct inderstanding of the laws of vegetable nutrition and the theory of manures, and we are all aware how many natural and artificial matters have been proposed as substitutes for the manure of the stable and farm-yard. Foremost among these ranks the Peruvian guano, composed for the most part of the exuviæ of sea-birds, and employed for centuries by the Peruvians as a powerful stimulant to vegetation. This substance owes its value to the phosphoric acid and ammonia which it is capable of affording to the growing plant; the former element being indispensable to the healthy development of vegetation and entering in large proportion into the mineral matter of the cereals, while ammonia furnishes, in a form capable of assimilation, the nitrogen, which with the elements of water and carbonic acid, make up the organic tissues of plants. Besides these essential principles, plants require sulphuric acid, chlorine, potash, soda, magnesia and oxyd of iron, all of which elements are found in their ashes, and are required for their healthy growth. In a fertile soil all of these ingredients are present, as well as phosphoric acid and ammonia, which last substance is constantly produced by the decay of animal and vegetable matters, and is either at once retained by the soil, which has the power of absorbing a certain portion of it, or is evolved into the air and afterwards dissolved and brought down by the rains to the earth.

Many of the mineral elements of a soil are present in it in an insoluble form, and are only set free by the slow chemical re-actions constantly going on under the influence of air and water. Such is the case with the alkalies, potash and soda, and to a certain extent with the phosphates. Now although there is probaly no soil which does not yield by analysis quantities of all the mineral elements sufficient for many crops, yet by long and uninterrupted tillage the more soluble combinations of these elements may be all taken up, and the land will then require a certain time of repose in order that a store of more soluble matters may be formed. Hence the utility of fallows.

In my analyses of the soils of the Richelieu valley, in the Report for 1850, pp. 79-90, I have shown, by comparing the virgin soils with those exhausted by continued crops of wheat during fifty years, the proportions of phosphoric acid and magnesia, elements which are contained in large quantities in this grain, have been greatly diminished, but the soil still contains as much phosphate as it has lost, and this only requires to be rendered soluble in order to be available to vegetatiou.

In forests and untilled lands the conditions of a healthy vegetable growth are seldom wanting; the soil affords in sufficient quantity all the chemical elements required, while the leaves and seeds which annually fall and decay, give back to the earth a great proportion of the elements which it has yielded. In this way the only loss of mineral matter is that which remains stored up in the growing wood or is removed by water from the soil. Far different is the case in cultivated fields, since in the shape of corn, of fat cattle, and the products of the dairy, we remove from the soil its phosphates, alkalies and nitrogen, and send them to foreign markets. The effect of tillage becomes doubly exhaustive when by artificial means we stimulate vegetation without furnishing all the materials required for the growing plants. Such is the effect of many special manures, which while they supply certain elements, enable the plants to remove the others more rapidly from the soil. A partial exhaustion of the soil results likewise from repeated crops of the same kind; for the elements of which the cereals require the largest quantity are taken in smaller proportions by green crops, aud reciprocally, so that by judicious alternations the balance between the different mineral ingredients of the soil is preserved.

One of the great problems in scientific agriculture is to supply to the soil the ammonia and the mineral matters necessary to support an abundant vegetation, and to obtain from various sources these different elements at prices which will permit of their being economically made use of. Nowhere but in the manure of the stable and farm yard can we find combined all the fertilizing elements required, but several of them may be very cheaply procured. Thus lime and magnesia are abundant in the shape of marl and limestones; soda is readily obtained, together with chlorine, in common salt; while gypsum or plaster of Paris supplies at a low price both sulphuric acid and lime. Potash when wanting may be supplied to the soil by wood-ashes, but phosphoric acid and ammonia are less easily obtained and command higher prices.

An abundant supply of phosphate of lime is found in bones, which when dried contain from 50.0 to 60.0 p. c. of mineral matter, consisting of phosphate of lime, with a little carbonate, and small portions of salt of magnesia and soda. The remainder is organic matter, which is destroyed when the bones are burned. This phosphate of lime of bones contains 46.0 per cent of phosphoric acid, and the refuse bone-black of the sugar-refiners usually affords about 32.0 per cent of the acid. The different guanos also contain large amounts of phosphoric acid, and that known as Columbian guano is principally phosphate of lime. Various deposits of mineral phosphate of lime have of late attracted the attention of scientific agriculturists. I may mention in this connection the crystalline phosphate of lime or apatite of our Laurentian limestones, and the phosphatic modules found in different parts of the Lower Silurian strata of Canada and described in previous Reports.

These mineral phosphates are in such a state of aggregation, that it is necessary to decompose them by sulphuric acid before applying them to the soil. The same process is also very often applied to bones ; for this end the phosphate of lime in powder is to be mingled with nearly two-thirds its weight of sulphuric acid, which converts two-thirds of the lime into sulphate, and leaves the remainder combined with the phosphoric acid as a soluble super-phosphate. In this way, the phosphoric acid may be applied to the soil in a much more divided state, and its efficiency is thereby greatly increased. Even in its soluble form however, the phosphoric acid is at once neutralized by the basic oxyds in the soil, and Mr. Paul Thenard has lately shown that ordinary phosphate of lime, when dissolved in carbonic-acid water, is decomposed by digestion with earth, insoluble phosphates of iron and alumina being formed, which are again slowly decomposed by the somewhat soluble silicate of lime present in the soil, and transformed into silicates with formation of phosphate of lime. It is probable that alkaline silicates may also play a similar part in the soil. These considerations show that the superior value of soluble phosphate of lime as a manure, depends solely upon its greater subdivision. A portion of the phosphoric acid in Peruvian guano exists in a soluble condition as phosphate of ammonia.

With regard to the nitrogen in manures, it may exist in the form of ammonical salts, or combined in orgânic matters which evolve ammonia by their slow decay. The ammonia which the latter are capable of thus yielding, is designated as potential or possible ammonia, as distinguished from the ammonia of the ammoniacal salts, which is generally soluble in water, and is at once disengaged when these matters are mingled with potash or quick-lime. Such is the sulphate of ammonia, which is prepared on a large scale from the alkaline liquid condensed in the manufacture of coal-gas. In Peruvian guano a large amount of the nitrogen is present as a salt of ammonia, and the remainder chiefly as uric acid, a substance which readily decomposes, and produces a great deal of ammonia. In fact, this decomposition takes place spontaneously, with so much rapidity, that the best guanos may, it is said, lose more than one-fifth of their nitrogen in the form of ammonia in a few months' time, if exposed to a moist atmosphere.

Other manures, however, contain nitrogen in combinations which undergo decomposition less readily than uric acid. Thus unburned bones yield from 6 to 7 per cent of ammonia, and dried blood, fifteen or sixteen per cent, while woolen rags and leather yeild about as large a quantity. In estimating the value of such matters as manures, the difference in the facility with which they enter into decomposition, must be taken into account. Thus if too large quantities of guano are applied to the soil, a portion of the ammonia may be volatilized and lost, while with leather and wool the decay is so slow, that these materials have but little immediate effect as manures. The nitrogen of blood and flesh is converted into ammonia with so much ease, that it may be considered almost as available for the purpose of a manure as that which is contained in ammoniacal salts.

Attempts have been made to fix the money value of the ammonia and the phosphates in manures, and thus to enable us from the results of analysis, to estimate the value of any fertilizer containing these elements. This was I believe first suggested a few years since, by an eminent agricultural chemist of Saxony, Dr. Stôckhardt, and has been adopted by the scientic agriculturists of Great-Britain, France, and the United States. These values vary of course very much for different countries ; but I shall avail myself of the calculations made by Prof. S. W. Johnson of New Haven, Connecticut, which are based on the prices of manures in the United States in 1857. In order to fix the value of phosphoric acid, in its insoluble combinations, he has taken the market prices of Columbian guano, and the refuse bone-ash of the sugar refiners, which contain respectively about 40 and 32 per cent of phosphoric acid, and from this he deduces as a mean 4½ cents the pound as the value of phosphoric acid when present in the form of phosphate of lime. This would give $1.44 as the value of 100 pounds of bone-ash, and 1.60 for the same amount of guano, while they were sold for $30 and $35 the ton.

The value of soluble phosphoric acid has been fixed by Dr. Voëlcker in England and by Stockhardt in Saxony, at 12½ cents the pound. This evaluation is based upon the market price of the commercial super-phosphates of lime. Mr Way of the Royal Agricultural Society, however, estimates, the value of phosphoric acid in its soluble combination at only 10½ cents the pound ; and Mr Johnson, although adopting the higher price, regards it as above the true value.

In order to fix the real value of ammonia, Prof. Johnson deducts from the price ef Peruvian guano, at $65 the ton, the value of phosphoric acid it contains and this arrives at 14 cents the pound for the price of the available ammonia present. This kind of guano, however, now commands a price considerably above that which serves for the basis of the above calculation ; and both Voelker and Stoëkhardt fix the value of ammonia at 20 cents the pound. The price of potash as a manure is estimated by Mr. Johnson at 4 cents the pound : but this alkali rarely enters to any considerable extent into any concentrated manures, and may therefore be neglected in estimates of their value.

AN ENUMERATION OF THE PRINCIPAL MAMMALS, BIRDS, REPTILES AND FISHES OF THE OTTAWA VALLEY.

By Edward Van Cortland, M. D.

Honorary Member of the Literary and Historical Society of Quebec, &c.

MAMMALS.

Scientific Name.	*English Synonym.*	*Remarks.*
Cervus Virginianus.	Common Deer.	Abundant.
Cervus Canadensis.	Wapite.	Scarce.
Cervus Tarandus.	Caribou.	Scarce.
Alces Malchis.	Elk or Moose.	Scarce.
Ursus Americanus.	Black Deer.	Plentiful.
Ursus Lotor.	Raccoon.	Plentiful.

Lutra Cenendensis.	Otter.	Plentiful.
Canis Lupus.	Common Wolf.	Plentiful.
Canis Vulpes.	Common Fox.	Plentiful.
Vulpes Fulvus.	Red Fox.	Plentiful.
Vulpes Virginianus.	Grey Fox.	Rare.
Felis Lynx.	Lynx.	Scarce.
Mustela Erminea.	Ermine.	Common.
Mustela Lutreola.	Mink.	Common.
Mustela Martis.	Stone Martin.	Scarce.
Mustela Abietum.	Pine Martin.	Scarce.
Mephitis Americana.	Skunk.	Common.
Gulo Luscus.	Wolverene.	Scarce.
Mustela Pennanntii (?)	Fisher.	Rare.
Castor Fiber.	Beaver.	Scarce.
Castor Zibethicus.	Muskrat.	Plentiful.
Arctomys Empetra.	Graund Hog.	Common.
Pteromys Sabrinus.	Flying Squirrel.	Scarce.
Tamias Striatus.	Ground Squirrel.	Common.
Sciurus Vulgaris.	Common Squirrel.	Plentiful.
Sciurus Cinereus.	Grey Squirrel.	Scarce.
Sciurus Niger.	Black Squirrel.	Scarce.
Dipus Canadensis.	Jumping Mouse.	Scarce.
Mus Agrarius.	Harvest Mouse.	Abundant.
Mus Bursarius.	Short Tailed Rat.	Rare.
Lepus Americanus.	Common Hare.	Abundant.
Hystrix Hudsonius.	Canada Porcupine.	Common.
Condylura Cristata.	Star Nosed Mole.	Common.
Phoca Grœnlandica.	Common Seal.	Occasional.

BIRDS.

NON-MIGRATORY.

Tetrao Umbellus.	Canadian Partridge.	Common.
Tetrao Canadensis.	Spruce Partridge.	Rare.
Corvus Corone.	Carrion Crow.	Common.
Garrulus Canadendis,	Common Jay.	Common.
Surnia Funerea.	Canada Owl.	Rare.
Surnia Nyctea.	Snowy Owl.	Rare.
Parus Atricapillus.	Chickadee.	Common.
Picus Villosus.	Hairy Woodpecker.	Rare.
Picus Pubescens.	Downy Woodpecker.	Rare.
Lanius Borealis.	Butcher Bird.	Common.

WINTER VISITANTS.

Plectrophanes Nivalis.	White Snow Bird.	Abundant.
Corythus Enucleator.	Pine Grossbeak.	Occasional.
Loxia Americana.	American Crossbill.	Occasional.
Lagopus Mutus.	White Ptarmigav.	Occasional.

REPTILES.

CHELONIA.

Chenolura Serpentina.	Snapping Turtle.	Common.
Cistuda Carolina.	Box Tortoise.	Common.
Kingsternon Pensylvanicum.	Common Tortoise.	Common.

SAURIA.

Menobranchus Lateralis.	Banded Proteus.	Common.
Triton Porphyriticus.	Grey Spotted Triton.	Rare.
Menopoma Ottawaensis.	Hell bender.	Rare.

BATRACHIA.

Hylodes Canadensis.	Cricket Frog.	Abundant.
Hyla Viridis.	Tree Frog.	Rare.
Hyla Versicolor.	Tree Toad.	Common.
Rana Fontinalis.	Spring Frog.	Abundant.
Rana Halecina.	Grass Frog.	Abundant.
Rana Pipiens.	Bull Frog.	Abundant.

OPHIDIA.

Coluber Constrictor.	Black Water Snake.	Abundant.
Coluber Vernalis.	Grass Snake.	Common.
Leptopis Saurita.	Garter Snake.	Common.
Tropidonotus Leberis.	Yellow Bellied Snake.	Common.
Coluber Punctatus.	Ringed Snake.	Rare.

FISHES.

Perca Flavescens.	Yellow Perca.	Abundant.
Catostomus Macrolepidotus.	Large-scaled Sucker.	Abundant.
Labreo Cyprinus.	Long-finned Sucker.	Abundant.
Centrarchus Œneus.	Rock Bass.	Abundant.
Centrarchus Fasciatus.	Black Bass.	Common.
Alosa Prostabilis.	American Shad.	Migratory.
Corvina Oscula.	Sheepshead.	Rare.
Pimelodus Catus.	Catfish.	Plentiful.
Pimelodus Pallidus.	Channel Catfish.	Plentiful.
Salmo Fontinalis.	Brook Trout.	Abundant.
Salmo Confinis.	Lake Salmon.	Abundant.
Salmo Etythrogaster.	Red-bellied Trout.	Plentiful.
Lepidosteus Ossex.	Bony Pike.	Plentiful.
Pomotis Vulgaris.	Pond Fish.	Plentiful.
Anguilla Tenuirostria.	Common Eel.	Common.
Acipenser Brevirostris.	Sturgeon.	Common.
Corregonus Albus.	Lake White Fish.	Abundant.
Hyodon Clodialis.	Fresh-water Herring.	Common.
Labeo Oblongus.	Common Chub.	Abundant.
Cyprinus Atromaculatus.	Lake Chub.	Abundant.
Esex Estor.	Maskinonge.	Plentiful.
Esex Vulgaris.	Common Pike.	Abundant.
Esex Reticulatus.	Pickerel.	Abundant.
Hydrargira Viridescens.	Minnow.	Abundant.

JUDICIOUS CULTTURE MAY TEND TO IMPROVE CLIMATE.

It has hitherto been a prevailing opinion with the many, that the constitution of plants must be altered and adapted to climate, without taking into consideration the practicability of altering or adapting, by artificial means, the climate to the constitution of Plants. The first process has been called acclimatizing.

But we shall endeavour to show, that, by familiar expedients, the climate may be altered so as to suit the habits and requirements of the vegetation.

It is absolutely necessary to consider the conditions of the atmosphere in which plants live and move and have their being ; but, as regards the latter, the generality are apt to omit, or overlook, that the conditions and temperature of the soil in which the *roots* of plants and trees are placed and permeate, are of at least as much importance, if not more, to their successful cultivation.

The root, or underground extension of the plant, is quite as sensitive to the extremes and modifications of moisture, dryness—of heat and cold—as the branches, leaves, fruit, and flowers that wanton in the sunshine, or wither in the inhospitable wind. The summer shower is as grateful to the buried rootlets, as to the verdant leaves ; and unhealthful influences, or fostering warmth, which, the one or the other, withers or expands the gay blossoms, are not without inflicting kindred influences on the responding and suffering radicles. So that the breath of spring and gentle breezes of summer effect equally the portions of the plant which beautify the landscape, or seek for sustenance from amongst the ingredients composing the body of the soil in which it stands.

It follows then, that the regulation of the circulation of air underground, and the condition of its volume must influence materially the growth of the vegetation on its surface. And it also follows, that the amount of contained moisture, and its conditions, must equally effect the growth of the plant it bears. But we have it in our power, by judicious culture, to regulate these conditions ; and thus far is it in our power to alter the climate to suit the habits and conditions of the various agricultural and other plants, the subjects of cultivation.

Now this result is to be obtained by securing the thorough working and comminution of the soil, for the purpose of aeration, or the introduction and distribution of atmospheric air through its cells—and, by thorough drainage, so as to secure the removal of superabundant, and therefore, injurious moisture. For when the interstices between the particles of earth are filled with water to the expulsion and exclusion of the air, except the small portion contained in the superfluous water itself—the plants, or their rootlets rather, are deprived of the most essential part of their food. Remove the superabundant water, and air takes its place, holding in suspension a sufficiency of moisture for the subistance of the roots, and the system of growth dependent upon them for nourishment ; for be it clearly understood, that it is not water *in a fluid state*, which is generally preferred or appropriated by plants,—but rather when it has assumed the state of air-borne vapour, it becomes adapted for facile assimilation.

But it is also noticeable, that drained land, in summer, may be from 10° to 20° F. warmer, than when saturated and gorged, so to speak, with moisture ; so that thorough drainage has the effect of *raising* the temperature of the soil—and we thus have it in our power to improve, if we may so express ourselves—the underground climate. It has been ascertained that heat cannot be transmitted downwards through water—therefore land injuriously saturated with moisture must proportionally decrease in temperature. On the contrary, if the soil be open, and not injuriously saturated, the warm rain descends through the cells and pores of the earth, carrying with it the high temperature it has gained at the surface—imparting it to the soil as it passes onwards and downwards, and thus distributes that encrease of temperature—familiarly called "bottom heat"—so essential to the luxuriant growth of the various plants, the subjects of culture. So that deep draining, when efficiently conducted, modifies and alters the underground temperature to a very appreciable extent ; and thorough culture, and a due separation or comminution of the constituent particles, open the soil, at once, for the more easy extension of the rootlets, and permit of the free access of the air ; and when both these objects are attained, an appreciable improvement will be speedily apparent, both in the vigour and luxuriance of the vegetation. The plants will be more able to resist the action of unhealthy influences—less subject to rust or mildew—less easily affected, retarded or destroyed by the attacks of insect enemies—less likely to fall a prey to drought; the robustness and vigour of their growth rendering them superior to the injurious influences which might otherwise overpower their recuperative energies.

J. A.

ON THE ATMOSPHERIC INFLUENCES ON SOIL AND VEGETATION.

Showing the nature of the atmospheric influences upon soil and vegetation, as affecting the amount and value of the produce, including the modification of these influences, arising from heat and cold, dryness and moisture.

The existence of such a body as the atmosphere is assumed in the Title of the Paper ; so we are relieved from going into any proof on this point. However, any person who shall walk against a strong wind for sometime, will not be disposed to dispute the resistance of some powerful opposing fluid body. Regarding its composition and properties, however, we shall have much to say; and we shall now proceed to give a slight introductory sketch, descriptive and explanatory of the general action of these, before we attempt the task of explaining in detail the particular nature of the atmospheric influences on soil and vegetation, as affecting the amount and value of the produce ; including the modification of these influences arising from heat and cold, dryness and moisture.

The atmosphere, or air, we may admit, in spite of all opposing assertion, in the present state of our knowledge, to surround our Globe to an undetermined and unascertained height. We breathe, inhale and exhale, inspire and expire this fluid; and without it, or were it differently compounded, neither the animal nor vegetable kingdom, as at present constituted, could, we may presume to say, exist, without the intervention of omnipotence. The atmosphere then is a fluid, otherwise we could never move nor breathe in it. But fluids, like other substances, must have ponderability or weight, and, consequently, pressure and also a certain elasticity; and these properties we shall hereafter find, when we are considering the effects of density and attitude, to have some connection with the subject of this Paper.

As substance of necessity must have some colour we may direct the eye of the curious to a distant landscape in what is called a fine summer day, and he will find woodland, field, and stream arrayed in blue, which is the colour of the air, —the atmospherical livery. The great bulk of the aerial body is composed of two gasses ; but, besides, it is found to contain, in very small proportion, a third gas, and a quantity of aqueous vapour.—However, although the relative proportion of the two latter to the two former is small, they are of much importance to the successful progress of vegetation. Many different analyses of air have been made by different chemists, varying slightly, but not materially, in the proportion of the individual ingredients.—For instance it contains in 100 parts according to

	Nitrogen.	Oxygen.	Carbon.	Watery vapour.
Lavoisier, by weight,	75.55	23.32	0.10	1.03
do by measure	77.05	21.00	0.08	1.42
D. Prout do	80.00	20.00		

So that we may say from 1/4 to 1/5 is composed of oxigen. and the remainder nitrogen, with a small, but important mixture of carbonic acid gas and watery vapour. The two first of these components are, so far as has been discovered, simple—the latter compound bodies. Carbonic acid contains:

1 Equivalent of carbon or charcoal	2 equivalents of oxigen	Air.
6	16	22

or it may be said to consist of carbon and oxygen only combined together in the proportion of 28 of the former to 72 of the latter ; or 100 lbs of carbonic acid contain 28 lbs of carbon and 72 lbs of oxygen.

The amount of the carbonic acid is about $\frac{1}{609}$ the part of the bulk of the air or about 0.04 per cent, the experiments made by Sausure at Geneva at all periods of day and season, giving 4.15 volumes in 10000 ; the maximum being 5.74 ; minimum 3.15.

Near large expanses of water, whether fresh or salt, it is found to diminish ; also diminishing as we recede from land. It is also less by day than by night. This gass is ½ heavier than the atmospheric air, and it may be easily poured through the air from one vessel to another.

The vapour is common water, a compound of the Gasses Oxygen and Hydrogen ; 8 grains of the former and 1 grain of the latter, in union, producing 9 grains of pure water ; or 88.9 grains of the former 11.1 grain of the latter, in nuion, producing 100 grains of pure water. To produce the vapour in the air water has been uplifted and diffused by the action and infusion of heat, operating upon the surfaces of the many lakes, rivers and seas, of the Globe. This principle is in constant action ; and as the temperature increases, so does it increase in energy. This process is familiarly described by the term evaporation. The measure of watery fluid contained in the atmosphere is found to vary according to the temperature of the containing body. The gazeous composition of the air is invariably the same in every known locality.—(*To be continued.*)

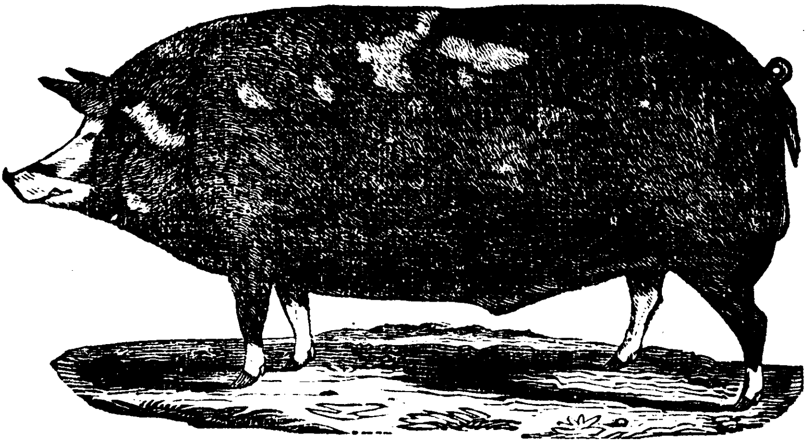
J. A.

SEED WHEAT.

We have just been informed that Messrs. Louis Renaud & Frere expect to receive immediately (by next steamer) 500 Minots of three months French Wheat, from the North, of a peculiarly fine variety, and he expects thereafter 3,000 Minots of Black Sea Wheat, of the best quality. Should this variety succeed well this season, these gentlemen intend importing a large quantity next year. They have the liberality to announce too, that this choice seed wheat will be disposed of at cost prices.—*Editor.*

☞ To Correspondents.—Many Articles and communications are laying on our table—but, coming in late, are crowded out of this number.

See Transactions, No ,5 , Page XLVII.



See Transactions, No. 5, Page LXIX.

ON THE INFLUENCE OF SOILS ON VEGETATION.

The influence of soils on vegetation, as will be presently seen, it would be difficult to overestimate. These influences operate in various modes and degrees; and it is necessary carefully to consider these various modifications of action in order to make any approximation to an accurate conclusion, as to the best admixture of the ordinary Elements of soil for promoting the germination and growth of particular vegetables.

We may regard the soil as the great sustaining or supporting body through which the roots of plants extend, and, by thus permeating through its interstices, become so interlaced with, and attached to this body, as to be able to extend their upward growth through the exterior air, and effectually to resist any injury that might result from the encreased latteral pressure consequent on a very sudden or rapid motion of its volume in one direction. In other words the soil is the great primary body or Matrix, as it is often termed, to which the plant is firmly anchored by its roots, and which enables it to resist the effects of ordinary winds. As the soil permits of it then, it may be stated generally, that the extension of the roots bears some definite proportion to the upward growth of vegetables ; and the character of the spontaneous productions of the soil are so far determined by the cohesion or looseness, the roundness or comminution of its constituent particles.

Again we may regard the soil as the great receptacle or storehouse in which the varions fructifying particles both animal and vegetable are garnered ; and which have been entrusted to its safe keeping by the hand of nature or of art ; and which it faithfully treasures in its bosom, until called upon to yield these up by the terms of that Law, which regulates the decompoaition and recomposition of all organic matter, and authoritatively proclaims that not one solitary atom shall go to waste. When reviewed in this light, the soil must encrease in value the more faithfully it performs this important trust, and the more amply it restores in a valuable form, when called upon, that portion of nature's riches committed to its keeping. It is admitted on all hands, and without dispute, that the progressive decomposition of organised animal and vegetable matter supplies the Elements necessary to recomposition and reorganisation, and it follows, thus, that a soil must encrease in value, as it is rich in these Elements ; —but thus always under the limitations after specified. While this is affirmed as a général truth, there is yet another quality of soils which it is very necessary, in practice, to view in connection with it, and that is the disposition which various soils manifest to part with the Elements of fructification, and the proportions in which they are capable of exerting that power. This leads us to inquire into the natural causes which dispose soils to part with the Elements of fructification, and the proportions in which they are capable of exerting this power, and also the means and process by which they are enabled to do so.

Every day observation convinces us that certain conditions are necesary to the decomposition of all organised substances, – that certain conditions hasten, while others retard it. We are convinced by the most familiar and homely arguments, by casting an accidental glance at the Larder or Farm Yard ; and from these we learn that the atmospheric influences second, and powerfully forward the operation of decomposition. It will be seen from watching its varying progress at different seasons, that, in order to its rapid and successful accomplishment, various conditions are necessary : and, by bestowing a little attention to that subject, it will be discovered that the mighty Agents by which it operates with such secrecy, constancy and unfailing success, are heat, air and moisture.

Those are the conditions which are necessary to its development, and it depends entirely upon the presence and just apportionment of those agencies, that this mysterious change is wrought. The nascent germ, then, is nourished by the decomposition of its kind :—it preys on the corruption of its predecessors.—Having discovered what are the Agents that promote this decomposition or corruption, it will be at once accorded that the fertility of soils must in some degree depend on their structure being of such a nature, as to permit of the free operation of these decomposing Agents, as well as of their containing enclosed and imprisoned among, or combined with, their particles a large proportion of the decomposing subjects, ready to be acted upon.

In this way soils vary in their degrees of fertility, from the varying proportions of decomposing and decomposable matter which they contain, and also in the degree in which the nature of their structure permits of the operation of the great Agents of decomposition.

But it must be kept in view, at this stage of our investigation, that soils from their structure, may be too retentive of their nourishing particles, or, in other words, may be so compacted and impervious, as to baffle the tender radicles of the plants in their efforts to permeate in search of their contained nourishing particles, and, from the same cause, exclude the atmospherical influences—or they may part with their moisture too freely, and permit the too free action of those influences ; and either excess must reduce them in the scale of fertility.

We learn from our every day observation of the Animal economy, as exampled in ourselves and others, that we are preserved in health by a steady and constant supply of wholesome nutriment : that we are loaded and inconvenienced by a surfiet, and that, when often repeated, repletion becomes fatal. That a denial of nourishment is attended with dissimilar, but eventually, equally fatal, effects. That by at one time gorging the system by a superabundant supply of nourishment, at another enfeebling it by one inadequate supply, we are certain to superinduce, by persisting in such a course, frequent indisposition, which will eventually determine in organic derangement—so true does this hold in the Vegetable economy. If soil contains too large a proportion of concentrated nourishment, the delicate vessels of the plant become loaded by repletion, and it frequently happens that a rupture takes place in consequence, which explains some of the common unhealthy appearances of vegetation ; but the particular explanation of these morbid appearances does not fall within the scope of this enquiry. When a soil contains too limited a proportion of nourishment, inanition induces languishing and death. Soils again that are very subject to be easily affected by the sudden and frequent changes of the atmosphere afford nourishment so irregularly, as to induce in time, organic derangement in the vegetables on the surface. (*)

But it here becomes necessary to explain, through what immediate medium it is that plants derive the Elements of their nourishment, and by which this nourishment is prepared for their absorption, and this will satisfactorily establish how soils, from their difference of texture, are more or less dependent on the state of the atmosphere for the supply of that solvent, which is necessary to hold in suspension the elements of fructification which they contain ; and, thus dissolved and suspended, to present the Elements to the absorbing vessels of plants so modified, as to be calculated for their ready absorption and consequent nourishment. Now we shall simply state, without enquiring further, as it is well established, that this great solvent and menstruum is moisture as it descends from the clouds ; and it will be at once conceded that close and retentive soils, provided they have considerable powers of absorption, will be less liable to part with a supply than those of a more porous or pervious texture. In loose and pervious soils, [and where the subsoil is also open, a great proportion of the

(*) NOTE.—It generally happens that the fructifying particles have escaped in the aerial form before the crop is matured ; and the cereal plants and others cultivated for their seeds are thus starved at the moist critical and important stage of their growth—the forming of their seeds or grain. This sufficiently accounts for such soils being ill suited for wheat or the more profitable crops, and particularly to the luxuriousness and productiveness in general of crops that require to be long on the ground.

moisture deposited by the atmosphere speedily finds its way downwards, and sinks to a level lower than the ordinary tillage depth ; and the remainder is too quickly absorbed by the continued action of sun and wind ; and open soils are thus deprived of their vehicle of nourishment.

It is evident then, that soil will be most fertile which contains the greatest proportion of enriching substances, provided they are not in excess—whose texture is just so porous as to permit of the free action of the atmospherical influences heat, light, air and moisture (although the consideration of light does not exactly fall under this enquiry,) without being so loose as to be too easily deprived of its all important solvent and vehicle of nutriment by the active and constantly operating influences of sun and wind.

But having established the general conditions of fertility, we must presently come to consider, what are the particular admixtures of soils best calculated for promoting the germination and growth of particular vegetables. We may here, in passing, mention, that all the general conditions which contribute to fertility are favorable to germination. (*) Seeds the subjects of agriculture, are composed of an external envelope, formed of membranes, and enclosing a kernel, consisting of farinaceous and mucilaginous matter, and this matter is possessed in an eminent degree of the property of absorbing moisture from the soil, which combines with its substance, and by this combination converts its mucilage and starch into sugar, which appears to be the substance best calculated for the nourishment of the Embryo germ—so soon as the radicle descends from the lower part of the grain, and the plumule pushes along within, and to the other end, and escapes from the sheath or external covering ; and when the store of nourishment, contained in the original seed, is exhausted, the future advancement of the germ depends, as does all vegetable growth, on the fertility of the soil. In some instances, however, in agricultural plants, the seed lobes are converted into leaves, and by this beautiful change are rendered capable of absorbing nourishment from the circumambient atmosphere. Seeds destitute of farina are more dependent in their early stages on a peculiar fertility of the soil, and more particularly on that portion in immediate contact with the embryo germ ; and they also require for their perfect success a very fine tilth, or, in other words, a high degree of comminution in the soil. For instance the Turnip and Beet : and it will be shown how, in this point of view, drill husbandry is most applicable to such crops.

The solid constituents of soil are the ordinary Earths, Silica, Alumina,—the Alkaline Earths, Lime and Magnesia,—the Aikalies Soda and Potassa, with a pulverulent substance of a dark colour, composed of Carbon, associated with the gasses, Oxygen, Hydrogen and Nitrogen,—the product of animal or vegetable decomposition, or of both ; and we frequently find soils in the neighbourhood of the Ocean, or in sea-girt Isles, impregnated with saline particles, deposited by the evaporation proceeding from the ocean, as it is borne along the surface by the currents of the atmosphere, and generally, a variety of salts the result of decomposition and recomposition and combination among the original and accidental constituents of the soil. Oxide of Iron too is of very frequent occurrence, most soils deriving their colour, either from this substance, or the carbon of the decomposed organic matter. Oxide of manganese and various Earths and Oxides occasionally occur ; but it is unnecessany to particularise or describe them at length in this enquiry. It has been asserted that some of these substances exert a baneful, and even fatal, influence on vegetation :—for instance, magnesia in quantity, and some salts of Iron ; but it is undeniable, on the other hand, that

(*) With the exception indeed of light, which is prejudicial in this process.

vegetation *does* exist where these are present in great quantity,— although the variety of plants may be circumscribed, and they may be deficient in healthy and vigorous growth. We must before going further, give a very brief and general account of the nature and properties of these various constituents, which will enable us to show how they affect the texture and fertility of various soils, and likewise all their constituents.—(*To be continued.*) J. A.

GROWTH AND CONSUMPTION OF WHEAT IN NEW-ENGLAND.—At a late agricultural meeting at Keene, Cheshire Co., N. H., one of the subjects discussed was the question, whether the farmer connot raise wheat and supply himself with flour, at less cost than he can raise other articles, and after subjecting himself to the trouble of marketing these, and to the cost of paying three or four profits to those through whose hands the wheat and flour have passed, purchase what of the latter he may need for his family supply. From the tenor of the confessions and remarks made, there seems to have been a pretty general impression that the farmers of that county, as well as of other portions of New-England, were working to disadvantage in neglecting to raise wheat, while at the same time they purchased so largely of flour. As an illustration of the amount of flour purchased in the towns, it was stated that in a single town in that State, in which there was no manufacturing establishment, but where nearly all the people were engaged in farming, and the population was only 1,500, flour was annually sold to the extent of abut $5,000, or of $3,33 for each individual. This estimate, though at first sight it may appear rather large, will not appear at all exaggerated when it is considered that in several districts of the country, where wheat is almost exclusively used for bread, it has been found that the consumption averages about five bushels, or a barrel of flour, for each person, young and old, per annum; and that in some families the rate of consumption has been found as much as seven or eight bushels for each mouth in the course of a year —this larger consumption having been caused, most probably, either by the want of a garden and its manifold contributions to the table, or by some other circumstance leading to an almost exclusive dependence on fine flour.

If, as seemed to be thought by some of the speakers, flour is consumedthroughout New England at about the same proportion for each person as in the one town referred to, it cannot be othewise than that the question stated in our opening sentence is one deserving of a full considerstion, a free discussion, and an early decision. Years ago the West produced wheat so cheaply and so abundantly, as to discourage the farmers in New-England in their attempts to supply the home demand, and to reduce the price so low thet their wheat crops were scarcely remunerative; but of late, the ravages of the wheat-midge, the exhausted condition of lands from continual taking from them and making no returns, and other circumstances, have placed East and West more upon a par, and made it less difficult for the farmer to compete with the latter in raising of wheat crops. *Country Gentleman.*

CULTURE OF THE ONION.—EDS. COUNTRY GENTLEMEN.—In your paper, Vol. XIII, No. 9, are instructions about growing onions—some of which are very good; others not so good. First it is well to have new seed, of the right kind —to be sure of this, grow it yourself, by selecting onions of the size and quality you wish to grow, and setting them out where they will flourish without any intermixture of the baser sorts. Onions, like persons, are known by the company they keep; he, therefore, who would have his product pure, must be careful that they have no bad associates. Spare no pains in preparing the soil, pulverizing and fertilizing it well, and clearing the surface of all extraneous matter, so that the seed may be evenly distributed—in rows about fourteen inches apart, and thick enough in the row to admit of the young plants being thinned, so as to leave them growing about two inches apart. No harm will accrue from their being thus thick; this will enable them to grow two inches in diameter, and when they grow larger than this, they are coarse and not so palatable. H. speaks of applying twenty cords of manure to the acre. It cannot be necessary to apply so much if the land is at all decent; one-half this quantity will be enough if properly fined and intermingled with the soil.

No crop better rewards care in culture than the onion. It has an extreme aversion to weeds, and every thing else that disturbs the tender fibres of the young plant. Although the bulb forms chiefly on the surface, these fibres extend to the depth of *ten* or *twelve* inches, and the soil should be in condition to favor this extension. Otherwise, when drouth comes on, the growing plants will feel it; and once checked in their growth, from this or any other cause, they never again fully recover.

Having lived for the last thirty years in the midst of fields of onions, where more than *one thousvnd barrels* of best quality are annually gathered, I have presumed to make these suggestions. If they should find favor in your sight, and place in your excellent paper, perhaps more of like character on other crops, may be forthcoming in due season.—J. W. P.—*South Danvers, Mass.*

Remedy eor the Onion Maggot.—Mueh loss has been experienced among onion growers from the destruction of the young plants by the maggot. Mr. Emerson of Hollis, states in the *N. E. Farmer*, that good guano applied on the rows by sprinkling on with the hand, so as to nearly cover the onions, is an effectual remedy. "The guano must be good, and put on with a liberal hand"—his onions, he adds, do finely under the treatment.

Tile Machines and Tile.—The most experienced drainers now prefer the pipe of tubular tiles, to all others, as they are less liable to accident. It has been proved that a small quantity of water will rise *higher*, and consequently *run faster*, in the narrow concave of a pipe, than in the flat and wide bottom of a horse-shoe tile. Some of the best English drainers assert that inch pipe are quite sufficient for the modern branch drains; others prefer those with a bore 1¼ or even 2 inches in diameter, but I think the medium size is best. It is a common error to make draining *too large*, as the current is apt to become sluggish in them, and to deposit sediment, which ultimately chokes the drain.—Edward Mason.—*Detroit.*

Short-Horn Sales.—Our last foreign journals come to us with accounts of two sales of Short-Horns the second week in March, one of which—that of Mr. Troutbeck at Blencow, near Penrith, Cumberland—deserves particular mention. The herd was one carefully bred, principally descended from the celebrated Nell Gwynne and Strawberry cows, both from the stock of Charles and Robert Collings: the attendance was between 500 and 600; the competition was spirited, and the prices high. Of 35 lots, comprising cows, heifers and heifer calves, 32 were sold for 1,897 guineas—being at an average price of nearly 60 guineas, or $300—one of the Gwynne tribe, (light roan, calved 1856,) selling for $750; another (roan calved 1858,) for $625, and a third, same age and color as the last, for $590. The average for all the Gwynne tribe was about $360 per head, while that of the Strawberrys was $190. Five bulls were sold, averaging about $220—the youngest, which brought 37 guineas, being only thirty days old. This sale is thought especially noteworthy, as it manifests the esteem in which the Short-Horns are now held in the immediate district formerly noted for its Long-Horns, and shows the complete triumph of the stock of the Collings brothers over that of Bakewell the great pioneer in stock improvement, whose pupils in some measure the Collings were.

Mr. Strafford, under whose direction this sale took place, also sold the day previously the herd of Mr. M. Spraggon, near Stockfield— comprising 34 lots of cows and heifers, and 13 bulls and bull calves.

Fence-Making—Inverted Posts.—I see in The Cultivator for 1858, p. 340, a hint given on inverted posts. This is a thing perhaps not generally known among our farmers, and perhaps not generally believed. It is nevertheless true that posts or stakes will last longer if inverted than otherwise; though the top end may be smallest, yet will it outlast the other if inverted. I am not able to give the reason why it is so, but am told that the timber has a natural "suction" by which water or dampness is drawn above the surface of the ground, which rots it off, which is not the case if inverted. Try it, brother farmers. C. F— *Clarion Co., Post.*

Culture of the Onion.—Messrs. Tucker & Son.—I have often seen the culture of the onion given in The Cultivator. Now I will give my way of raising onions. If the ground is wet, horse manure is best for it. Plow it in the fall, and let it lay till spring. But if it is a dry, sandy soil, common barn-yard manure is the best. Put it on in the spring, and plow it 8 or 9 inches deep, and then rake smooth, and draw your drills 14 inches apart—after marking, let it lay to the sun a few hours, and then sow 6 to 8 pounds to the acre. Cover up the seed, and roll the beds with a light garden roller. When they come up, a top-dressing of wood ashes is very beneficial to this crop. Hoe and weed when needed, but not hoe too deep. Thin out to 2 or 2½ inches apart in the drill. At the last weeding, brush the dirt away from the bottom to give it a good chance to bottom above ground. I have not given any time to sow, as every one can judge for himself.—George T. Osborn, *Pawling N. Y.*

MANURES FOR POTATOES.

In the April number of the Genessee Farmer for 1858, we gave the results of some experiments, made by the proprietor of this journal, with several artificial fertilisers on potatoes. It was there shown that though half the ash of potatoes consists of potash, four hundred pounds of unleached wood ashes, gave an increase of only five bushels per acre, while 150 lbs. of sulphate of ammonia gave an increase of 45 bushels per acre, and 150 lbs. of sulphate of ammonia and 300 lbs. of super-phosphate of lime gage an increase of 84 bushels per acre.

We then remarked that these experiments indicate that potatoes require, in an eminent legree, ammonia and phosphates, and that therefore Peruvian guano, which contains about 18 per cent. of ammonia and 25 per cent. of phosphates, is one of the best artificial manures that can be used for potatoes, and instanced the following fact in confirmation :

" In the same field on which the above experiments were made, two acres were planted with potatoes in 1852, without any manure, and two acres with 300 lbs. of Peruvian guano per acre, sown broadcast. The two acres without manure produced 238 bushels, and the two acres dressed with guano produced 410 bushels ; or an increase of eight-y-six bushels per acre."

Since then, the result of some experiments made in Scotland have been published in the Quarterly Journal of Agriculture, which confirms this opinion.

There were forty-seven experiments in all, but our space prevents allusion to more than the principal ones.

Of any single manure, Peruvian guano gives the greatest increase and also, as an auxiliary to farm manure, it affords the best result.

Sulphate of lime (plaster) was used in unusually large quantity. Eight hundred and ninety-six lbs., when used alone, gave and increase of 11½ bushels ; and when used with farm manure, it caused a decrease of 9½ bushels, as compared with the plot receiving the same quantity of farm manure alone ! This is a result we cannot account for. Muriate of potash, used with farm manure, also caused a decrease in the produce. In our experiments, 100 lbs. of plaster, used alone, gave in increase of six bushels per acre over the unmanured plot.

As more convenient for comparison, we give the main results in tabular form:

Manures used and quantity per acre.	Produce in bush's per acre	Increase in hush's per acre.
No manure	157	
896 lbs. sulphate of lime, (plaster)	168½	11½
663 lbs. superphospate of lime	191	34
376 lbs. Peruvian guano	275	118
252 lbs. sulphate of ammonia	179	22
224 lbs. nitrate of soda	193¾	36¾
15 loads farm manure	189½	32½
15 loads faim manure and 896 lbs. sulphate of lime, (plaster)	180	23
15 loads farm manure and 376 lbs. Peruvian guano,	300½	143½
15 loads farm manure and 663 lbs. superphosphate of lime,	214½	57½
15 loads farm manure 252 lbs. sulphate of ammonia	291	134

It is evident that, to raise large crops of potatoes, as of wheat, barley, oats, corn, &c., we require ammonia and phosphates. If these are present, most soils can furnish an abundance of all the other constituents of plants : and if they cannot, there is no natural way of supplying ammonia and phosphates that will not at the same time supply an adequate quantity of every other element required. To get ammonia at a cheap rate, is the grand problem which American farmers have to solve. We know of no better way at present, than to raise plenty of clover, peas, beans, turnips and other roots, and feed them to stock on the farm, using as much oil-cake and other rich, nitrogenous food, in addition, as they can afford—of course being careful to save all the manure.—*Genessee N. Y. Farmer.*

Horticulture.

GARDEN FLOWERS.

At the meeting of the Farmers' Club of the American Institute, in response to a request, Mr. Pardee handed in the following as a select list of 25 species of flowers, which he had prepared for a lady at her request. It was not intimated that the list was complete, but it was said this list, or even a part of it well cultivated, will be far preferable to a larger number cultivated in the ordinary way, tto wit :

Best Verbenas.
" Petunias.
" Pansies.
" French Asters.
Peona flora and Chrysanthema flora Aster.
Phlox Drummondi alba, Criterion and Victoria.
Portulacas, best varieties.
Best Double Balsams.
China Pink, new marbled.
Cypress vine.
Canary bird flowers.
Climbing Cobea.
Amaranths, tri-colored, &c.
Best double Sweet Williams.
Best pereeial Lupins.
Best Digitalis, or Fox Gloves.
Best Delphinium or Larkspur.
Best double Hollyhocks.
Phlox perennial, Roi Leopold.
Dielytra Spectabilis.
Dwarf Chrysanthemums.
Peonies.
Yucca Filamentosa.
Roses.

With the exception of the last named six species and perhaps the Climbing Cobea, it was recommended to raise the plants from seed, sparing no pains to get the best kinds of seeds, and, if possible, save them yourselves. If a lady can only be induced to learn enough about the superior cultivation of flowers to excel in one variety, she will be likely to acquire a taste that will enable her to excel in many other kinds, and then, she will ever after be sure to have an abundance of fine flowers, with little care or trouble.

Ladies Department.

BRAN BREAD.—A sweet and economical, and most wholesome bread may be made by pouring water, either warm or cold, on to bran, stirring it up, and leaving it to steep for an hour; then strain the bran off through a sieve or strainer, pressing all the moisture out. There should be liquor enough to mix your bread, without any water, unless it be too cold, and a little hot water is required to raise the temperature; add the usual quantities of salt and yeast; and mix and knead as in other bread. The most wholesome and nutritive parts of the bran will thus be preserved and added to your bread.

Cobbett recommends this bread, and I have proved its good and wholesome qualities myself. All the fine flour and bran that passes through the sieve, should be put into your bread, along with the liquor, for this constitutes part of its excellence. If you wish for *browner* bread, throw in a handful of dry sweet bran, and mix with your flour, in addition, but not that from which the gluten and fine sugary particles have been extracted by the water.

Many persons who do not use potatoes in their bread, as directed in the first receipt, set a sponge over night, merely mingling the flour, warm water, salt and yeast, and when' well risen, (which it is known to be by the air-bubbles that rise on the top,) thicken with flour, and knead well: when the dough is of sufficient lightness, make up into loaves; let them rise a second time in the bread pan or bake-kettle, and bake.

PLANTING SHADE TREES—The best season in all theyear fordoing this work, has again returned. Trees have taken threir winter rest undisturbed, have gathered up new forces im root, trnnk, and limbs, and are now ready to exert them in making a virgorous growth. As yet, they are comparatively dormant. The kindly sun and the breath of the sweet south are beginning to arouse them, but they are not fully awoke. Now then, is just the time to remove them to the places desired. where in genial soils they may grow and spread themselves abroad fcr long years, and gladden the eye of the planter.

Does anybody need exhorting to do this work? We can hardly believe it; though stranger things have happened. Friend please take my arm for a short walk. Let us go up this street at the right, it is (stepping over into the mouth of June for a while) well-shaded, and will make a pleasant stroll for us. Glad it's shady, are you? so am I, What a good thought it was in Mr. Jones and Mr. Smith to set out these trees by the road-side? These men where not satisfied with adorning their own grounds; their taste would not be confined within their own fences, but spread itself abroad over all the neighborhood. Hence came this good road, and this well-made sidewalk, and these umbrageous trees. What an excellent monument have they erected for themselves! For a century or two, at least, these elms and maples will keep the planters names fresh and green.—Yes you are right in saying that a man who plants trees by the roadside is pretty sure to be a genia sort of man,and a man whom his neighbors love. I hold, too, that it enhances the value of one's property to have the street well shaded.

This is my friend John Jones' residence, and as I have the freedom of the place, let us go in and range through the grounds. These elms standing like sentinels each side of the gates, look to be forty or fifty years old; but they are not half that age. I saw them planted, and know that their wonderful growth is owing chiefly to the good soil he has given their roots to ramble in.

No, those are not "foreign trees" The first is the Tulip-tree, and the other is the Cucumber tree, or *Magnolia acuminata*—both indigenous to this latitude. They are so seldom planted, I don't wonder you thought them exotics. Can anything be more admirable for a lawn than these trees, with such clean, handsome bark, and such magnificent foliage! Better, certainly, than the abele, locust, and ailantus. Let us walk on and look at the other trees. Here are American, English, Irish, Scotch, and Dutch elms, all good. Yonder are maples, horse-chestnuts, English lindens, Scotch larches, evergreens of all sorts : how charming they all look, dressed in their fresh green coats! I fancy Mr. Jones feels himself well paid for his labor, in the attractions of his home. His wife and children, too, how happy must they be to live in such a beautiful home? Their friends in visiting them, and indeed all persons passing along the street, must say to themselves, Mr. Jones is a sensible man, a man of taste, and one who knows how to find happiness in the world, as he goes along. Success to Mr. Jones!

Reader, let us break away from those happy June people, leaving them to stroll about a while longer in the shady grounds of Mr. Jones, while we go and plant trees in our own grounds and by the roadside, while it is yet April.—*American Agriculturist.*

THE BEST WHITEWASH WE KNOW OF.—The arrival of the house-cleaning and house repairing season, and several recent inquiries, remind us to again refer to that first-rate in-door whitewash we described last June. Nearly a year's trial has confirmed all we said of it. Our house ceilings, and the walls were not papered, which received one coat last May, are now as white as after a usual fresh coat of lime, and we have not been in the least trouble with its "rubbing off." The numerous published receipts, to the contrary notwithstanding, we believe no preparation of lime or other material will adhere well without the addition of glue, oil or varnish. The latter two articles are expensive, and caustic lime mixed with glue will soon change its color. White chalk is *uncaustic* lime, (carbonate of lime,) and this substance is the best substitute for lime, as a white, wash. A very fine and brilliant white-wash preparation of chalk is called "*Paris White.*" This we buy at the paint stores for a cent a pound, retail, For each sixteen pounds of Paris White, we procure half a pound of the white transparent glue, costing twenty-five cents (fifty conts per pound.) The sixteen pounds of Paris White is about as much as a person will use in a day. It is prepared as follows :

The glue is covered with cold water at night, and in the morning is carefully heated, without scorching, until dissolved. The Paris White is stirred with *hot* water enough to give it the proper milky consistence for applying to the walls, and the dissolved glue is then added and thoroughly mixed. It is then applied with a brush like the common lime whitewash. Except on very dark and smoky ceilings, a single coat is sufficient. It is nearly equal in brilliancy to "Zinc white," a far more expensive article. Let the readers of the *American Agriculturist*, try this method the present Spring, on a room or two at least, and we think they will not use lime thereafter. It is, of course, a little more expensive than common lime, but is cheaper in the end, on account of its better color, greatest permanence, and fast adherence to the plastering. At least such is our experience.—*American Agriculturist.*

Flowering of Potatoes.—Mr. Mamby of England, in his prize essay on the cultivation of Early Potatoes, says that "a flower to an early potato is considered a sign of deterioration—the first symptom of *growing out*—it being contended that all the strength of the plant should be thrown into perfecting the tuber and not in the opposite extreme." He would therefore eradicate them as soon as they appear, and save seed from plants which have shown no indication of flowering. Experiments have shown that potato plants beginning to show a tendency to flower, perfect their tubers less early and perfectly than before that tendency was developed.—*Country Gentlemen.*

Ague.—For an adult female, divide six grains of calomel into three doses; take one of these doses every two hours; at the end of the sixth hour take a large tea-spoonful of Epsom salts. On the following day take a wine-glassful of the following tonic mixture; dissolve twenty grains of quinine in a pint of water, to which add four drachms of diluted sulphuric acid: if too acid, add more water to reduce it. Take the dose at seven in the morning—at eleven—and again at four, as long as the bottle lasts. When you have finished it, take a dose of senna and salts; and in most cases the ague will cease; but it generally returns at the end of twenty-one days. As it is sure to give you notice of its approach, have recourse to the same doses of calomel and salts, as before, followed by the quinine and sulphuric acid; or you may take three grains of calomel the second time, divided into two doses: it seldom fails of curing. Should the disorder show any symptoms of returning the third time, do not wait for a confirmed fit, but take a few doses of the tonic mixture, diminishing the quantity from two doses to one, till you leave it off altogether.

MONTHLY METEOROLOGICAL REPORT FOR JANUARY 1859.

From observations taken at St. Martin, Ile Jesus, C. E., Latitude 45 degrees 32 minutes, North Longitude, 73 degrees, 36 minutes West, Height above the level of the sea 118 feet.

BY CHS. SMALLWOOD, M. D. L. L. D.

Barometer.

	Inches.
Highest reading of the barometer the 10th day	30.614
Lowest reading of the barrometer the 15th day	29.127
Monthly mean	30.021

Thermometer.

Highest reading the 26th day	F. 19.4
below zero	43° 6
Lowest reading the 10th day	43° 6
Monthly mean	12° 37
Greatest intensity of the suns rays	40° 0
Lowest point of terrestrial radiation	43° 6

Mean of humidity		792
Rain fell on 4 days, amounting to 0,231 inches, it was raining 21 hours 35 minutes		
Snow fell in 11 days. amounting to 15,13 inches it was snowing 67 hours 15 minutes		
Most prevalent wind N. E. by E.		
Least prevalent wind E.		
Most windy day the 8th, mean miles per huor	22	73
Least d». do, the 10th day	0	08
Aurora borealis visible on 3 nights		
Zodiacal Light visible		
Ozone was in large quantity		

MONTREAL RETAIL MARKETS.

FRIDAY, April 29th 1859.

	BONSECOURS.					ST. ANN'S.				
FLOUR.	s.	d.		s.	d.	s.	d.		s.	d.
Country Flour, per quintal	18	9	a	19	0	0	0	a	0	0
Oatmeal, per quintal	17	9	a	18	0	0	0	a	0	0
ndian Meal, per quintal	0	0	a	0	0	0	0	a	0	0
GRAIN.										
Wheat, per minot	0	0	a	0	0	0	0	a	0	0
Oats, per minot	2	9	a	3	0	2	3	a	2	6
Barley, per minot	3	9	a	4	0	0	0	a	0	0
Pease, per minot	4	3	a	4	6	0	0	a	0	0
Buckwheat, per minot	3	6	a	3	9	0	0	a	0	0
Indian Corn, yellow	4	6	a	5	0	0	0	a	0	0
Rye, per minot	0	0	a	0	0	0	0	a	0	0
Flax Seed, per minot	7	0	a	7	3	0	0	a	0	0
Timothy, per minot	9	0	a	9	6	0	0	a	0	0
FOWLS AND GAME.										
Turkeys, (old) per couple	5	0	a	7	6	10	0	a	12	0
Turkeys, (young) per couple	0	0	a	0	0	6	0	a	8	0
Geese, (young) per couple	4	0	a	6	0	3	6	a	4	6
Ducks, per couple	2	6	a	4	0	2	6	a	3	0
Ducks, (wild) per couple	3	0	a	3	6	0	0	a	2	6
Fowls, per couple	2	6	a	3	0	2	0	a	3	0
Chickens, per couple	0	0	a	0	0	1	3	a	1	6
Pigeons, (tame) per couple	1	0	a	1	3	0	0	a	0	0
Pigeons, (wild) per dozen	2	6	a	3	0	3	6	a	4	0
Partridges, per couple	0	0	a	0	0	0	0	a	0	0
Woodcock, per brace	0	0	a	0	0	0	0	a	0	0
Hares, per couple	0	0	a	0	0	0	0	a	0	0
MEATS.										
Beef, per lb	0	4	a	0	9	0	4	a	0	8
Pork, per lb	0	5	a	0	7	0	6	a	0	6½
Mutton, per quarter	5	0	a	7	0	7	0	a	12	0
Lamb, per quarter	3	6	a	0	0	2	0	a	3	9
Veal, per quarter	5	0	a	12	3	5	0	a	15	0
Beef, per 100 lbs	35	0	a	40	0	30	0	a	40	0
Pork, (fresh) per 100 lbs	35	0	a	45	0	27	6	a	30	0
DAIRY PRODUCE.										
Butter, (fresh) per lb	1	3	a	1	6	0	11	a	1	0
Butter, (salt) per lb	0	11	a	1	0	0	8	a	0	9
Cheese, per lb, skim milk	0	0	a	0	0	0	0	a	0	0
Cheese, per lb, sweet do	0	0	a	0	0	0	0	a	0	0
VEGETABLES.										
Beans, (American,) per minot	0	0	a	0	0	0	0	a	0	0
Beans, (Canadian) per minot	7	6	a	10	0	0	0	a	0	0
Potatoes, (new) per bag	4	0	a	4	9	4	0	a	5	0
Turnips, per bag	0	0	a	0	0	0	0	a	0	0
Onions, per bushel	0	0	a	0	0	0	0	a	0	0
SUGAR AND HONEY.										
Sugar, Maple, per lb, (new)	0	4½	a	0	5	0	4	a	0	4½
Maple Syrup per gallon	0	0	a	0	0	0	7½	a	0	8
MISCELLANEOUS.										
Lard, per lb.	0	8	a	0	9	0	8	a	0	9
Eggs, per dozen	0	8	a	0	9	0	8	a	0	9
Halibut, per lb.	0	0	a	0	0	0	0	a	0	0
Haddock, per lb	0	3	a	0	0	0	0	a	0	0
Apples, per barrel	25	0	a	30	0	15	0	a	20	0
Oranges, per box	20	0	a	22	6	0	0	a	0	0
Hides, per 100 lbs	0	0	a	0	0	0	0	a	0	0
Tallow, per lb	0	4½	a	0	5	0	0	a	0	0
BREAD.										
Brown Loaf	0	11	a	0	0	0	9	a	1	0
White Loaf	0	0	a	0	0	0	9	a	0	