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J. E. WILLIAMS, EDITOR.

# THE SOUTHERN PLANTER.

DEVOTED TO

AGRICULTURE, HORTICULTURE,

AND THE

HOUSEHOLD ARTS.

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# THE SOUTHERN PLANTER

*Devoted to Agriculture, Horticulture, and the Household Arts.*

Agriculture is the nursing mother of the Arts.—*Xenophon.*

Tillage and Pasturage are the two breasts of the State.—*Sully.*

J. E. WILLIAMS, Editor. AUGUST & WILLIAMS, Prop'rs.

Vol. XVIII. RICHMOND, VA., OCTOBER, 1858. NO. 10.


## Vegetables as Fertilizers of the Soil—Their Necessity and Mode of Action, and the Vegetables best Adapted for Fertilizers, Chemically and Practically Considered.

BY RICHMOND A. LEWIS, M. D.

To the green drapery in which the earth is clad, the world of vegetation around us, we are indebted not only for the pleasing beauties of the landscape, the cheerful adornment of hill and dale, but for food, raiment, shelter and a thousand luxuries, for grateful cordials, and soothing drugs, and even for the breath of life, for it is to vegetable respiration that we are indebted for the constant regeneration of the atmosphere.

There is not a more beautiful illustration of the adjustments of Providence in natural laws, than that exhibited by this mutual dependence of the two great classes of organic beings, the plant taking up the carbonic acid, which the animal exhales, appropriating the carbon to its own uses in forming bark, wood, oil, &c., &c., and giving off again the clear, pure oxygen, which is necessary for animal existence, while the animal produces the carbonic acid which is essential to vegetable life, and appropriates the oxygen which the vegetable has prepared, each receiving and using what the other rejects, while the whole atmospheric ocean is kept in a state of chemical equilibrium. The play of this wonderful and admirable law of equipollence is but one of the cycles which portrays the perfect adaptation and accomplishment of the law that the two classes of organic beings are mutually dependent on each other for their existence and perfection.

In the examination of the subject before us, it is necessary to begin with the ultimate elements, and primary tissue of vegetable life, or in other words, the essential components, or universal organic constituents of plants.

These are carbon, hydrogen, oxygen and nitrogen, and they constitute from eighty to ninety-nine per cent. of every vegetable substance—the remaining portion being inorganic matter, (*i. e.*) alkalies, alkaline earths, acids and the oxides of metals.

Of these few substances, every part of every plant is composed, for the proximate principles and organic compounds of which they consist, the starch, gum, sugar, resins, oils, acid, gluten, legumen, peculiar secretions, &c., &c., are but combinations, or different arrangements and proportions of all, or some of these primary constituents.

It is to the vegetable, and to the vegetable alone, that we are indebted for the transformation of elementary and inorganic matter into organized living tissue. The animal does not possess this power; it can only take up the process where the vegetable leaves off, but it does not and cannot form organic living tissue out of inorganic elementary bodies. This creative power of vegetables is the most important part which they play in nature; for if they cease to transform elementary bodies into organic compounds, the sustenance of the whole animal creation is cut short. The animal can

only be sustained by that which has previously been prepared, or organized by the vegetable, but these elements which the vegetable transforms, are constantly furnished by the animal.

Here, again, is seen that unbroken chain or cycle of dependencies of the two classes of organic beings.

But we must again revert to the four universal organic constituents of plants; oxygen, hydrogen, carbon and nitrogen, for these substances united form the primary cellular tissue, which is the base out of which every part of all the tissues of every plant is formed.

Now, as these four elements are essential to the being of vegetable life, as no such thing as vegetation can exist without their presence, and consequently a great quantity of these materials is a necessity of vegetable life and growth, it must first be inquired from whence this food is obtained; where is the immense reservoir from which they draw their supplies?

There are only two natural sources from which it is possible for plants to obtain these essential components, the soil in which they grow, and the atmospheric sea in which they live and breathe.

From the analysis of the soils of various parts of the earth by the most able chemists (see analysis of soils by Abel & Bloxam, published 1854, Leibeg, Berzelius, and others,) it is evident that soils do not possess a sufficient quantity of all these materials, and even if a soil could be found containing an ample supply of essentials, and plants obtained them from the soil alone, the stock would soon be exhausted, by a few successive crops of vegetation removed from the soil.

But if we take it for granted that plants do obtain a portion of their necessary elements from the soil, still it is absolutely certain that they obtain much the larger portion from some other source, for it often happens that a single crop of vegetable growth will contain more of some of the universal constituents than the soil possesses, and they could not derive more from the soil than it possessed, while a subsequent analysis of the soil will show but a slight variation in the proportion of its organic constituents.

Hence, it is evident that these materials were not obtained from the soil.

Moreover, if we powder flints, pure silex, or charcoal, and sprout seeds upon them, supplying them with rain water, the plants thus grown will contain their normal proportions of these elements, and the primary order of plants growing in the crevices of lava, in volcanic regions, and upon basaltic rocks, or newly formed islands, contain their due amount of these materials.

Hence, it is evident not only that *all* plants do not obtain these elements from the soil, (for they grow in no soil,) but it is certain that they were obtained from some other source.

The only other accessible source is the atmosphere, and it now remains to examine into this matter, to find out whether the atmosphere contains the necessary ingredients to supply the demands of vegetable life and growth.

The atmosphere is usually said to be composed of two gaseous elements, oxygen and nitrogen.

| | | |
|---|---|---|
| By volume, | Oxygen, . . . . . | 21 |
| | Nitrogen, . . . . . | 79 |
| | Equal to . . . . . | 100 |
| Or by weight, | Oxygen, . . . . . | 23.1 |
| | Nitrogen, . . . . | 76.9 |
| | Equal to . . . . | 100 |

And these most probably are the only ingredients essential *directly* to animal respiration, but they are not the only substances found as components of this airy sea. Oxygen and hydrogen combined in the form of watery vapor, are very abundant; streams of carbonic acid are perpetually pouring in through the open mouths of volcanoes. From every wood and coal fire, indeed, from every combustion and from the expirations of every breathing animal, this reservoir is constantly supplied with the same gas; nitrogen and hydrogen in combination forming ammonia, which is the result of the decay or decomposition of every vegetable and animal substance, and also the aroma, or odoriferous principle, not only of flowers in countless myriads, but of many other substances, existing in minute quantities.

The existence of carbonic acid and ammonia is not merely inferential, but an absolute and chemical certainty. If we analyze the atmosphere, we find carbonic always and in the same proportions at the sea level, or on Mt. Blanc, which fact is also an evidence of the aforementioned state of chemical equilibrium of the atmosphere.

Every drop of rain that falls upon the earth is a solution (chemically proved*) of carbonate of ammonia; for the ammonia in the atmosphere, coming in contact with free carbonic acid, combines with it, forming carbonate of ammonia, which is a compound very soluble in water.

Here, then, we find in the atmosphere all the universal organic constituents of vegetable life; first, oxygen and nitrogen, free and uncombined; second, oxygen combined with hydrogen, forming water; third, oxygen combined with carbon, forming carbonic acid; fourth, nitrogen combined with hydrogen forming ammonia; fifth, hydrogen combined with oxygen, forming water; sixth, hydrogen combined with nitrogen, forming ammonia; and last, carbon combined with oxygen, forming carbonic acid.

* See Liebig's Agricultural Chemistry, Chapter 5th.

Here is a never-failing supply of the necessary elements of vegetable life, a storehouse from which plants may freely draw, as long as the law of mutual dependence between the two classes of organic beings exists, or until the triple links of that grand cycle of life and growth, death and decomposition, which is but the realization of the fabled Phœnix, shall be rent asunder.

We have endeavored to show that vegetables do not obtain the principal amount of their organic constituents from the soil, in which they fasten their roots, but from the air, in which they expand, and it is only upon this supposition that we can account for the accumulation of a soil on volcanic land, on island rocks and on pure sandy places. The process by which a soil is formed in such places is as follows: first, such spots become covered with a growth of primary or cryptogamic plants, such as lichens, mosses, ferns and the like, which are epiphytic plants, deriving their nourishment entirely from the air. These die, depositing what they have accumulated from the atmosphere. This deposit is now a vegetable mould or humus, being a supply of carbon which is gradually acted on by the atmosphere, forming carbonic acid which in solution is absorbed by the roots of plants. The humus has the property of absorbing ammonia. From these sources and from the surrounding atmosphere, a supply of food is furnished which will support a higher order of vegetation.

A new and more vigorous growth is found year after year living upon the ancestral accumulation, and a new deposit as the vegetation decays, till a soil is formed which will support the higher orders of vegetation which are necessary to animal life. Herein is portrayed one of the remote necessities of vegetable fertilizers.

Before taking up the direct necessities of vegetables as fertilizers, we will discuss one of the remote necessities for the purpose of showing the uses to which vegetables apply these essential elements of their existence (of which we have spoken,) and their adaptation and absolute importance to animal assimilation and sustenance. When we speak of the direct and remote necessities of vegetable fertilizers, we use these terms in this sense: The remote necessities are the fixed immutable laws of Providence, by which the animal creation is made dependent upon the fertilizing powers of the vegetable creation; the immediate necessities are those arising from the cultivation and exhaustion of the soil, which each generation of agriculturists must meet and answer by the proper use of vegetable fertilizers and manures, and by proper culture.

We have stated that the essential organic constituents of plants, are oxygen, hydrogen, carbon and nitrogen, and that out of these with the addition of the mineral elements obtained from the soil, every part of every plant is formed, and we have endeavored to show that by necessity the largest portion of these organizable materials, is obtained from the atmosphere.

We will now endeavor to show to what uses the plant applies the original elements, the compounds formed by it, and their adaptation to animal sustenance. The carbonic acid which animals exhale into the atmosphere, is immediately absorbed by the leaves of plants, and by the influence of light, and heat and the vital energies of the plant, is decomposed; the carbon is appropriated to its own uses, while the oxygen is given back to purify the air. But this is not the only way in which plants receive and appropriate carbonic acid; for it is very soluble in water—water freely absorbing or dissolving its own volume of the gas. The gas existing in the air in a free state is readily absorbed by the descending rain and carried to the roots and is absorbed by their hygrometic tissue. This solution of carbonic acid in water is doubly valuable to the plant; for the carbonic acid besides being itself essential, enables the water to dissolve various substances which are essential to the perfection of many plants, and which are insoluble in pure water, such as silicate of potash, carbonate and phosphate of lime (essentials of the cereals.)

Carbonic acid is also obtained by plants from the carbonate of ammonia in the atmosphere, also carried to the roots in solution in rain water, and from decomposing humus or vegetable mould, the result of vegetable decomposition.

The necessity for this abundant supply of this inorganic element is readily appreciated when we consider that from forty to sixty per cent. (Gray) by weight of the whole plant is carbon.

Plants obtain most of their oxygen from the atmosphere in the form of water, (a combination of oxygen and hydrogen,) for in their decomposition of carbonic acid they retain but a very minute quantity, if indeed any at all, of the oxygen thus liberated. They return it it again to the atmosphere. As a genral rule they do not absorb free oxygen from the air except in very small quantities under peculiar circumstances, as for instance, when sugar, starch, gum, &c., are converted into acids. (Gray.)

But they obtain a small portion from the soil in the form of salts and oxides.

Their hydrogen they obtain from water (oxygen and hydrogen) from ammonia (hydrogen and nitrogen) and some small quantities possibly from the salts of hydro-chloric and hydro-fluoric acids which may exist in soils.

The large demand which plants have for water may be inferred when we know that they exhale such large quantities, besides that which they retain and assimilate.

A sun-flower three and a half feet high, presenting a surface of five thousand six hundred

and sixteen square inches, perspires at the rate from twenty to thirty ounces avoidupois every twelve hours, or seventeen times as much as a man.

A vine within twelve square feet of foliage exhales six ounces per day.

An apple tree with eleven square feet of surface exhales nine ounces per day. (Hales).

Besides this great demand for water, it composes the larger portion of all the juices of the plant, and forms about fifty per cent of all the lignin, gum, starch, sugar, &c., &c.

They obtain their nitrogen from the ammonia of the atmosphere, from small quantities of nitrate of ammonia and from nitric acid, the products of atmospheric electricity, (Graham,) and from the salts of nitric acid found in the soil in minute quantities. Some plants have the additional power of assimilating the free nitrogen of the atmosphere. (M. Boussingault.)

Here are before us the materials of vegetable growth, and the various sources from whence they are obtained.

Of the carbon, hydrogen and oxygen, the vegetable forms a number of ternary compounds; starch, gum, sugar, wax, resin, oils, vegetable tissue, &c.

These the animal consumes, laying up or assimilating only a small portion of them, which portion, when assimilated and forming a part of the animal, is found to be identical in chemical composition with the substances while they were vegetable matter, the animal finding the material ready formed or organized, only has to appropriate it or accumulate it. (Gray, Liebig, &c.)

But by far the larger portion of these ternary compounds is consumed by animal respiration or slow combustion for the support of animal heat, and these materials are again returned to the atmosphere as carbonic acid and water.

Out of carbon, hydrogen and oxygen, with the addition of nitrogen, the plant forms a series of quarternary compounds, gluten, legumin, albumen, vegetable casein—which are found to be chemically identical, with the fibrin, gelatin, albumen, casein, found in the various parts of the animal structure.

As in the use of the ternary compounds, the animal has only to appropriate what was already prepared or organized, and these materials are again returned to the atmosphere in the form of ammonia, water and carbonic acid, when the animal dies and is decomposed.

Thus is another cycle completed, and the truth of this remote necessity of vegetable fertilization established.

We come now to consider the direct necessity of vegetable fertilizers of the soil.

It is a philosophical truth, as well as an agricultural adage, that what we withdraw from the soil by constant cultivation and removal of the products of the soil, must, in some way, be returned to it, or it will gradually becon poorer and more barren, till at last it will r semble a primitive formation.

All the salts of the metals, the alkalies ar alkaline earths, the acids, the vegetable moul or carbonaceous matter and the ammon which it absorbs, will become so entirely e hausted, that the soil is only adequate to tl support of the primary orders of vegetation.

In confirmation of this fact, it is only nece sary for me to point to the worn-out lands many parts of Europe, once fertile, but whi require now quantities of carbonaceous, min ral and nitrogenous manures to enable the to produce a tolerable harvest.

And to bring the matter nearer home, loo at much of the exhausted soil of Eastern Vi ginia, upon which tons of guano, phosphate lime, gypsum and carbonaceous matter, b sides clover, peas and beans, are now employ constantly, to enable us to produce dece crops. This was not the case with the fi settlers in Virginia. They found a soil rich all the constituents necessary to produce whe and tobacco, and they did not trouble the selves to prevent the degeneration and exhau tion of the soil. This they might have do by the use of vegetable fertilizers and n nures, and by a judicious rotation of cro but the same crops of wheat and tobacco we repeated for almost a century, till the soil n in many parts of our State, is incapable producing these staples without a large supp of manures containing the elements necessa to the production of these plants.

These soils can only now be reclaimed a gradual disintegration of the minerals a stones which they contain, by which proc the mineral constituents are furnished, and a long course of vegetable fertilizers turned at the period when they contain most carb and ammonia, or by the application of lar quantities of manures containing the alkal and alkaline earths, phosphoric, carbonic a sulphuric acids, iron, silica, alumini, and lar quantities of nitrogen in the form of ammon The majority of these substances at least, such of them as have been exhausted, must replaced in order to bring back the soil to original fertility.

To aid in this laudable enterprise, and to duce those who have lands, still capable producing good crops, to preserve their fert ty by judicious management, we present their consideration the great utility of so vegetables as fertilizers of the soil, the man in which they act, and the even greater nec sity for their use, than mineral manures.

We have stated that vegetable fertilizers even more important than mineral. The tr of this assertion is evident, when we consi that the only elements essential to vegeta life are oxygen, hydrogen, carbon and nitrog (constituting, as they do, from eighty to ni ty-nine per cent. of every plant,) and t

nts obtain all these from the atmosphere
l return them to the soil and to the air.
But we do not deny either the utility or ne-
sity of the mineral constituents of plants,
we know that many, especially of those
nts which are essential to the nourishment
man, cannot be perfected without a portion
the mineral ingredients. But in compari-
with the amount of other ingredients
ich may be obtained from the vegetable fer-
zers, the quantity of mineral matter is very
all.
As we have before stated, carbon forms
m forty to sixty per cent. of the whole
nt, whereas the per cent of mineral ingre-
nts is small; in the leguminosæ, they rarely
ount to one per cent. In wheat and tobac-
and some other plants, the mineral constitu-
ts are greater; hence the utility of wheat
d tobacco after fallow crops, peas, beans,
ckwheat, clover, lucerne, &c.
These do not abstract the alkalies, but re-
n large quantities of carbonaceous matter
the soil. In this aspect it cannot but be
n that the vegetable fertilizer is more neces-
y than the mineral. So much larger quan-
ies of the materials they furnish are re-
ired. Another reason (before hinted) why
y are more important is, that not only is the
ck of carbonaceous matter more readily ex-
usted on account of the greater demand for
but generally the supply of mineral ele-
nts is replaced by means of the constant
integration and solution of ores and stones
ich contain the amount essential.
The supply may fail for a time, but soils
ually contain within themselves the means
restoring the needed supply if sufficient
ne is given them.
Another important office of the vegetable
rtilizers is to render efficient the minerals.
It is a solution of the carbonic acid furnished
humus and by the air, which enables the
in water to solve the minerals and thus
nder them available.
We have stated that the chief utility of
getable fertilizers is the vast amount of car-
naceous and nitrogenous matter which they
rnish to the soil, without the supply of
hich it is impossible to procure a crop at all,
hereas a crop, though an indifferent one, in
mutrient principles, may be obtained with-
t the mineral constituents. But the con-
tuents furnished by vegetable fertilizers are
ore important in a more practical point of
ew, and one which is of great importance to
e agriculturist. We may take a piece of
orn-out land which has been exhausted by
ng and constant culture of wheat and tobac-
, and supply it with every mineral constitu-
t essential to any particular crop, and unless
e carbonaceous and nitrogenous supplies are
ded, no benefit will be derived from the
ineral manures which have been spread upon
e soil. In support of this assertion we would refer to the experiments of Messrs. Laws and Gilbert, which may be found in the Journal of the Royal Agricultural Society of England for September or October, 1851. Their experiment extended through a period of ten years. One of them we will introduce in illustration of the point under consideration.

"They took a field at the close of four years' rotation, when the manures added at the commencement of the course, were exhausted. On this ground they cultivated wheat for ten years under various circumstances. One plot remained unmanured, and the produce of this served as a standard and a starting point for the comparisons during the whole period. Thus if its yield for 1845 was seventeen bushels per acre, the improvement over this in an adjoining lot (otherwise the same) was set down to the advantage of whatever manure had been employed. The first year's comparative practice was made with the various approved mineral manures alone. It was found that even by the addition of large quantities of these, the increase of product over the unmanured plot was but trifling. In the next year the same character of mineral manures were employed, but with the addition of nitrogenous manures. In all these the effect was quite marked, the yield increasing to ten, twelve and fourteen bushels above the unmanured plot. This, in short, was the character of all the results: sometimes ammoniacal mamanures alone were added, and then the increase was several times more than by mineral manures alone. In one experiment four hundred weight per acre of Liebig's special mineral manure for wheat was applied to a plot, and produced an increase of but two or three bushels. Upon this same plot, in the next year, ammoniacal manure gave an increase of ten or twelve bushels. To make the experiment still more conclusive, no manure was added to this plot the next crop, and the yield then fell again almost to the original standard. These trials are conclusive, so far as wheat is concerned. They prove that ammoniacal manures increase its growth far more than mineral manures, and that the addition of any amount of the latter will do little good, unless the former also be present. These views are still further sustained by a very able paper in one of the French scientific journals. The experiments in this case were made upon oats, and were between forty and fifty in number. They commenced by growing out in sand, first deprived of every thing soluble by acid, then burned to draw off the vegetable matter. As might have been expected, no perfect plants were produced. One mineral substance after another was added until at last it was found that with a certain *series* of them the plant flourished better than with others. But it was not until some manures containing nitrogen had been furnished that entirely healthy, fertile

and strong plants were obtained."—(Extract from J. P. Norton's letter to Albany Cultivator for October 24, 1851.)

From the above details the importance and necessity of vegetable fertilizers is unquestionable; for by constant cultivation and removal of crops from the soil, the carbonaceous and ammoniacal constituents which we have shown to be essential, are gradually removed. They are consumed by animals, and ultimately returned to the atmosphere, and it is by the intervention of vegetable fertilizers that we must *principally* return them to the soil. For they are the great pipes or channels which lead from this great atmospheric reservoir, and the only channels by which we can render this rich store available. Their principal mode of action has been shown to be their power of assimilating the carbonic acid and ammonia of the atmosphere; or in other words, they derive their nourishment from the air, condense it and deposit it upon the soil in the form of vegetable mould or humus. This is a supply of carbonaceous matter having the power of absorbing great quantities of ammonia. Decayed vegetable matter absorbs seventy-times its volume of this gas, (De Saussure,) and this supply of ammonia enables the plant to absorb from the atmosphere and fix more carbonic acid than it would otherwise be able to do.—(Liebig.)

It now only remains for us to show what plants are best adapted to fulfil these requisitions and the reasons of their adaptation. From the statements already made, it is plain that the class of plants most suitable for vegetable fertilizers, is that which derives the largest amount of essential nutritious matter from the atmosphere, and which subtracts the smallest portion of its sustenance from the soil; or in other words, those plants which take least from the soil and return most to it. It has been proved, both by experience and chemical analysis, that the order of plants which most fully meets these requisitions, is that called the leguminosæ, to which belong clover, lucerne, peas, beans, &c. They, as a general rule, possess these powers in a greater degree than any other order of plants; first, because they extract such very minute quantities of mineral substances from the soil, (such as silex, phosphate of magnesia, phosphate of lime, &c.,) the proportion rarely amounting to one per cent.—(See analyses of these plants by Playfair, Crome, Einhof, Braconnot.

Secondly, because by their great amount of foliage, they absorb an immense quantity of carbonic acid and ammonia from the air, and thus create enormous deposits of humus, and also shade the land from the burning sun, which is, in itself, a great advantage. It presents the evaporation of ammonia and moisture. The leaves next to the ground are constantly decaying, forming a humus which absorbs still more ammonia. But these plants have another direct advantage over almost all other plants, the power of assimilating the pure uncombined nitrogen of the atmosphere. (M. Boussingault, Ann de Chim. et de Phys. t. 76, p. 5 & t. 69 p. 353.) They also have greater powers than any other plants of absorbing and retaining their carbonic acid as well as the nitrogen of the atmosphere, (Gray,) thus they prepare the soil for the growth of plants requiring large quantities of carbon and ammonia. Another advantage which some plants of this order possess, particularly clover and lucerne, is that they send out many deep roots which act the part of sub-soilers. They take up the mineral constituents deep down in the earth, and as soon as the chlorophylle, or green principle, is freely secreted in the leaves, the roots excrete or throw out into the soil these inorganic matters, (Liebig;) and thus many of the materials requisite for the perfection of many other plants are brought nearer the surface and within reach of their roots. The decay of this great quantity of roots in the earth is another important source of humus. But there is a vegetable belonging to another order of plants which, so far as my knowledge extends, has been but little used as a fertilizer, yet which I would recommend to the agriculturists of Virginia as a matter of experiment.

The helianthus tuberosus or Jerusalem artichoke, which belongs to the order compositæ or is a syngenesious plant. The reasons for these recommendations are not the result of experiment but purely analogical. This plant, like the legumes, has the power of assimilating the free nitrogen of the atmosphere. (M. Boussingault.) It is easy of propagation and is a very luxuriant growth, the leaves and stalks affording a great amount of humus, and when planted thickly over the ground, afford a dense shade. If used as a fallow crop and turned in just when the roots are full grown before the dying of the leaves and stalk, we believe that a larger amount of humus would be obtained than from any other plant; for besides the leaves and stalks, the roots lay up or accumulate a great deal of carbonaceous material. For the purpose of improving the land the only culture the plant would require would be to scatter the tubers divided into small pieces and then plough them in. This fertilizer is worthy at least of a fair trial.

We have not in the above article attempted to adduce or introduce any new doctrines or theories. Our object has been to cull from facts scattered through many scientific works (usually not in the possession of the agriculturist) valuable truths; and to adduce from them such arguments as will place in a condensed and available form before the agriculturists of Virginia, the importance and necessity of the constant use of vegetable fertilizers. And to exhibit also the certain depreciation and exhaustion of the soil without their use.

At present the rage in Virginia seems to be for the use of mineral manures, particularly for the phosphates, and we have feared that our agriculturists might endeavor to make the use of mineral manures supersede vegetable fertilizers, which would inevitably result in small harvests, unless some costly carbonaceous and nitrogenous manures are substituted for the more economical and as certain vegetable regenerators. If our farmers would save, as carefully as the Chinese do, all their stable manure, night soil, urine, &c., fixing their ammonia with gysum, ashes or soapsuds and follow a judicious rotation of crops upon scientific principles; for example, by following one crop with another which does not require the same constituents, or rather which does not subtract the same substances from the soil which the previous crop had removed, and also by replacing with fallow crops and constant vegetable fertilizers, the carbonaceous and nitrogenous exhaustion and deficiencies, and by giving rest or time for mineral decomposition, so as to replace the essential mineral constituents; and thus by the judicious use of home-saved manures, the most valuable portions of which are now lost or wasted, we would save annually the expenditure of millions paid for guano and other manures to enable us to reap abundant harvests.—*Transactions of the Virginia State Agricultural Society.*

## On the Economy of Farm-made Putrescent Manures---In Reference to their Preparation, Preservation, and best Application.

By Edmund Ruffin, 1854.

*General Remarks on the subject. The opposite errors of giving too little and too much care and labor to manure.*

There is no branch of agricultural instruction which has been more often or extensively treated, or attempted by writers, than the subject of preparing and applying the ordinary farm manure. This has not only been one of the essential and important subjects of every general treatise on husbandry, but it has also been, and still continues to be made, the main and essential, if not the exclusive subject of many separate essays and other publications. Such pieces may be found in almost any and every volume of the agricultural journals, and especially in the authoritative instructions from the editors of those publications. Yet, (to say nothing of the differences of doctrine among the instructors themselves,) there is no other subject of common practice in regard to which there exist such general, great and important differences, between the customary doctrines and instructions of the teachers by writing, and the actual operations of the best and most generally successful farmers. Every vegetable and animal substance, liable to speedy decomposition by natural causes, offers material for putrescent manure, that will feed growing plants, and more or less fertilize the land. From this general truth, as premises, writers in general have deduced, and recommended as proper practice and good economy in farming, the gathering to the barn-yard of all such available materials, at least so far as supplied by the fields—if not also embracing other supplies not strictly the products of the fields or the farm. They also have directed great subsequent labors, and other considerable expense to be incurred for the more perfect preparation for use, and preservation of all these fertilizing matters. Now if each of all these directions had been truly conducive to the designed object of increasing the quantity and preserving the value of the manure, (which would be admitting much more than is always true,) still the cost of many of the recommended operations and safeguards would be greater than any amount of profit to be thence derived. Hence these very elaborate and (so called) most perfect systems of manure-making, though having (in some one or other modification) the approval and recommendation of all merely theoretical reasoners and closet agriculturists, have had few followers in practice—and none in the practice of the most successful farmers, and in profitable as well as improving farming. They who practice to any extent the elaborate and costly methods are mostly either wealthy amateur farmers, or agricultural martinets, who improve, adorn, and cultivate small spaces for the amusement and display more than profit, who labor more to obtain ornamental and brilliant than useful results—and who regard much more the gross amount of products, than the balance of net profit, (or of net loss it may be,) in their farming operations and expenditures.

The writers who advocate any plan or form of what is here designated as the elaborate system of manuring, would deem it wasteful and inexcusable in a farmer not to gather to his stock-yards or stables all the stalks of the corn crop, and all the straw of his wheat, or other small grain. Then, to best secure these and other materials from wasting their richest parts while in preparation for manure, or after being prepared, it is advised by nearly all recent writers, to shelter both the litter in the stalls or yards, and also the more mature manure in heaps, from rain and sun, by covering roofs. The stalls of horses and other animals are to be paved or otherwise closely floored, so as to be impervious to water, and to have gutters to collect, and larger conduits to transfer the fluid excretions of the animals to suitable receptacles. Some advise the daily removal of the used litter, and the heaping it in walled and paved cellars, or in other well-covered and still more costly stercoraries. In the cool climate of Britain, in which fermentation of barn-yard manure usually proceeds too slowly for its designed first use, it is also recommend-

ed to shift and re-heap the mass, for the purpose of renewing and quickening fermentation. And these latter instructions have been still more improperly proposed for this country, with a much warmer summer climate, and in which it is usually more required to retard or moderate than to hasten the progress and the latter results of the fermentation of barn-yard and stable manure.

While I advocate, and aim to practise, the most extensive use of prepared putrescent manures that is *profitable*, either in speedy or late operation—in effects whether transient or durable—I would reject not only many of the expensive labors for this object recommended by writers and amateur farmers, but also some that are in common use by practical cultivators who are not remarkable for either the carefulness or economy of their management in general. The proper test of the value of every particular branch of manuring, as of all other operations in farming, is its utility and profit. No practice should be adopted which is not likely to return the cost with profit. And even if promising, or certain, to be thus remunerative, still an operation should be omitted, if its execution would prevent the making of some other improvement that would be certainly more profitable. For in this country—with our cheap land, relatively high priced labor, the urgent need for numerous improvements deficient on every farm, and also the facilities offered for their execution—labor is more or less wanting with every farmer who has intelligence to direct its best uses. It is not in our power to do everything that we even know to be proper, and which would be remunerating, if considered alone. It is necessary to choose between objects all of which may be desirable, and to aim at those which will be the most profitable; and either to neglect, or to attend very slightly to other less profitable subjects.

To this conclusion the closet agriculturist and calculator would object, and propose instead, as the proper course in such cases, that the farmer shall appropriate more working capital, and employ more labor, so as not to omit or neglect any of the less profitable objects—and certainly not any of the branches of the very important business of making manure. But farming operations cannot be greatly extended to new objects, even though altogether proper in themselves, without the defects of imperfect supervision and direction, or the want of systematic arrangement, increasing with and exceeding the enlargement of the sphere of operations. There have been few years of my own farming labors, and none recently, when there were not new and proper subjects of improvement in my view, which, if undertaken, could employ twice the actual number of my teams, and four times the number of my laborers. And if, by merely paying the price for so much increase of labor, and its superintendence, in money, or even in debt, and the labor could be properly directed and employed, I would not hesitate to pay the cost. But for want of administrative talent, or ability for managing extensive operations—a defect which every farmer has in some degree, and few more than myself,—it is most probable, if I were so to extend my labors to all improvements that my own reasoning and calculations in advance would indicate as proper and profitable if well performed, that the losses by practical mismanagement would be at least as great as the amount of new products so to be obtained.

This practical objection will apply with correctness and force to many of the laborious and costly parts of the elaborate systems of manure-making, even when such parts are correct in theory, and would be profitable in judicious and well executed practice. But it would be yielding too much, by far, to make this admission as to all of even the generally approved parts of such systems, as they appear in books, or editorial advice, or (very rarely) in agricultural practice. On the contrary, some of the processes of these elaborate plans are not only wanting in the requisite of being profitable, but would be even detrimental or destructive to the great object in view, which is to increase the quantity and value of the body of available manure. This remark applies especially to and includes all the processes of heaping and turning manure to hasten its fermentation.

*The materials for farm-made manure—to be collected, or to be left dispersed, or to be altogether neglected.*

The foregoing general remarks, even if without the further admission which is readily made, would be enough to place the writer in the class of farmers whose manuring operations are rude and slovenly, and would be deemed also greatly defective, if judged by the rules and instructions of most other writers on this subject. But together with this admission, I claim for the rude practises which I shall recommend, and for the omission of others, the result of more net profit, in the increase of fertility or of production, than is to be attained by different and the most costly procedure. The subjects deemed proper for our attention and practice, and the errors both of too little and too much care and labor, according to my views, I will now proceed to discuss.

On most farms in this country, that are moderately productive, the vegetable materials for prepared manures are more abundant than the labor that can profitably be devoted to their collection and subsequent application. These materials consist of the residues or offal parts of the crops, and in this region mainly the stalks of corn and straw of wheat—to which are added, and intermixed, the excrements of live-stock of the farm. The questions for the

consideration of the farmer are, first, to what extent, and in what manner, according to the condition of the farm, it is profitable to bring together materials for manure—next, their most economical (or profitable) preparation and preservation—and then the best application. These questions will be considered in order—but not entirely separate and distinct from each other. In stating the practice which I most approve, (and use, so far as may be,) it is not my purpose to describe in detail other and different modes of procedure, or to expose particularly their charged defects. Still, much of such statements must come in incidentally, and as required for comparison with other procedure which I deem more profitable, and therefore preferable.

On lands reduced to very low grades of production, by previous exhausting cultivation, all the residues and coarse offal parts of all the crops may be required for the winter food and comfortable bedding of the live-stock necessary, and therefore profitable to be kept on the farm. In such cases, even if without regard to the increased product, and the profit of manure-making, it would be economical to collect, and to use all the stalks, straw and other such offal of other crops, to serve first as food or bedding for animals, and next, whatever remains of it, as manure. All this supply of food and litter, from poor fields, will be but a scant and insufficient supply for the live-stock, where more are kept than are beneficial to the farm, or profitable to the farmer. This error of keeping too many animals was formerly universal, and is still very general in Eastern Virginia.

If a farmer derives unquestionable and sufficient profit from selling the products of his live-stock (or consuming what he otherwise would have to buy,) then these products are to be considered as part of the selling or profitable crops of the farm, and the number of stock should be increased or kept up to the amount that will yield the most net profit for their keeping. But on most farms formerly, the cattle were so badly supported that they yielded almost no products for sale, and certainly no direct profit to the owners. The cattle (and also sheep and store hogs,) after being nearly starved through winter and spring, needed all the usual scant supply of the summers' poor grass to replace their lost flesh, and to bring them from the condition of living skeletons to that of being barely able (possibly) to live through another winter of hunger and extreme suffering.

The keeping of live-stock for profit, or the grazing, fattening, and selling of animals, is one branch of farming business, the economy and advantages of which depend on the market or other returns. The keeping of live-stock in reference to making manure, or for the other benefits to the fields and their production, is another and very different matter. It is in the latter point of view only that the consideration of stock-keeping belongs to my general subject. To such extent as it is profitable and expedient to keep live-stock, for any or all the objects and benefits named, so far as it is expedient and profitable to collect and use for food and litter of the stock the offal residues of crops, which will also serve to make manure. But no more cattle, or other live-stock, should be kept than will yield good profit by their products for sale and consumption, or otherwise are as beneficial to the fields by a proper and strictly limited measure of grazing and trampling. And these latter and important benefits, obtained from a moderate number of well-kept cattle and sheep, are of more value to a grain-farmer than all the other fertilizing values given to the fields by the animal manures from these animals, substituted for vegetable materials which served to produce the animal manures.

It was long the prevailing vulgar opinion that animal excrement only was manure—or that, of the mixed mass of litter and excrement composing winter-made manure, the large vegetable portion served mechanically, and almost entirely, to absorb the fluid, and to divide the solid animal excretions, and so to better preserve both, and prepare them for use. Even most of the better informed farmers deemed the vegetable portion of mixed manures as of very little value compared to the animal portion. This is true, to great extent, if comparing equal bulks of each. But it is not true, if comparing the whole amount of the original materials (if used as manure) with the amount of animal excretions which they can produce, when consumed as food. When used as food, the richest parts of the vegetable matters are retained to support the animal, and supply the continual waste of its system. Another part of the products of the food, forming carbon, is continually thrown out in breathing by the lungs, as carbonic acid gas, and is mostly wasted (as to the particular locality,) in the atmosphere. Also, some nitrogen, (derived from the richest element or products of the richest food consumed,) is incessantly exhaled and lost, while none is drawn from the atmosphere by animals—(*Boussingault.*) The remaining poorer, or less digestable parts only of the vegetable food, are rejected from the animal system in excrements, and go to serve for manure—in a concentrated state of richness indeed, and well prepared to feed plants immediately; but much reduced in quantity, and also in the total amount of richness and value as manure, from, and compared to, the original materials consumed as food.* This opinion, in

* For more full and particular proof of the waste of manuring value of the food eaten by animals, I refer the reader to some experiments conducted by Boussingault, with remarkable care

general purport, going to show that the feeding of animals seems to lessen, instead of increasing the value of the manuring matters of a farm, was first maintained by our earliest and great agricultural teacher, Taylor; and it was then at first listened to as a novel heresy, or a starting paradox. But the doctrine is not only sustained by reason, and by the latter practical experience of general manuring results, but also, recently, by the lights of chemical science, one of the latest, and a high authority in agricultural chemistry. Professor J. F. W. Johnston, speaking of green vegetable substances, says—"if they be converted into fermented (farm-yard) manure, there is also a large loss, as we shall hereafter see; and the same is the case, if they are employed in feeding stock with a view to their conversion into manure. *In no other form can the same crop convey to the soil an equal amount of enriching matter as in that of green leaves and stems.*" (Lectures, &c., Part. IV., p. 418, Am. Edition. The author italicised this last sentence, as it here appears, to give the greater force to his declaration. Nothing can be more explicit as to the loss of fertilizing matter in green vegetables when used as food. And though the learned author, (perhaps somewhat influenced by the long prevailing farming practises and prejudices of his countrymen,) confined his statement to green vegetables, and these to be *ploughed in*, reason and analogy will as much include *dry* vegetables; and the views which I will hereafter present, will extend the above position to vegetables left naturally to decay on the surface of the soil, or used as artificial top-dressing, as much as if ploughed under for manuring. But though the feeding of animals serves to lessen instead of increasing manure—or improves the quality of the manure at a great sacrifice of quantity and total value—there are important benefits to land derived from the moderate and properly limited grazing of stock; and evils of opposite character are suffered from the total cessation of grazing. Annual weeds, the most injurious to the growth of crops or to the grain by the intermixture of their seeds, which plants would be destroyed by grazing during their latter growth will otherwise mature their seeds and drop and plant the whole greatly increased product, to grow and intermix with the succeeding wheat, greatly to the diminution of the quantity of that crop, and still more to the detriment of its purity. The soil too, for want of the consolidation afforded by the treading of animals, becomes loose and "puffy," and unsuited to the production of the important crops of wheat and clover, both of which require compact soil. Further, from the continued shelter and protection of a cover of weeds, vermin of various kinds, and especially insects, are propagated and maintained in greatly increased numbers, to the great injury of the cultivated crops.

For these reasons, while fully admitting Taylor's doctrine of the exhausting operation of all grazing, and the destructive effects of the close and unrestricted grazing of poor lands, through all intervals between their tillage and crops, I also maintain the benefit of proper and limited grazing in other respects to the land itself; and more benefit than will compensate the partial abstraction of fertilizing matter in the grass consumed.

It was the usual error of the early disciples of Taylor, to adopt and act upon his erroneous

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and apparent accuracy, and reported at length at pages 376–7 of his Rural Economy, (Am. Ed. of Eng. Trans.) A horse and a mileh cow were confined to stalls, and fed for a month on preeisely the same kinds and quantities of food, for each day in each case. The food of the horse was hay and oats; that of the cow, hay of like kind, and potatoes. By proper arrangements, the animals were weighed every day at a certain time, and found neither to gain nor to lose weight during the month. Hence it was fairly inferred that the ration of food in each separate ease, was (as designed) just sufficient to maintain the animal in the same condition of flesh, without increase or decrease. Therefore the difference in quantity between the amount of food consumed, and of the exerements voided, was assumed for the quantity taken up by the animal for its bare support, or lost by exhalation. Then for such trial, the two animals were fed as for the previous month, 72 hours longer, and for that time the same food was given by weight, the water weighed and the solid and fluid exerements all saved, and also the milk of the cow. The quantities of all these exeretions were weighed, and also the dry weight of each, as of the food noted. Further, fair samples of different kinds of food of the water drunk, and of the different excretions, were all analyzed. From these data it was found, (and it is stated at length in tabular form,) that the dry weights of all the excretions of the cow were but little more than half of the dry weights of the food consumed; and of the horse, the excretions amounted to less than half of the food. But perhaps it might be inferred that the excretions retained the richer parts, and therefore were of better quality and greater richness than the food. But the facts were different. There was not only the great general difference and loss just stated generally, but also losses nearly as great in all the elements of organic matter—in carbon, hydrogen, oxygen, and nitrogen. In the nitrogen, only, (always the smallest of these constituents,) there was a loss much less in proportion to quantities, than in the other three greater elements. Only the minute proportions of mineral matters in the food and water, were returned without diminution in the excretions. These results show, and seem to establish a considerable loss in every manuring principle or element, of food changed to excrements—and a general measure of average loss approaching to one-half of the manuring value of the food consumed.

doctrines as readily as his novel and most valuable truths. All the most ardent an zealous of his followers strove to carry out, to their full extent, his views as to the complete cessation of grazing, on tillage lands. In this course none went farther in obedience to the venerated teacher than the writer of these observations, or persevered longer, or suffered more loss in the evil thus produced subsequently to his fields.

According to my later and present views, the grazing animals kept for the benefit of the farm, and in aid of the farming, should be as few in number as will graze and tread the fields in succession, and at proper and limited times, for their benefit, and not materially operating to reduce their fertility—and still leaving, to die upon and manure the land, much the larger proportion of the whole product of grass and weeds grown on the fields during the years of cessation and tillage. Thus, incidentally and in advance of the designed order of my remarks, reference is here made to the most abundant supply, and most extensive application of putrescent manure—the permitting the land to top-dress and manure itself by the growth, death, and decay of its own covering of plants. This is the great manuring process of Nature.

*The preparation of manure in winter.*

If the relative positions of the barn, stable, and straw-rick permit, there will be advantages found in having the stable for the farm horses and mules to open to the winter yard for the cattle. The poor food of the cattle, and their abundant littering of straw and corn-stalks, will make but poor manure. The stable manure, on the contrary, is often so rich as to be hurtful to the horses and mules, (by the escaping ammoniacal gas effecting their eyes—) if the manure is allowod to accumulate in the stable, for any considerable time. If thrown out daily, or frequently, even in small bulks, it will heat so violently as to be "fire-fanged." If in larger bulks, this effect is almost certain. This "fire-fanging," shown by the formation of white mould, is the result of excessive fermentation, of rich and too dry manure, and is evidence of the destruction of the richest parts of the manure. But when the stable and cow-yard are thus connected, the manure, or used and foul litter from the stable, can be frequently removed without loss or disadvantage; and by being spread thinly over the poorer cover of litter in the cow-yard, the qualities of both manures are equalized, and the whole mass improved by the mixture. Besides this, the access of the cattle to the stable, when vacant, and of the mules, when at rest, to the cow-yard, will be some benefit to both. One or two hogs will keep fat on the wasted grain of 10 or 12 mules, and also will benefit the manure by their rooting serving better to intermix the rich and the poor materials.

In my own rude practice, there is no shelter for the manure from rain, because, deeming that no advantage thence to be derived would repay the cost of the roofing. Any ordinary amount of moisture from rain is advantageous to the preparation of the manure. With the proper supply of dry straw or stalks for food and litter, there will rarely occur, even from heavy rains, any important waste of the fluid parts of the manure, by oozing out and flowing from the mass of trodden litter. It is true that such loss does sometimes occur. after unusually great falls of rain. But the greatest of such losses necessarily attendant upon this plan, cannot approach in amount to the cost of covering the manure in the yards, or subsequently in heaps and stercoraries.

Unless when cattle are confined separately in stalls, or otherwise that the covered shelters for loose cattle are so spacious as to be enormously expensive, shelters for cattle from rain, are not of much service to them. At least, I find that my stock with scarcely any such shelter, keep in as good condition as other stocks much better cared for in this respect. Of the ordinary sheds to yards within which the cattle go at large, the stronger animals take possession, driving off the w aker; and thus, for the greater number, and these most needing protection of every kind, there might as well be no attempt to shelter them from rain. A barrier against the cold winds, however, is important, and may be easily made effectual. The only shelter and protection from either wind or rain that my cattle have had for some years, is furnished in a large rick of straw which extends along nearly half the circumference of the yard, on the north and west side. This rick offers this kind of food at discretion, and supplies much the greater part of all the food consumed by the cattle, while confined to the pen from November to some time in April. The pickings of corn-stalk fodder, with the shucks attached, after having been previously passed through the stable, as food or litter for the mules, make the smaller residue of the winter food for all the cattle, other than working oxen and cows for milking. The animals soon eat out hollows along the side of the straw-rick, leaving a close and thick roof of compact straw above. No better shelter from rain and the north winds can be desired. But this cover serves only, as in other and usual cases, elsewhere, for the strongest animals, which do not generally permit the entrance of the weaker, when they most need the protection. This very imperfect sheltering is not stated here as commendable, or for an example to other farmers. But such are the existing facts. And, as before stated, I know of no other stocks of cattle that seem to keep in better condition, on the like coarse food, through the winter and spring. My cattle too are mostly of the improved short-horn blood, a kind commonly believed to require, more than ordinary cattle, good and plentiful food, and tender treatment.

The cattle-yard is littered with dry straw (from other ricks or stacks) twice a week regularly—and also, and more abundantly, after every wetting of the bedding by rain or snow. It is not desired to have these coverings more abundant than necessary for the comfort of animals, and to absorb or divide their excretions. The bed of litter in the winter cattle-yard (as also in the stables, and other stock enclosures,) is relied upon to absorb, divide, and preserve for use, the urine of animals. If this under plan is more wasteful of the fluid parts than the mode of separating them by means of water-tight floors and conduits, and tanks, it is also very far less costly—and therefore, for our circumstances, productive of more net manuring value. Any supply more than enough to take up all the animal matter, to diffuse it, and so prevent too great concentration and richness in spots, and consequent waste of the richest parts, would be an improper waste of labor. Any amount of material beyond this, if added, would remain as merely so much straw, to be made wet by rain, and so increased to five or six times its previous dry weight, and of course so much the more laborious to be carted to and spread on the fields as manure. All the surplus of straw, not needed as food, litter, or as a sufficient mechanical absorbent of the animal matters, I prefer to cart to the field from the ricks in the dry state, and without the five-fold additional weight of useless water. This hauling too can be done at any leisure times of winter, when quite too early to remove manure from the winter cow-yard, and when no other team labors can be well performed.

The cow-yard manure, with its admixture of the richer materials from the stable, remains in an unbroken mass, and continually added to on the surface, to such times in March and April as may be convenient to begin the removal to the fields. The manner of application, and the reasoning on which it is founded, will be offered subsequently.

In the climate of lower Virginia, the litter of a cow-yard, such as here described, will begin to ferment early in winter, and continue, though very slowly, throughout all the warmer weather of winter. After the heat of fermentation has been produced in the interior part of the mass, probably it is not cooled, or the progress of fermentation stopped (unless near the surface) during the coldest weather. But though this fermentation will increase with time, and the increasing warmth of the spring, still, even to the early part of April, it has served barely to awaken the vegetable fibres and their texture, and to make the litter more tender and easy to be reduced, without any notable loss having yet been induced by the slight heating of the compact mass, then perhaps 18 to 24 inches thick. If the farmer can begin so late, and yet effect the removal of the whole body to the fields in good time, it is best not to begin until in April. Up to the time of vegetation beginning to make progress, and especially to the springing of red clover, the later the removal of the imperfectly fermented mass of manure, the better for its early operation. By the delay, the quantity is added to, the strength is increased by the larger supply of animal matter, and the slow fermentation continues to reduce and break down the unrotted fibres, and fit the manure better to operate speedily.

*The preservation of manure.*

This branch of the general subject, which occupies so large a part of the usual treatment by writers, will occupy but little space here. In my opinion, the best mode of preserving manure, is to apply it to growing plants, in suitable manner, and as soon as possible after the manure is prepared and fit for use. My reasons for this opinion, and the practice founded thereon, will appear in connexion with the extended observations which will next be offered on the proper application of manure.

But it may happen in some cases that no field is ready, or within convenient distance to receive the winter manure until some months later than the time when the spring feeding of cattle ceases. In such case, the manure will be best preserved by leaving the mass in its compact state, not to be broken into (in its then softer state) by the longer treading of animals. Still worse would be the digging up, loosening, and heaping the manure, (as was the old practice,) which would hasten or renew fermentation, and cause great loss of the fertilizing parts. If the mass is left as compact as made by the treading of cattle through winter onunrotted litter, the air will be so nearly excluded that fermentation will proceed very slowly, and by aid of the moisture, without violence at any time. No doubt there is loss in this mode. But much less, (and with very far less labor,) than in any manner of heaping manure, whether with or without its being sheltered from rain and sunshine, on the surface of the earth. It may be, (as I have no personal experience, or even reliable information of such facts,) that the daily or frequent removal of fresh manure to safe receptacles under ground, or other well constructed stercoraries, with close floors, walls and roofs, and keeping the mass always wet, might still better preserve the first value of the manure. But if so, the enormous expense of this plan, in labor and in buildings, would far exceed any possible superior value of the manure at any later time.

In the next section, I shall recur to particular subjects which have been but hastily touched in the preceding pages, because they could be better treated in connexion with what will now follow.

*For the Planter.*

## "Action of Lime or Marl on Soils below the Falls of the Tide-Water Rivers of Virginia.

"The application of lime or marl below the falls of the tide-waters of Virginia," has been attended with decidedly beneficial results. The effects have varied according to the varying condition of the soil. Upon light soils their action has been much quicker than upon the stiff clay lands of what is generally known as the Forest, yet upon both their beneficial results have been sure and certain.

Lime, or marl, is now regarded as the basis, the most essential element in the improvement of worn out lands. Without the agency of the one or the other every attempt to recussitate them will be fruitless. So powerfully have they acted upon acid soils abounding with sorrel, that the effects of their application can be distinctly traced even in the first crop. Upon close and compact soils, producing but a light and inferior growth of grass, it has been the means of at once making them pulverable and easy of cultivation.

Lime and marl act in various ways. They break down the tenacity of stiff clays, improve their friability, and prepare them to be acted on by the atmosphere. On the other hand, they act with equal benefit in increasing the tenacity of light soils, and improving their power of retention, thereby preventing in a measure the exhalation of nutrative manures. They perform the office of a solvent, and thus convert the inert vegetable remains, as well as the inorganic elements of the soil, into the nutrition of plants. This is one of their most important properties. They have, also, the power of attracting moisture from the atmosphere, enabling crops to bear the effects of summer drought with comparatively small injury. They enter into the constitution of all plants, and combine with various acids which are to be found by careful analysis in their roots, stalks, blades or seeds. They are, therefore, essentially necessary to the growth of plants.

I have now been using lime for twelve or fifteen years. The soil to which I have applied it was originally rich, but by long continued cultivation had been reduced to sterility. At the time I commenced liming, it abounded with sorrel. In consequence of its continued use the increase of the crops has been trebled, if not quadrupled, and the intrinsic value of the land has been equally enhanced.

Assuming, then, that lime is one of the most important means of improving the soil, it becomes a matter of interesting inquiry as to the manner in which it should be applied. In determining this question, the quality or condition of the soil should always be regarded. If it is capable of producing a heavy vegetation and is full of insect life, it should be applied in large quantities, and unslacked, just as it was taken from the kiln, so that its action may be more effective than it would be in an effete or slacked condition.

If, on the other hand, the soil is thin, it is better to apply small quantities, and repeat at intervals, until a sufficient quantity is applied. There is a variety of limestone rock, of shells, and of marls, in use. To reap the greatest benefit from these substances they, as well as the land to which they are applied, should be analyzed. Some instances have occurred in which neither lime nor marl appears to have had any effect; no doubt because there was an abundance in the soil, or that used was of an inferior quality.

As fertilizers, lime and marl are not only rapid and powerful, but also durable. There are many instances in which effects have been visible after they had been applied for twenty years. Entering, as they do, in a greater or less degree into the composition of nearly all animal and vegetable remains, they excell all other manures. They are recommended also by cheapness and adaptation to all sorts of land, being advantageously applied (except in a very few instances,) and almost always affording the sure means of rendering thin and exhausted soils productive and luxuriant.

Long experience in the use of lime induces me to believe it to be among the best preventatives of smut in wheat. Some eight or ten years ago, I was induced to soak my wheat from twelve to twenty-four hours in a strong brine,—not for the purpose of preventing the smut, but to rid my seed of all impurities, as well as to benefit the crop; the result was, my wheat did not come up well; the salt no doubt preventing it from germinating,—consequently my crop was not half thick enough, and thereby much injured. I have never since used a brine or soak for smut or anything else; and up to this time I have not seen a dozen heads of smut in any one of my crops of wheat.

My neighbours, who have used many of the various remedies prescribed for smut, and who have not used lime or marl, have found it to be an increasing evil.

Living, as I do, on a navigable stream, I have preferred lime to the *clay marls of my neighbourhood*, because its effects are much earlier developed,—and I believe it is cheaper, being delivered at the landing for seven or eight cents per bushel. Upon light and sandy knolls I prefer the application of Miocene marl on account of the modification of the soil produced by the clay combined with it. I have been a close observer of the effects of the Eocene marl of the Pamunky and James rivers, and should prefer that even to lime, if it were not inaccessible. It combines many more of the valuable inorganic elements of the soil, such as soda, potash, gypsum, &c., and is also rich in organic substances. It is the most powerful fertilizer I have ever seen applied.

Many fields have been reclaimed by it from sterility, and advanced to as high a degree of improvement as has been exhibited by any other lands in Eastern Virginia.

In further illustration of the views expressed above, I will here cite the two following experiments, conducted several years since by the use of lime: *

1st. A field containing 130 acres of land, from which there were gathered, in 1844, about 500 barrels of corn, was limed at the rate of fifty bushels to the acre in August, 1848, and cultivated in corn in 1849. Although the corn suffered very much for rain, there were gathered 647 barrels of good merchantable corn. In the fall this field was sown in wheat at the rate of about a bushel to the acre; the product was an average of eleven bushels for one. Clover was sown, in the spring, upon the wheat, —and the following spring (1851) a bushel of plaster was applied per acre. The first growth of clover was mowed, measuring from 2½ to 3 feet high through the field. In the month of August the land was fallowed with large double plows. Owing to the heavy growth of clover, the work of turning it under was imperfectly done. After fallowing, the field was laid off, in checks, seven yards square; a half bushel of lime deposited in the middle of each square, and immediately scattered, and raked thoroughly in the land. A fraction over a bushel of wheat was sown to the acre, and the field finished about the 6th of October. The wheat grew off finely, and had a good appearance through the winter and spring of 1852. During the month of May it was visited by many of my neighbours, and by Mr. Wm. Boulware and Col. Robert Bland, two of our most scientific and practical farmers, who pronounced it to be as good if not a better growth of wheat than any they had ever seen. Owing to a wet spell, the wheat was not cut until it was thoroughly ripe, and consequently much loss was sustained. The wheat was gotten out, accurately measured, and an average of thirty bushels per acre was the result. This field is now (1854) in corn, having rested in 1853, and having had a third application of lime on it just before planting. It has suffered a little from drought, but good judges pronounce the probable average of the crop to be equal to ten barrels per acre, if present prospects are realized.

2nd. Upon a field of 150 acres of land, (recently purchased,) lime was applied at the rate of forty bushels to the acre, in the summer of 1852, and cultivated in corn in 1853. The corn showed marked improvement over any crop that had preceded it, averaging from four to five barrels through the field. A large portion of this field had peas sown broadcast on the corn for the benefit of the wheat crop. The crop of wheat this year has been almost an entire failure through our county, and not more than half an average has been realized. Upon the pea-fallow of this field, an average of 12 to 15 bushels per acre has been obtained, excelling even that portion of the field which had the advantage of an application of guano. This old field which contained the sorrel and poverty grass, and which was an eye-sore to all good farmers, will next summer present a new aspect, in the foliage of a good set of clover.

WM. D. GRESHAM.

Forest Hill, *King and Queen Co.*

* Note.—These experiments were reported and published in 1852, and have been since continued up to this time.

*For the Southern Planter.*

## Cultivation of Clover.

In the August number of the Planter there appeared an essay on the "cultivation of clover," by Col. McCue, of this county, which contained many valuable suggestions and useful hints in reference to that crop, so important to the farmer, and with the culture of which Col. McCue's experience has made him familiar. It is, therefore, with diffidence that I venture to call in question the correctness of any of his opinions in regard to this "Sampson among the fertilizers." But in the communication referred to, he lends the sanction of his name and influence to the propagation of a theory that I conceive to be as erroneous as it is injurious to practical agriculture.

After attributing much of the difficulty and want of success, in the culture of clover, to "defective seed," Col. McCue says, "In the Valley counties where it (clover) is cultivated, the farmer raises his own seed, year after year, on the same soil. Every succeeding crop exhibits a falling off in the vigour and luxuriance of the hay, and an increasing tendency to deterioration in the quality of the seed, consisting of light, chaffy grain, &c."

The sentence I have just quoted expresses an opinion, in regard to clover, that is prevalent, to some extent, among farmers in reference to all farm crops, viz: that by some inscrutable law of Nature they deteriorate if grown on the same land for a series of years. An opinion that I believe to be equally untrue of clover and other farm crops.

The effect, of the opinion in question, is at once to paralyse all efforts to improve the quality or increase the productiveness of either grain or grass by the judicious and systematic selection of seed from "year to year." Because no farmer would be willing to undergo the labour and trouble of an attempt to improve the quality of any one of our staple crops, if he is to be met at the threshold of of his undertaking by the dogma that all crops, by an inexorable law, deteriorate after a few years' cultivation on the same soil.

I believe this *theory of degeneracy* alike unsustained by either facts or arguments. The

most successful cultivators of every kind of grain or grass, are just those careful and painstaking farmers who invariably raise, from "year to year," their own seed.

At one of the section meetings of the State Agricultural Society, at the Fair of 1856, Mr. Edmund Ruffin stated that he had been raising one kind of wheat for thirty years, without its exhibiting any evidences whatever of deterioration.

The writer of this has often purchased seeds of various kinds from a distance, with the hope of improving the quality and prductiveness of his crops, but his hopes and expectations have always been disappointed. And after trying many varieties of Indian corn, he is now growing the same kind on the same plantation on which his grand-father cultivated it a half century ago. And it grows as vigorously and luxuriously now as it did then.

What reason, in the nature of things, can there be for supposing that the simple transfer of wheat or clover from the limestone lands of Maryland or Pennsylvania, to the limestone lands of Rockingham, or Augusta, is to improve the vigour or increase the luxuriance of the crop? I am unable to imagine any reason why the crop from such seed should, in any particular, be better than that from seed grown on the same farm on which it is sowed. A firm faith in the opinion that crops degenerate after a few years cultivation on the same land, is an excellent and ingenious method of accounting for bad crops, without in any degree impeaching the skill, industry, or management of the farmer.

The partial failure of the clover crop in this county, for the last ten or twelve years, as well as the "chaffy" seed, of which Col. McCue complains, can be accounted for without a resort to the theory of deterioration.

The Summer of 1846 was very wet, but since that time, up to the present year, the Springs and early Summers have been, for the most part, extremely dry. During the decade between 1847 and 1857, there were many Aprils and Mays with scarcely a single shower.

This condition of the weather, combined with the usual mode of sowing clover seed, which is in the Spring of the year, upon winter grain without the use of any means to cover the seed, is, I think, sufficient to account for any want of success in the culture of clover for some years past in this county.

Much of the seed sown probably never vegetated at all, and of that which did succeed in germinating, a large portion was destroyed by the drought.

My observation and experience tend to the conclusion that clover seed, when sown in the ordinary way, requires a large amount of rain to ensure its complete germination and growth.

The Summer of 1846 being very wet, we had a "fine stand" of clover; at harvest it was, in many fields, growing up through the wheat that had been prostrated by the heavy rains. And this year, which has been "very seasonable," the Spring-sown clover seed has come up uncommonly well. And, doubtless, next Summer, as the believers in "deterioration" look over their luxuriant fields of clover, they will congratulate themselves on having obtained undegenerate seed from some distant locality.

In regard to the diminution of the hay, and the "chaffiness" of the seed, I have a remark or two to make. It is well known that clover is a biennial plant, and if allowed to mature dies in two years, which necessarily much diminishes the yield of hay if the land is kept longer than that time in clover. And in addition to this cause, our usurping, indigenous grasses, the blue and the greensward, soon supplant the clover; in which labour they are aided by the timothy that the farmer is advised to sow along with his clover.

It is, doubtless, the failure to observe these facts, that has, to some extent, given prevalence to the belief in the deteriorating tendency of the clover plant.

Every one familiar with the cultivation of clover, knows that a crop, for seed, must be cut before all the heads have fully ripened: for the reason, that those maturing earliest will fall off, if permitted to remain uncut for any length of time, and the loss would be greater by waiting for the ripening of the entire crop than by gathering part of it green. These unripe heads will yield seed "light and chaffy," just in proportion to their state of maturity.

From many causes, which it is unnecessary for me to state, the proportion of immature heads, at the time of gathering, varies with every year.

Some farmers, however, in preparing their seed for market, blow out with the fan most, if not all, the "light and chaffy" seed, whilst others preserve as much of it as possible, in order to increase the quantity, a practice by no means to be commended, and one against the evils of which Col. McC. very properly cautions the farmers.

I think these facts satisfactorily account for all the imperfect clover seed seen in the market, and completely negative the idea that the mere presence of "light and chaffy" seed is any evidence that the clover plant has degenerated. It is extremely rare to find in a fully matured head of clover, of the second crop, imperfect seed. If you cut clover for seed before it is ripe, like every other crop, you will find that the seed will shrink. T.

*Augusta Co.*, 11th August.

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A very good sealing wax is made by melting and stirring together one ounce of Venice turpentine, four ounces resin, and six ounces gum shellac. A beautiful red color may be given by adding ¼ of an ounce or less of vermillion.—*Germantown Telegraph.*

*For the Southern Planter.*

## Brunswick and Dinwiddie Club.—Tobacco Exchange.

At a regular meeting of the Brunswick and Dinwiddie Hole and Corner Agricultural Club, held on the 13th of August, 1858, the following preamble and resolutions were unanimously adopted:

THIS CLUB being apprehensive that the establishment of a TOBACCO EXCHANGE by irresponsible parties in the City of Richmond, or elsewhere, will ultimately result in the transfer of all tobacco carried to markets, where this policy has been or may be inaugurated, from the hands of planters to the Commission Merchant, do therefore

*Resolve* 1. That we are opposed to the establishment of any such medium for the sale of tobacco, without the authority of law.*

2. That we believe that the establishment of some such institution, for the sale of Tobacco, conducted by responsible officers, and regulated by law, will meet with general approbation, and be promotive of the interest of all parties interested.

3. That our Senator from this district, and the Delegates from the counties of Dinwiddie and Brunswick, be instructed, so far as this Club can do so, to use their best efforts, to procure the passage, by the Legislature, of such laws, as will best protect the rights and interests of both planters and dealers in tobacco.

It was further

*Resolved*, That the proceedings of this meeting be sent to the Southern Farmer and Southern Planter for publication, with the request that the papers of their respective cities will copy. FRANK JONES, *Pres't.*

J. F. EDMONDS, *Sec'y.*

*For the Southern Planter.*

## War Against Wash Boards.

Farmers' wives and all house-keepers are guilty of a great oversight in permitting their washer women to use wooden or any sort of wash-boards for cleansing clothes. Ladies who have abandoned (by destroying all they see) the use of them, say that one set of shirts for husband and children now lasts nearly three times as long as they did while the use of wash-boards were countenanced in the family.

House-keepers have but little idea of the heavy tax inflicted on their pockets by the indiscriminate use of washboards. Many a $3 and $5 fine linen handkerchief is rubbed out upon a board that cost 38 cents. Ask any house-wife the fate of one of her nice face towels, if the chambermaid slily uses it once or twice for washing up a smooth floor, which is not half as injurious as the fluted surface of a board. Abandon such things in your wash-room, and your store-bills will be lessened, and your seamstress will have time to help on wash days. TWENTY-ONE YEARS' EXPERIENCE.

*Clarke Co. Va.*, Aug. 20, 1858.

* The first and second resolutions are the same as those adopted by the Nottoway Club.

## The Composition of Milk at Various Times of the Day.

Professor Bodeker has analyzed the milk of a healthy cow at various times of the day, with the view of determining the changes in the relative amount of its constituents. He found the solids of evening milk (13 per cent.) exceeding those of the morning's milk (10 per cent.) while the water contained in the fluid was diminished from 89 to 87 per cent. The fatty matters gradually increase as the day progresses. In the morning they amount to 2.17 per cent., at noon 2.53 per cent., and in the evening 5.42 per cent. This fact is important in a practical point of view; for while 16 ounces of morning's milk will yield nearly half an ounce of butter, about double this quantity can be obtained from the evening's milk.

[*Edinburg Medical Review.*

## A New Way to Bring up the Cows.

Travelling a few days in Missouri, in sections where the cows have a wide range, we heard a new enticement to bring the cows home regular at eve. That was feeding them with sugar the same as you would salt, a little handful at eve, at the same time of day, would bring them back to the gate with a regularity as unfailing as the sun. After they are well trained in sugar-eating, it may be omitted every other night. A half dozen notable housewives assured me that the fact was well worth knowing.—*Ohio Farmer.*

## Sorghum Cider.

The Nashville (Tenn.) Homestead says that, besides the excellent syrup and sugar made from the Chinese sugar cane, there is yet another article obtained from it which is of pleasant taste, and doubtless healthy in its consequences. It is obtained by putting the expressed juice of the cane into any clean wood or glass vessel, allowing it to stand ten or twelve days, when it assumes the appearance of limpid water, and is fit for use. The flavor is similar to our best cider, and we suppose might be properly called cane cider.

## To Destroy Rats.

The Griffin (Ga.) Empire State says: That a lady in that city, whose house became infested with troublesome little varmints, says the simple remedy of dissolving copperas in cold water (make it strong) and sprinkling in the most prominent places of resort, will make them leave at a two forty rate and no mistake. She tried it successfully, and has not been troubled with rats or mice since. It is simple and will not cost much to try it.

*For the Southern Planter.*

## A CARD.

*To the Members of the Virginia State Agricultural Society:*

THE EXECUTIVE COMMITTEE—to whose discretion the subject was referred by the Farmers Assembly—after exhausting every proper expedient to prevent it, determined to remove the next Annual Exhibition of the society from the ground which had been prepared by the City of Richmond, and to hold it at Petersburg in connection with the Union Society of Virginia and North Carolina. As this determination, either from entire ignorance, or from misconstruction, has been made the occasion of injurious animadversion, it is deemed proper to submit a transcript of the record of proceedings had by the Executive Committee in reference to the subject, that from a right apprehension of facts, a just and intelligent judgment may be formed in respect to the grounds and motives of their action.

On the 26th of November 1857, the following preamble and resolution were adopted:

"Whereas, the space afforded by the present Fair-Ground, provided by the City of Richmond, being entirely insufficient for the accommodation of the society, and the condition of the buildings thereon being such, as to need thorough and expensive repairs or reconstruction, with large additions, which can not longer be postponed or neglected if the buildings are to be retained for the Exhibitions of the Society; it is obviously both expedient and economical at this juncture to endeavor to procure more spacious and eligible grounds for the future use of the society. And, whereas, all the efforts of this body to obtain the needed accommodations having so far been fruitless, the case was represented to the Farmers Assembly, and by that body has been specially committed to the discretion and action of the Executive Committee, therefore:

"*Resolved*, That a committee be appointed to wait upon and confer with the President and Members of the Council of Richmond, and to request of them to submit to the voters of the City the question of the expediency of making an annual grant of three thousand dollars to enable the Virginia State Agricultural Society to purchase, and fit out a suitable Fair Ground in or near the City of Richmond, and to aid in supporting the expenses of the Annual Fairs."

Committee.—Messrs. Crenshaw, F. G. Ruffin, G. W. Randolph, E. Ruffin and Chas. B. Williams.

On the 26th of January, the Committee made the following report, which was received and adopted:

"The Committee appointed to confer with the Council of the City of Richmond, in regard to an appropriation asked from the City in its corporate capacity, beg leave, respectfully, to report:

"That, in obedience to instructions from the Executive Committee, they waited upon the City Council, at its December meeting, and presented the proposition to submit to the voters of the City of Richmond the question of making an annual donation of three thousand dollars to the Virginia State Agricultural Society; that, the consideration of this proposition was postponed from that meeting to a subsequent one in January; that, at this meeting the application was rejected on grounds which showed that the majority of the Council thought the benefit to the City of too little value to be obtained by an annual contribution to the Society of the sum proposed, and which seemed also to show, that, the Council thought the citizens might not agree with them in this opinion; that, the following resolution—deemed by them a fair concession to the demands of the society—was adopted by a vote of six to three:

"*Resolved*, That the Council is disposed, for the present, to continue to extend to the Virginia Agricultural Society the accommodations granted to it last year; but, will not come under any obligation to endow it permanently with any sum of money or with any property;" that, this resolution contemplates a contribution of one thousand dollars only, subject if meant as an annual appropriation, to all the difficulties, uncertainties and delays which have heretofore attended the obtaining of a like meager sum of the Council of the City of Richmond; that, the Council seemed to be of the opinion that the society was rich enough to hold its Fairs without any extrinsic contribution; that, in the present and prospective financial condition of the society, the amount is wholly inadequate to the yearly demands, and insufficient either to rent the present indispensable Horse Lot or to cover more than half the estimated cost of repairs; that, the funds of the society applicable to this purpose according to the estimate of expenses of holding a Fair, submitted as an appendix to this report, forbid the idea of holding the Fair and Show of the Virginia State Agricultural Society from their own resources alone; that, whilst it is very true that Richmond possesses advantages so greatly superior to other cities, as to make it very desirable to hold the Fairs here, permanently, that yet, it is for those of her citizens who are friendly to our petition, and not for us, to go again before a body of gentlemen who have persistently rejected every application for substantial aid; that, the constitution is peremptory in its requirement to hold an Annual Fair; As the only means, therefore, of accomplishing the purposes of this requirement without bankrupting the society, it is recommended to the Executive Committee to adopt the following resolution:

"*Resolved*, That a committee be appointed to solicit and receive proposals from the several cities in regard to the inducements they may be disposed to offer, for the holding of the next

Annual Fair and Show, under such instructions as the Executive Committee shall be pleased to give.

"Committee—Messrs. Crenshaw, F. G. Ruffin, Knight and Noland, to which the President was added.

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*"Appendix to the above report.*

Estimated expenses for 1858, if the Fair should be held in Richmond.

| | |
|---|---|
| Rent of Horse Lot, | $1000 |
| Repairs of Fair Grounds, | 1000 |
| Payments for old premiums, probably, | 200 |
| Premiums of 1858, " | 4000 |
| Printing and advertising, | 500 |
| Incidental expenses, | 750 |
| Ticket Office, | 100 |
| Police Department, | 2000 |
| Forage Department, | 1000 |
| Office Expenses, | 400 |
| Salary of Secretary, | 1500 |
| | 12,450 |

*Estimated Receipts.*

| | | |
|---|---|---|
| From Annual Memberships probably, | 3000 | |
| From Rents, | 200 | |
| " Gate-Money, | 2600 | |
| " Interest, | 2800 | |
| Total, | 8,600 | |
| To which add probable balance to the Cr. of contingent fund, | 2,000 | 10,600 |
| Leaving the society in debt after the exhaustion of its contingent fund, | | $1,850 |

"If the Fair is held elsewhere, upon the guarantee of the amount of its proper expenses and the surrender by the society of the incidental receipts of the Fair to the guarantor, such as gate-money, rents, &c., the account will then stand thus:

*Receipts.*

| | |
|---|---|
| Receipts from Annual Members, | $2,500 |
| Interest, | 2,800 |
| To which add contingent fund as before, | 2,000 |
| | 7,300 |

*Expenses.*

| | | |
|---|---|---|
| Salary of Secretary, | 1,500 | |
| Office Expenses, | 300 | 1,800 |
| A gain to the society in comparison with expenses in holding the Fair at Richmond, of | | $5,500 |

As the basis of negotiations with the several cities, the following resolutions were adopted:

"1. *Resolved*, That the Committee be instructed to make arrangements with any city within the State, that they may deem most advisable, which will guarantee the society against loss in holding its Fair of 1858; the said city to receive the gate-fees, rents, &c., and pay all expenses of conducting the Fair, and also the amount of the awards under the schedule of Premiums; that, if said committee fail to make such an arrangement, then, they shall receive such proposals as may be offered, and report them to the next meeting of the Executive Committee.

"2. *Resolved*, That, in any arrangements the Committee may make, the payments received from annual members, be reserved to the society, and that, the privilege of gratuitous attendance of the exhibitons of the society, be reserved to the Life and Annual Members thereof, with their families as heretofore enjoyed by them."

On the 27th of April, the committee acting under the above instructions made the following report, which was received and adopted.

"The sub-committee appointed and fully empowered to make definite arrangements for the location of the Fair for this year, submit to the Executive Committee the following report of the performance of their duties:

"In reply to the publication of the resolutions of the Executive Committee, asking proposals from every city in Virginia to which the holding of the Fair might be suitable and desirable, and also to particular communications addressed to several of the towns deemed most likely to act, we have heard from the cities of Wheeling, Petersburg, Norfolk and Alexandria, and have received actual proposals from the two former of these only. On the part of Wheeling the terms offered were most liberal, and as much so as could have been desired for the State Agricultural Society. But, several serious objections, including the remote position and difficult access to Wheeling for nearly all the actual members of the Society, and still more, the impropriety of the Session of the Farmers' Assembly being thus far removed without the previous and distinct understanding and authority of that body, compelled us to decline the offer of the citizens of Wheeling. This offer was of the ground and all other accommodations necessary for holding the Fair and General Meeting of the Society, and a guarantee of re-payment of all other pecuniary expenses that might be incurred by the Society for the purpose, not exceeding the limit of $10,000.

"The terms agreed to and upon which a contract has been executed, are these:—The Executive Committee of the Union Agricultural Society of Virginia and North Carolina, acting in its own behalf and also for the City and People of Petersburg, will furnish to us the ample and excellent Fair Grounds of that Society and all needed buildings and accommodations in good repair, and assumes all the expenses necessary for and incident to the Fair and General Meeting of the Society, except that in regard to the payment of premiums, the additional amount to be furnished is to be sufficient to pay all the premiums awarded, provided the aggregate of the awards shall not exceed four thousand dollars.

"The terms agreed upon are, substantially

these—that the city or community having the benefit of the Fairs, will pay for those benefits all of the expenses of the Fair, including the premiums awarded, thereby, saving to the Virginia State Agricultural Society an annual outlay for this purpose of some six thousand dollars, which has been for the past two years the average amount expended in conducting the Fairs over and above the receipts at the gate and for rents.

"In this arrangement the Virginia State Agricultural Society retains the contributions from its own members, and they are to have the same privilege of free admittance to the Fair Grounds with their families as they have enjoyed heretofore."

The foregoing record fully discloses the grounds upon which the Executive Committee have acted. They stand justified from any possible imputation of hostility, dislike or unkindness towards the city, since it must be obvious to any unprejudiced mind, that they left no means untried, which a decided and avowed preference for Richmond could suggest, and that it was at any time during negotiations protracted through several months, at the option of the city, before proposals were submitted elsewhere, to have secured the advantages of which her citizens have since exhibited so just an appreciation.

CH. B. WILLIAMS, *Sec'y.*

## The Curing of Tobacco with Charcoal.

We regret that the subjoined letter came to hand too late for insertion in our last number—however, it is still in time, and will make a valuable addition to the article on the same subject in our September issue.

It is furnished by a very skilful and experienced planter, at our request, for the benefit of all "green hands," (ourselves included) who are engaging in the cultivation of Tobacco. We have seen samples of several hogsheads, cured by this process, by our correspondent. They were very "bright," and yellow—what is more in their favour, they were sold for *high prices.*

We should like to be at liberty to publish our correspondent's name to his letter, but his modesty prevents us. Why is it that so many sensible men have such a dread of "seeing themselves in print?" This very nervousness of theirs is a serious obstacle to the progress of every agricultural journal in the United States. Many a good article, which would be thankfully received by both editors and subscribers, is thus "kept back." Much information likely to prove valuable to large numbers of readers, is withheld; and, consequently, a great deal of good which might be accomplished by agricultural papers, is still undone. This is wrong. Farmer's, as well as men of every other class, should *do all the good they can.* If a farmer is in possession of any information which he thinks would benefit his brethren, it is his duty to communicate it. Let every one act up to this advice, and errors will be annihilated—good feelings and strong sympathies will be engendered, and fostered among them: the cause of agriculture *will be advanced,* and we shall have added to our community of interests, many a real pleasure, and social interchange of opinions. Allow us *to suggest the columns of the Planter* as a fitting vehicle for just such communications, and with great pleasure we add, one most agreeable to us. It is devoted to the interests of the farmer—therefore, let every farmer think he owes to the Planter, and to his brethren, an exposition of all that is valuable in his practice. Surely the men who so well know the value of information obtained at "the handle of the plough," and from *open air observation,* do not expect us to sit "upstairs," surrounded by "bricks and mortar"—the only view from our windows being the "sights" of a busy city—and *unaided,* to *instruct them.* We are accommodating in our disposition we know, but our face has not *brass* enough in it to allow us to promise any such thing. We intended to say this much at the first opportunity to all our readers. We hope they will, in return, say a great deal more to us. They have the odds.

CASWELL COUNTY, N. C., Aug. 1858.

*Dr. Williams:*

DEAR SIR:—I have delayed complying with your request, that I should communicate with you on the subject of coal curing, or yellow tobacco, hoping that I might find some of my neighbours of more experience, to undertake the task—like myself, they are reluctant to put on paper any plan on a subject so much under the control of circumstances. The most any one can do in the matter, will be to state general principles, leaving their application to the better judgment of those who may choose to try it. I will endeavor very briefly to do so. In the first place, the curing-barn must be made perfectly close, and no tobacco but that grown on fresh land, grey or sandy, or old field reclaimed after many years growth in pine, should be attempted, as that has more tendency to yellow on the ground, which greatly facilitates the desired end. All plants to be used

for one curing should be selected of a uniform colour—cut the same day and housed as soon as practicable. If the tobacco is entirely of a green colour, and consequently full of sap, let a moderate heat, about equal to summer-noon heat, say 90 degrees, be applied—fires made of decayed wood of any kind, such as can be pulled or knocked to pieces, and allowed to smoke freely, and regulated by a thermometer suspended in the centre of the barn, on or below the first tier. Continue this heat for 12 hours, then raise it 10° and in 12 hours 10° more, the next 12 hours 5° (115°) at this stage apply charcoal for 6 hours, by which time the tobacco will be through the process of fermentation, and as yellow as it will be. Then pass up to 120°, which in 12 hours will cure the leaf, after which go up 10° every 2 or 3 hours, until you reach 150–60 or any higher heat within bounds of safety from burning, and continue till the stem and stalk are cured. The coal need not be used longer than the curing of the leaf (say 18 hours,) during the stages of 115–20°. It is of the utmost importance that the heat should not fall below the degree indicated at any stage of the process, otherwise the sap in the stem and stalk will descend into the leaf, staining or spotting, turning it red. Consequently the strictest watch must be kept, day and night. After the leaf is cured, any kind of dry wood, or half-dry, is better than coal throughout. If the tobacco is considerably yellow on the ground when cut, commence your fire with coal in the first instance, and with 105° of heat, and increase it every 6 hours five (5°) up to "120°," and 12 hours at that will cure the leaf, then go on as before stated. The advantage of the coal is, that it produces a dry heat, and is consequently best to fix or set the colour. While the wood, even if seasoned, still has a steaming quality which makes it best for the fermenting or yellowing stage, and will not affect the colour in the latter or high-heat stages. The great point is to get the tobacco sufficiently yellow, which will be, if at all, at the period when the fermentation ceases, and to commence the leaf-curing, just at that stage, or it will turn red, and a failure is the consequence. In this event, stop the fire, let the barn cool, take out the tobacco, and let it cure in the sun or remove to another barn, or shelter and dry without any more fire, and it will be more sightly than to continue the course first prescribed. The fate of the barn may be, and frequently is, decided the first 24 hours, and indeed in any stage, up to the curing of the leaf, and even then, if the heat is suffered to fall below 125–30° until the stem and stalk are cured. It is known to any one who has given attention to the subject, that tobacco, in its full perfection, must pass through the process of fermentation—this it will naturally do under almost any circumstances, and if artificially, it must be by the application of heat in regular gradation. A yellow colour is the result in either case. To set the same, a dry, curing heat must take it precisely at the period when the fermentation ceases, otherwise it will immediately begin to lose colour by absorbing the sap from the stems, hence the difficulty in obtaining yellow tobacco. This can be done by any and every one with proper attention. And I will take this occasion to say that he who does it, will earn all the price the market affords. Nevertheless, let it be tried.

Yours truly, R. J. S.

*From the Farmer and Planter.*

## Orchard Grass.

The following we clip from *Germantown Telegraph*, in testimony of the value of a grass we have often taken occasion to commend. For a permanent upland meadow it is unquestionably the best grass now known to us,—taking into consideration both hay and pasturage. Timothy is the popular hay grass, and those who make hay for market must confine themselves chiefly to this. But for consumption on the farm and pasturage combined, it does not compare with Orchard Grass. For pasturage the latter is especially valuable. It springs early and continues later. Endures drought, and requires to be close fed to keep it in order. With seed enough put on the ground, it makes a close turf, and it never runs out.

Let us give a word of caution, however; the seeding with orchard grass is costly, and it should not, therefore, be sown except on well prepared ground in good condition :—[*American Farmer.*

"I have just finished the perusal on a 'Treatise of Grasses and Forage Plants, by Charles L. Flint, of Massachusetts,' a second edition of which I found had been recently published by a New York Bookseller. It is in my opinion an excellent and practical little work, which every farmer should possess himself of and study. In connection with the subject, I propose to give my experience of the value of a variety of grass which I think is not understood or appreciated by most of our farmers. It is the *Orchard Grass* or *Rough Cocksfoot*. *Flint* says this grass was introduced into England from Virginia, in 1764, in which latter place it had been cultivated for several years previously. It is now one of the most widely diffused grasses in England, and is highly prized there.

Orchard grass, in my experience, yields a greater amount of pasturage than any other, and is better suited to sustain a drought than any other grass we are yet acquainted with in this country. In the severe drought of 1856 in this section, my Farm Book reads as follows:

"July 15th.—Grass fields suffering greatly for want of rain." "20th. Clover and rye grass fields look as if a fire had passed over them." 'Pasturage in these fields quite gone.' 'The field of green grass of 35 acres, but little better, affording scanty pasturage to a few sheep and cows.' The orchard grass field of 20 acres, supporting entirely the store cattle, 40 head, and still looking green, and our only dependence.' If it fails us, we must feed away the sheaf oats.' It did not fail us, but carried the cattle through the drought, which was not broken until the 15th of August, while the same field had been well pastured during the whole season. When the rains of August started the other grass fields, and we could relieve the orchard grass from duty, it looked as if an invading army had passed over it. But with a little rest and a few showers, in ten days it was ready for reasonable pasturage again.

"Orchard grass is of rapid growth, and a field well set with it affords earlier and later pasturage than any other, green grass not excepted. When cut in blossom with red clover it is said to be an admirable mixture for hay, although of this I have had no experience. For pasturing, be sure to keep it *well grazed*, to prevent it from forming tuft and running to seed. Every kind of stock I have yet turned upon it in its green state, are fond of it. It is a lasting grass, endures the shade well, and is not as exacting upon the soil as either timothy or rye grass. It succeeds best when sown in the spring, about the same time as clover on wheat ground, say four quarts of clover, crossing with one and a half bushels of orchard grass to the acre. If sowed alone, I would sow two bushels to the acre. It may succeed in the fall on early wheat, harrowed in very lightly after the wheat is covered. For hay, cut it in blossom in June. From the quantity of seed required, it is somewhat expensive at first, but afterwards the farmer should save his seed himself, which is readily done. The seed is very light, weighing about twelve to thirteen pounds to the bushel.

"In my experience, the merits of orchard grass can thus be summed up, viz: Early and rapid growth; resistance to drought; abundance of return in pasturage; endurance of shade; and in affording earlier and later pasturage than any other grass.

"NEW-CASTLE COUNTY."

## The Pernicious Influence of Water, and Watery food on Young Stock.

There is too little attention paid to the feeding of young stock, and we find frequently that many valuable animals are lost from diseases of the bowels, which arise from no known cause. A French writer notices this fact, and observes that the assimilation of nourishing matters is in proportion to the energy of the digestive passages; and if the digestive organs are relaxed by an excess of drink, or by food that contains more water than the animal needs, then there is a loss of time.

Animals drink only when they are thirsty, and their own instinct is the best rule; but the ignorant feeder frequently endeavors to force more water into the young animal than it needs by mixing the food which it likes with water, and thus exciting it to drink more than it needs. It may be noticed that a very great number of good cows, which give a large quantity of milk, are poor nurses, and seldom have thrifty calves. The reason of this may be found in the fact that the calf which depends upon such a cow, has to swallow a large quantity of water in which there is little nutriment, before it can obtain enough to satisfy its appetite. The nutritive matter floats on such a large quantity of water, that it cannot be assimilated, and the water itself relaxes and loosens the alimentary channels so that they perform their functions imperfectly. The calf consequently remains poor, its muscular system is not filled out, and while its paunch is full, its bones are sticking through its skin in every direction.

The cause of this state is easily explained. The stomach and the alimentary canal are dilated under the pressure of the mass of food which has been swal-

lowed, and they crowd the lungs; consequently the respiratory organs cannot be filled, and are constrained in their action, the ribs are bowed out under the weight of the intestines, the chest cannot develop itself, and the breast remains narrow, and badly shaped The young animal thus raised is always defective. A calf will seldom be seen to drink if allowed to suckle a cow that is a good milker, even where it is fed crushed grain or meal of any kind. Though water should be kept in its reach in our hot, dry climate.

It may be remarked that calves are sometimes subject to a diarrhœa or scours in the spring; this arises solely from the watery nature of the food on which dams are fed; for at this time, the young grass and clover contain a very large proportion of water, and, to obtain the nutriment required, a vast quantity of water has to be swallowed. The remedy, in all such cases, is to give a drier food, and one which is more nourishing in proportion to its bulk.

Amongst hogs the effect of this treatment is very perceptible, and if we go into almost any barnyard at the present time, the litters of young pigs will be found in a shape which shows that they have been improperly fed.. Whilst the young pigs are with the sow, and she is fed reasonably well, the pigs are straight on the back, round, with bodies and heads well proportioned; but as soon as they are taken from their dam, they are fed the swill and dishwater of the house, which contains a very large proportion of water, and the least possible quantity of solid food; the immediate consequences are, that the belly of the pig bloats out, and hangs down, the muscles of the hips and shoulders dwindle away, the head looks as though it were too large to be carried around with convenience or ease to the animal; the neck fades into a bundle of tendens without any muscle or flesh; the chest becomes narrow and lean, and the back is humped up. We are very sure that our readers will be able to see any quantity of this kind of animals in their neighborhood, and wherever they are, let them be put down as specimens of the effects of too much water and too little food. A pig once let down in this way for two months of the time when he should be growing, is a decided loss to the breeder, for not only has he lost all the time and food that the animal has already used up, but it will take a large quantity of food, and considerable time to bring the animal back into a condition and shape that will fit him to make the most of the food on which he is to be fattened for market. Feeders should bear in mind that water is not food, though necessary to enable the animal to convert food into pork or beef.—*Michigan Farmer.*

## Marking Ink for Linen.

Take nitrate of silver, eleven grains; rain or distilled water, eighty-five grains (say drops;) gum arabic, twenty grains; carbonate of soda, twenty-two grains; liquor of ammonia, thirty grains. In mixing the ingredients, dissolve the gum in the water first, and then the soda—now dissolve the nitrate of silver in the liquor of ammonia. When the solutions are complete, mix the two fluids in a glass vessel, and boil them for a minute or so; when cold it is ready for use. A common oil flask is a capital vessel for the above purpose, provided the oil has been well cleaned out of it by means of strong soap and hot water. Though of glass, they may be placed on a clear fire, and water boiled in them without any fear of breaking. In marking linen with permanent inks, care should be taken that the fabric is perfectly dry, as this prevents the ink from running; and it is essential at all times to use only quill pens.—*Scientific American.*

## Rags.

The importation of rags for the purpose of paper making is a great deal more extensive than most persons would imagine. During the year 1857 we imported 44,582,080 pounds, valued at $1,448,125, and making 59,461 bales; 35,591 bales were from Italy, and more than one-third are entirely linen, the rest being a mixture of linen and cotton. About 2,000 bales were also imported from the free cities of Hamburg and Bremen. France prohibits the exportation of rags, and so does Rome; the few which we get from Ancona (a Roman province) being by special permission on payment of large fees. Prussia and Germany generally impose so high an export duty on rags as to stop the trade en-

tirely. The exports from Alexandria and Smyrna are chiefly collected in Asia Minor by agents having license from the government, and the domestic demand must be supplied before any can be exported.—It is the same with Trieste, where only the surplus is allowed to come away. The Trieste rags are collected all over Hungary. We are informed that New York and Boston receive the largest quantity, and the place that ships the most is Leghorn in Italy.—*Scientific American.*

## Who Would not be a Farmer.

The Louisville *Courier* pays the following tribute to the occupation of the farmer:

"If a young man wants to engage in business that will ensure him, in middle life, the greatest amount of leisure time, there is nothing mare sure than farming. If he has an independent turn of mind, let him be a farmer. If he wants to engage in a healthy occupation, let him till the soil. In short, if he would be independent, let him get a spot of earth; keep within his means, to shun the lawyer; be temperate, to avoid the doctor; be honest that he may have a clear conscience; improve the soil, so as to leave the world better than he found it; and then, if he cannot live happily and die content, there is no hope for him.

*From the Homestead.*

## Indian Corn--Experiments in Hybridizing.

BY THOMAS ANDREWS.

Read before the "Rhode Island Society for Encouragement of Domestic Economy."

INDIAN CORN.—This is one of the most beautiful plants that grows in New England. One unaccustomed to it, is always struck with its symmetry and beauty; were it less common, we should never pass it without paying it the homage of our admiration. The tall glossy stalk, tapering from its roots, strengthened by joints at regular intervals, adorned with long, graceful leaves from every joint, and ending with a tuft of tassels at the top, slightly bending under its own weight, the ears projecting from the joints just at the height from the ground as not to endanger the plant, covered with their bright green husks, and displaying their silken threads to catch the pollen from the tassel and fructify them, what plant has claims to greater beauty? Look at its roots projecting in every way to support it. The ripe grain, how beautiful the full ear, glowing in varied colors, the pearly white, the golden yellow, and the ruby red, protected by the encircling husks from the rain and frost. To the farmer's eye it has other beauties. It is his crop of crops. None more certain, none more productive, none that will better repay him for extra labor and care.—Every part has its use, from the butts which slowly yield to the great law of decay, the stalks and the leaves, and the ripe grain; the last furnishing food acceptable and nutricious for all portions of his care, man, beast and fowl.

I have made this plant my study for years. For more than sixteen years have I been experimenting with it, and now find myself just beginning to know a little of what might be done with it. What I do know of it I have derived from my own experiments with very little assistance from books. I propose giving the Society some of my results and modes of operation, that some younger and more scientific minds may pursue them further than my state of health will permit.

The kind or variety of corn at harvest, depends not on the kind or variety of corn planted, but on the kind or variety from which the planted corn receives its pollen. This I have established by repeated experiments. For instance, I have planted the improved Canada corn, and have raised from it a sweet corn, fit for use at the time that the ears of the Canada corn would have been in the milk. The mode of operation was very simple: as soon as the tassel of the Canada corn began to appear it was cut off. The tassel was also cut from the Sweet corn, and the pollen shaken from it on the silk of the incipient ear on the Canada corn. The ear will be Sweet corn without any intermixture of kernels of the Canada corn. If the tassel be suffered to remain on the Canada corn, and the pollen from the tassel of the Sweet corn be shaken on the silk of the ear, the ear will consist of kernels of Canada corn and kernels of Sweet corn intermixed. I have mixed three varieties on one cob, by shaking the pollen from the tassels at different times, and I see no reason why many more might not be added to them. But if

the pollen from tassels of different varieties be shaken on the silk of any variety at the same time, the corn produced will have in it combined all the peculiarities of the varieties represented in the pollens.—It was by this means that I produced the Rhode Island Premium corn, and the Andrews' Hybrid corn; the first by a combination of the pollens of the large yellow corn, the Adam Anthony, or red capped corn, and the Canada corn; the other by a combination of the pollen of the Rhode Island premium, the Dartmouth white, and the improved Canada corn. I have found some varieties that will not intermix on the ear with other varieties. I have never known the Rhode Island premium corn to do so. There is one or more of the red varieties that will not mix in the kernel. Why this is so I am not prepared to say. Further experiments may demonstrate the facts more clearly, and perhaps afford the reason for them. It is the pollen from the tassel that decides the corn, and without this pollen there will be no corn. The cob will grow in its covering of husks, but without a kernel of corn on it. An easy way to prove this is one that I adopted; cover the incipient ear so that no pollen can lodge on its silk. This can be done with a paper or cloth; if it be done effectually you will raise cobs, and that will be all. This led me to let the suckers on my corn alone. I never cut them out or remove them. They yield pollen if not ears, and thus help fill the ears on the parent stalk. I have come to the conclusion, that in those varieties that most abound in suckers, there is a deficiency of pollen in the tassels to fructify all the silk and make well capped ears, and that nature sends to supply that deficiency. By examining the ears of the Rhode Island premium corn, or the Andrews' Hybrid corn, it will be seen that the corn grows very close over the butt of the cob, as well as being well capped over at the other end. I have observed occasionally kernels of corn on the tassels of my corn. These generally resembled the kind planted, but were smaller. In some instances they represented the color of the original planted, but were more round as if they grew more at their ease than those on the regular cob, and others again seemed partly blighted, and looked much like the Doorah corn. They were all on a substance resembling the ordinary corn cob, but more soft and spongy. I planted some of the most perfect kernels from the tassels in the Spring of 1856. They germinated and grew as well as other corn, and yielded ears of the same variety as the original, from which the tassel corn grew, but corn was much less firm and much smaller. This last year, 1857, I planted some of the corn from these ears, and the result was ears larger than their immediate seed ears, with an equal diminution in the size of the cob. In these instances I found that the cob bore a less proportion to the grain on them than did the cobs raised from ordinary seed.

*Slaterville, R. I.*, 1858.

## Seasonable Hints on the Pig.

Look well to the pigs and pens. Pigs need particular care and protection from extreme heat of the season at this time to do well. See that they have shade, shelter, and clean, comfortable pens, for pigs, like bipeds, do best in comfortable quarters. Many build their hog pens over a running stream, to avoid the nuisance of the ammonia which arises from the manure, and therefore annually suffer the loss of the fattening properties of their whole rye, corn and buckwheat crops, by permitting the voidings to run down the stream. Of course no farmer can ever prosper who permits the waste of so much valuable ferterlizing matter as this, and when it can be prevented, as well as the health of his pigs, and the atmosphere of the neighborhood purified by simply feeding a few handsful of charcoal to the pigs daily, it is a matter of great surprise that so simple a precaution as this should be neglected, and a most abominable nuisance kept up to the annoyance of the whole neighborhood. The strong odor of the hog-stye is frequently the first salute of the stranger in approaching an otherwise neat and tidy farmer's residence, whereas, the offensive effluvia might be altogether arrested and concentrated by keeping on hand a barrel of charcoal and feeding a few handsful occasionally to the hogs, who will eat it more greedily than corn. Charcoal not only acts as a disinfectant, but also greatly promotes the health and growth of swine, and any farmer who undertakes to make nice pork without using charcoal to promote the fattening of it, and particularly to feed it at

killing time, purify and prevent the fœtid odor which arises from the cleaning of the intestines, deserves to be made to feed and keep company with the grunters whom his stupid ignorance or laziness compels to live and die in filth. If ever any neighborhood is afflicted with the "hog cholera," put it down to the disgusting practice of herding them too closely together, and compelling them to live in the midst of their own offal. Wherever any regard is paid to the feeding of charcoal and other cleanly arrangements, pigs may be kept in the midst of large towns without any person apparently being the wiser of it.—Thus much we have felt called upon to say in behalf of the unhappy porker herded in confined pens.

Shoats may be made to obtain a fine growth during this month, if a little ground corn, rye and oats be mixed with their milk or slop, so that by the time the corn is ripe in the corn-fields they will have already arrived at a hog's estate—and then, if they are only "crowded a little" with a mash of potatoes, pumpkins, turnips and meal, they will have made such progress by the first of October or November, that at the end of the warm days of Indian summer, and the hogs be of the right breed, they will scarcely be able to eat half the ration of a lean hog, and will soon become so fat as to be unable to get up.—Pork fattened and grown upon any other system will cost the owner twice as much for an inferior article. One reason why Western pork is, and always will be, inferior in quality to the "Jersey fatted," is because the Western farmers do not take sufficient pains in raising and fattening it.

[*New Jersey Farmer.*

## The Economy of Nature.

In the great universe, to whatever part of it we turn, one controlling principle is ever apparent, one sentiment seems to pervade the whole—economy; and so forcibly does this strike the attention of every one of us, that we have expressed it in a proverb and use it as a motto, "Waste not, want not." The flowers are ever ready to receive the dew-drops, and when they have done with them, the morning sun evaporates and keeps them in the clouds ready for use again. Matter is indestructible, and although we can by fire and other means render it invisible, what is our surprise to find that it has assumed a gaseous form, and the piece of charcoal that we burned is now floating in the room mixed with the atmosphere we are breathing. Matter is ever changing. The forces of nature which we call chemical action, gravity, electricity, light, heat, and life are unceasingly effecting the transmutation of substances; thus, for example, ages long since rolled away, myriads of little creatures with shells not larger than a pin's head, acted as the scavengers of the ocean, they died, and sunk to the bottom of the deep, and to-day we find their shells as chalk and limestone all over the world, and naturalists tell us that on the sea bottom of the Gulf of Mexico, and in various parts of the Gulf Stream, there are limestone beds being formed by the modern representatives of ancient *Foraminifera*.

The lovely tints that deck the leaves in the Fall, and give to our autumnal scenery such a distinctive beauty, is due to some bed of iron ore, which has lain hidden beneath the rocks for centuries. Some little brook first found it out, and carrying it away bit by bit has spread it over the soil, gradually the iron ore crumbles, and the winds disperse it, the trees feed upon it, and in the autumn it shows that it is there, by the color of the leaves. When trees shall have decayed, and what is now dry land shall have been depressed and upheaved, covered by the sea and scorched by the sun, who knows but that that same iron may form a nodule or ball in a bed of coal, and be worked and smelted for the use of man. All these changes work together harmoniously. All goes on in exact proportions. No waste, no want!

"What is one man's meat is another's poison," is another maxim which the economy of nature teaches, and one simple illustration will quickly make it plain. The solid portion of living things, if we except the skeleton, is carbon—charcoal. This all animals must have in their food, and from the food the digestive organs take as much as is necessary to make muscle, flesh and tissue, throwing the rest away from the lungs as an invisible gas, poisonous and deadly. When we for a moment think of the number of beings who are every moment breathing into the common atmosphere such vast quantities of this gas, and have been doing it for centuries, we ask, "How is it, then, that we can live?"

In the quiet and still night when men and animals sleep, the plants are greedily and eagerly absorbing all this carbonic acid, and with care taking every particle of carbon for their own nourishment, they throw off as useless that which is most necessary to the support of animal life—oxygen. So the proverb is illustrated, for what is the poison of the animal is the food of the plant.

In this way, lessons may be learned by studying the workings of the natural forces, and by imitating the economy of nature, we shall ever be healthy, happy and content.—*Scientific American.*

*From the Vermont Stock Journal.*

## Influence of Soil and Climate on Animals.

Whoever is fond of domestic animals, and has at all considered the peculiarities of form, temper, disposition and qualities of different animals, of the same breed, and more especially, the difference in different breeds, of the same animal; has enquired for the causes of these differences, without obtaining a satisfactory answer.

How much depends on soil, and climate, —how much on rearing, and management, —how much on difference of origin,—and how much on attempts to create varieties for particular purposes.

In the outset, we should be disposed to think, that soil and climate would strongly affect animal life, as we know it does vegetable. Fruit of high flavor, and surpassing excellence in the stern climate and on the rugged soil of New England, become insipid and worthless, on the magnificent prairies of the West; and the fruits of the West droop and languish under an Eastern sky.

We know well that animal life is keenly and sensitively alive to changes of climate. If taken from a temperate climate to a cold one, a premonition of the coming frost seems to exist in their natures. Without any volition, they are silently and steadily prepared to resist a cold they have never experienced. The hair rapidly and steadily thickens and lengthens. Instead of the hair lying close to their body, as in summer, to allow the heat of the body to pass off rapidly, each particular hair seems to stand at a right angle with the body, and the outer covering will be found to have assumed a form best adapted to retaining the animal heat.

It can hardly be questioned, too, that the soil on which animals are reared has an important influence on their size, and probably on their conformation. Animals transferred from mountainous regions to the more abundant valley pastures, will increase in size, and a change from exuberant pastures to dry and scant mountain grasses will soon diminish the size. While it is, therefore, plain that soil, and food, and climate, have an influence on animals, not as yet fully understood, it must be conceded, that other agents of equal or greater force, are steadily at work.

We find animals of distinct, and different breeds, all flourishing equally well, to all appearances, in the same locality, though it is quite possible that such appearances are not real, and that slow and silent changes are going on, particularly, when animals are removed to pastures differing greatly from those on which they were reared. These changes may not show themselves, although actually going on, because the natural tendency may be checked by art. Suppose the Durhams to be taken into a rugged climate, and placed on a sterile soil, without very great care they would certainly deteriorate. But with extra feed, and a careful selection of those, to continue the race, who exhibited most strongly, the distinguishing characteristics of the breed; it could for a long time, and perhaps perpetually, be kept up. Still it would be a steady effect of art to counteract natural laws.

But place the same animals in the glorious pastures and genial climate of Kentucky, and they would be evidently at home, and need little care. They have nothing to do but to grow, and fatten, and they do both, in a way that is both pleasant and profitable to the owner. And yet, in Kentucky, care and skill, on the part of the breeder, will produce the same results that have been attained elsewhere. By judicious selections and watchful care, they can produce better short horns than they have ever imported; we do not know but they have already done so. If they have not, we trust they will, as we are *sure* they can.

Whatever estimates we may make of the effect of soil and climate, upon animals fed from the growth of the soil, we cannot doubt, that *art* when applied to the rearing of animals, can work out wonderful changes, both in form and qualities.

If what we have said on this subject is correct, it is apparent, if a man is about to commence the breeding of fine stock, he must first consider what kind is best adapted to his soil and climate. For beef, on favorable soils, the Durham is, by many, thought to be unrivalled, and they are good milkers; though they may not be equal for the dairy to the Alderney or Ayreshire.

For oxen, in a hilly country, the tasteful farmer is charmed with the beautiful Devon. His quick, elastic step, deep red color, fine countenance, rugged constitution, and exquisite symmetry of proportions, leave nothing to be desired, for medium-sized working oxen.

When the breeder has decided on the breed of animals best adapted to his wants, he should then proceed to purchase; and if he acts wisely, he will apply to breeders of known probity and honor; and a pedigree should be obtained with every animal purchased. This is the only sure way to obtain pure blood. L.

### Unhealthy Position of the Body.

Those persons engaged in occupations requiring the hands alone to move, while the lower limbs remain motionless, should bear in mind that without constantly raising the frame to an erect position, and giving a slight exercise to all parts of the body, such a practice will tend to destroy their health. They should, moreover, sit in as erect a position as possible. With seamstresses there is always more or less stooping of the head and shoulders, tending to retard circulation, respiration, and digestion, and produce curvature of the spine. The head should be thrown back, to give the lungs full play. The frequent long-drawn breath of the seamstress evinces the cramping and confinement of the lungs. Health cannot be expected without free respiration. The life-giving element is in the atmosphere, and without it in proportionate abundance must disease intervene. Strength and robustness must come from exercise. Confined attitudes are in violation of correct theories of healthy physical development and the instincts of nature. Those accustomed to sit writing for hours, day after day, can form some idea of the exhausting nature of the toilsome and ill-paid labor of the poor seamstress.—*Scientific American.*

### Chemistry and its Study.

Prof. G. W. Francis thus eloquently sets forth the main objects of the study of Chemistry, and lays down for us a path to follow:

It is the fundamental principle of physical knowledge that we can create nothing and destroy nothing. We may change the fashion and properties of all things, but to form new laws of combination or new species of matter, belongs to the Creator alone. The utmost man can do is to develop and apply to his own use and benefit those properties and materials which the constitution of already-created things afford him. Nay more, there is no reason to suppose that a single atom of matter has been added to or taken from the earth since its formation; yet changes are incessant, some natural, others artificial. Some few of them mechanical, but the greater number, and those of the greatest moment, chemical. The minute seed placed in the ground, becomes in process of time a gigantic tree, yet not one particle of its wood did not previously exist in some other state; it has been derived from the earth and atmosphere. Moisture and carbon have, by the vital action of the vegetable, been united, and have formed woody fiber, oils, acids, resins, sugars, gums, salts, &c. We may fashion the trunk into a house, a boat, a plow; no change in properties takes place, but merely an alteration of form—in fact, a mechanical action only is occasioned. Still nature will exert her influence; houses, boats, and plows will decay and become eventually changed into their chemical elements—in fact, into earth, fit to supply other trees with proper nourishment.—Again, we may distill the branches and procure pyroligneous acid, gas and charcoal. We burn the charcoal, and produce sensible light and heat, and carbonic acid, gas. Being burnt, we may by washing the ashes procure potassa. The potassa is still a compound body; which by the aid of electricity may be resolved into its elements, potassium and oxygen. Thus vital action, natural decay, artificial combustion and electricity, have been equally the cause of chemical composition and decomposition, or in other words of *chemical action.*

These changes show equally, the nature and the cause of this action, and exhibit

to us at the same time, many of the important facts of chemistry.

Chemistry shows the inherent nature of all material substances, and the laws which regulate their composition and decomposition.

The principles and facts of chemistry are the foundation of many of our trades and manufactures.

Those natural phenomena which are of most frequent occurrence, and which now modify the climate and constitution of the globe, are always attended, if not caused, by chemical change. Were it not for chemistry the functions of secretion, digestion, sanguinification, respiration and many others, the results of vital action, would remain unexplained; the cause of disease unknown; the ravages on poisons unmolested; and medicine, which owes all its force and efficacy to a correct knowledge of the effects of inorganic substances upon vital functions, would still be, what it once was, a tissue of absurdities.

Chemistry is essentially a science of experiments, not dependent upon any other science for an explanation of its principles, and its not to be anticipated by mathematical reasoning, or in other words, experiments alone have raised it to its present extent and perfection. It is no less true that chemistry is pre-eminently a science of amusement; the extraordinary nature of chemical action, the contrary characters of the fundamental elements, and their almost endless combinations, give such varied interest to the subject, that the mind is insensibly attracted and diverted, at the same time it is imbibing valuable knowledge.

How is chemistry to be studied? Perform its experiments, understand well the character of the substance, and then prove by experiments, thus impressing it upon the memory and perhaps eliciting new facts. Order in the study is no less necessary. H. M.

## How to Apply Lime.

In the application of lime to the soil, two important things are to be remembered:

1. *It takes some time to produce its known effects upon the soil.*

2. Its effects are greatest when *well mixed with the soil and kept near the surface within easy reach of the air.*

And as lime seems to be particularly beneficial to the wheat crop, it seems evident then, that we should attend to liming our fields at the time our ground is undergoing preparation for wheat sowing.

After the ground is broken up, the newly slacked lime should be scattered over the soil, and then the whole field thoroughly harrowed. The lime seems first to remain *inert*, but early in the ensuing season it will have begun to act upon the soil, and the crop may be expected to be very much larger on account of the lime having been applied. The good effects following a thorough liming of land, will continue to increase for two years, and will last for many years.

In regard to the quantity that should be applied to each acre, this will depend very much upon the character of the soil. If a field about to be limed, is in a limestone section, and has become exhausted of its lime by the washings and leechings made by the rains, while the soil was undergoing continued culture, a dressing of one hundred bushels to the acre may be considered a proper amount for the first application. To keep up the proper amount of lime in the soil, another dressing of twenty or twenty-five bushels to the acre should be made at the end of every five years.

If, however, the land about to be limed, is a heavy clay soil, with but little if any lime in it naturally, a first dressing of even two hundred bushels to the acre may be considered as not any too much, to be followed by forty or fifty bushels every five years. Where sod ground, either clover, timothy, or blue grass, is broken up for wheat, an application of lime harrowed in, is particularly beneficial. The myriads of grass fibres are acted upon by the lime, decomposition is hastened, and a great quantity of plant-food is furnished to the wheat crop.

It is stated by Johnston, that—

"Lime opens and renders more free such soils as are stiff and clayey. It increases the fertility of all soils where lime is not already present in sufficient amount. It enables the same soils to produce crops of a superior quality. From some poor clays, apparently unfit to grow wheat, it brings up luxuriant crops.—It alters the natural produce of land by killing some kinds of plants, and it favors the growth of others; the seeds of which had before laid dormant. It destroys sorrels and other hurtful vegetation, and brings up a sweet and tender herbage, mixed with white and red clovers—more greedily eaten and more nourishing to the cattle. Indeed, all fodder, whether natural or artificial, is said to be sweeter and more nourishing when grown upon land where sufficient lime has been applied.

*It improves the quality of almost every cultivated crop.* The grain of wheat has a thinner skin, is heavier, and yields more flour, while this flour is also richer in gluten. And besides this, the wheat crop, after lime, runs less to straw, and it is not so apt to fall down and lodge. In wet springs the wheat plants pre-

serve their healthy appearance, while on unlimed lands of equal quality, it looks yellow and sickly.

"*Potatoes* grown upon all soils are more agreeable to the taste and more mealy after lime has been applied; and this is especially the case on heavy and wet lands, which are undrained. *Turnips* are often improved both in quantity and quality when lime is laid on in preparing the ground for the seed. *Peas* are grown more pleasant to the taste, and are said to be more easily boiled soft. Both beans and peas also yield more grain.

"*It hastens the maturity of the crop*, especially of wheat, which is ready to harvest on limed land from ten to fourteen days earlier than on land not limed.

"The liming of land is the harbinger of health, as well as of abundance. It renders salubrious no less than it enriches the well cultivated district. The introduction of the drain in a country adds greatly to its health. But where the use of lime and the drain go together, it is difficult to say how much the increased healthiness of the district becomes promoted. The lime arrests the noxious effluvia which tend to rise more or less from every soil at certain seasons of the year, and decomposes them, or causes their elements to assume new forms of chemical combination, in which they no longer exert the same injurious influence upon animal life. How beautiful a consequence of skilful agriculture that the health of the community should be promoted by the same methods which most largely increase the produce of the land. Can we doubt that God designed this as a stimulus to further and more general improvement —to the application of other knowledge, still, to the amelioration of the soil."—*Valley Farmer.*

## Fruit Trees.

Summer pruning, or pinching the points of young shoots, seems not be so thoroughly understood as its importance demands. It is not too much to assert that the highest degree of cultivation cannot be reached, until its importance and necessity are fully comprehended and recognized. The whole aim of pruning is to modify and direct growth so as to render it subservient to the wishes of the cultivator. At no time can this be more readily attained than during the season of growth. It is much easier to prevent a shoot from growing now where it is not wanted than to cut it off after growth is completed, just as it is easier to rub off a bud than cut off a branch. We allude to established trees. It would be well for all cultivators to study this matter practically. Especially is it desirable that a practice should not be condemned, in the absence of knowledge as to the proper application of the principles upon which it is founded.—*Horticulturist.*

## The Philosophy of Rain.

To understand the philosophy of this beautiful and often sublime phenomenon, so often witnessed since the creation of the world, and essential to the very existence of plants and animals, a few facts derived from observation and a long train of experiments must be remembered:

1. Were the atmosphere everywhere, at all times, at a uniform temperature, we should never have rain, or hail, or snow. The water absorbed by it in evaporation from the sea and the earth's surface would descend in an imperceptible vapor, or cease to be absorbed by the air when it was once fully saturated.

2. The absorbing power of the atmosphere, and consequently its capability to retain humidity, is proportionably greater in warm than in cold air.

3. The air near the surface of the earth is warmer than it is in the region of the clouds. The higher we ascend from the earth, the colder do we find the atmosphere. Hence the perpetual snow on very high mountains in the hotest climate. Now, when from continued evaporation, the air is highly saturated with vapor, though it be invisible and the sky cloudless, if its temperature is suddenly reduced by cold currents descending from above, or rushing from a higher to a lower latitude, its capacity to retain moisture is diminished, clouds are formed, and the result is rain. Air condenses as it cools, and, like a sponge filled with water and compressed, pours out the water which its diminished capacity cannot hold.—How singular, yet how simple, the philosophy of rain! What but Omniscence could have devised such an admirable arrangement for watering the earth?—*Scientific Journal.*

## Vegetable Garden.

There is always more or less green vegetable refuse in gardens during summer, such as potato tops, pea haulm, and similar matter, which is either allowed to remain on the ground and dry up in the sun or deposited in a heap for the purpose of forming manure. A better disposition of such products is to dig them at once into the soil; there are always some spare corners or uncropped spots, which may be enriched by becoming a place of deposit for rubbish of this kind. Even the short grass from lawns may be covered at once, if no more useful disposition can be made of it; such as mulching between the rows of vegetables, or over the roots of recently planted trees. There is much loss of enriching matters by allowing these incidental accumulations to lie on the surface; and, even as a matter of neatness and regularity, they should be at once disposed of, and rendered useful for future crops.—*Horticulturist.*

*From the Germantown Telegraph.*

## Propagation by Cuttings.

This is one of the most common and available modes of extending plants. A cutting is simply a part of a plant taken off and placed in a position to form roots, and become in all respects a living representation of the original from whence it was taken. The constitutional conditions, or special proportionate arrangements of the constituents of plants most favorable for the emission of roots, has not been determined. While, therefore, some will throw out roots under any conditions, others will do so very tardily under the most favorable circumstances.

Cutting taken from extreme points of shoots will produce early flowering plants, and frequently a tendency to bushy and dwarf growth; those from side branches, incline to horizontal growth, and in some cases it is only by securing an upright shoot from the base of such side growing plants that upward growth is obtained. These peculiarities are not constant, and are not considered important, although occasionally useful for particular purposes.

The formation of roots is dependent upon the previous or immediate action of leaves; the best shoots therefore for propagation are those possessing a considerable portion of the organised matter consequent upon maturity, but in which the processes of growth are still in full operation; in other words, those shoots that have commenced to mature, but are possessed of healthy, active foliage.

Cuttings of young and succulent shoots, are immediately dependent upon the simultaneous growth of the stem for their successful rooting, the leaves must therefore be preserved in order to assimilate matter for root formation.

It is necessary to surround the cuttings by an atmosphere containing a uniform degree of moisture. All moist bodies, when placed in a dry atmosphere, lose moisture by evaporation. If the cuttings are subjected to aridity their contained sap will speedily be exhausted, and they will shrivel and die. Hence the practice of propagating in close-fitting frames, or covering with a bell glass to insure the required atmospherical temperature and contained moisture.

Light in excess is equally injurous, shading is requisite from strong sunlight; care is required, however, that enough light be admitted to maintain a healthy leaf action.

Every one who has experience in this mode of propagation is aware that under certain conditions, cuttings will grow and increase at top without forming roots; while under others the same kind of cuttings will produce roots without indicating the slightest symptoms of growth by external buds. Heat is the great stimulus to the vital forces of plants, and when the atmosphere in which they are placed is of a higher temperature than the soil in which they are inserted, the branches are excited to growth. On the contrary, these conditions are reserved when the soil is a few degrees warmer than the air; roots are then encouraged while the stem may remain stationary. In propagating cuttings it is therefore a good general rule, to place them in the lowest average atmospherical temperature that they will endure, to retard upward growth, and, on the other hand, to raise by the application of artificial heat, the soil to the highest average temperature, in order to stimulate into activity the processes carried on in the vessels beneath the surface of the soil, and the more completely these conditions are secured, the greater the chances of success.

[W. SAUNDERS in *Horticulturist.*

## Origin of the Stocking Frame.

In the Stocking Weaver's Hall, London, there is a portrait of a man in the act of pointing to a stocking frame, and addressing a woman who is knitting with needles. The picture bears the following inscription: —"In the year 1559, the ingenious William Lee, A. M., of St. John's College, Cambridge, devised this profitable art for making stockings."

A cotemporary gives an interesting elucidation of this inscription. It appears that when the art of knitting stockings was yet a new thing in England, the Rev. Mr. Lee fell in love with a young woman, to whom he paid his addresses; and it so happened that whenever Mr. Lee came to see her she was knitting a stocking, and so intent was she upon her occupation, that she gave little heed to the sugary talk of her lover. His desire for a wife soon changed into a malevolent determination to spoil

her knitting forever, by inventing a machine that would supersede stocking-making by hand. He visited the lady as sedulously as ever, but his purpose was to learn the mystery of knitting, that he might contrive to do similar work with iron fingers. He observed that his mistress made the web loop by loop, but the round shape she gave the stocking from the 4 needles greatly embarrassed him. Pondering this great mystery on one of his visits, he found her knitting the heel of a stocking, and using only two needles—one holding the loop, while the other formed a new series. The thought struck him that he could make a flat web, and round it by joining the selvages. After three years' hard study, Mr. Lee was enabled to make a course upon the frame, but the formation of the heel and foot embarrassed him greatly. Perseverance, however, conquered this difficulty at last, and his machine was finished. The fair knitter, whose shyness or coquetry resulted strangely, endeavored to re-awaken M. Lee's passion for herself, but in vain. He had become so thoroughly engrossed by his invention that he had no sensibilities for anything else. He abandoned his curacy, shut his heart against affections, and wove stockings in his head from morning till night. The result was, that though he succeeded to the utmost in his invention, he died in Paris, in concealment, grief, and poverty. The same hall contains a portrait of Sir Richard Arkwright, whose stocking frame, considerably modified, is the one now generally in use.

*Scientific American.*

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*From the Germantown Telegraph.*

## Ashes and the Potato Rot.

Mr. Editor.—The rot appears to have been far less extensive in its ravages last year than it was the year before. Nevertheless, it made its appearance in some places and did no little damage, especially to late-planted potatoes. I have always been satisfied that lime, ashes or some other alkalescent article would be found the best, if not the only remedy for this disease; and where it last year made its appearance on a plot of potatoes, I determined to test the truth or falsity of my belief, by reducing it at once to actual experiment. I accordingly took some ashes, and going into the potato piece, commenced applying it by lifting up the tops, and sprinkling a handful among the stalks of each hill. I was particularly careful to insert it as nearly as practicable in the very centre of the plants, in order that the roots as well as the tops might, if necessary, be benefitted by the application. In a few days the rot, on the rows ashed, was stopped, while on two rows on one side, upon which no application was made, were completely destroyed. I can attribute the salvation of the crop to no other influence than that exerted by the ashes, and, to my mind, the experiment was conclusive.

Every one must feel rejoiced at the evident subsidence of this plague, which at one time threatened the entire annihilation of this valuable esculent; but should it return again to assail it, let every one be prepared to apply the remedy, and at once. There is some principle which produces the disease; and if this can be corrected, and its deleterious and fatal effects neutralized by an application so cheap and simple as wood ashes, it should certainly not be withheld. Millions of bushels of this wheat have been destroyed during the career of this perplexing disease. On many farms, every tuber was lost in 1852.

I never have cut my potatoes nor applied fermentable manure to them since the disease first made its appearance, but although I have been more fortunate than my neighbours who have done both in direct opposition to my advice, I have not, by any means, enjoyed perfect immunity, and have been, to a considerable extent, a sufferer from its effects. Ashes are valuable manure, imparting warmth and sweetness to the soil, and producing a vigorous action of the seaments of the roots of all vegetables to which they are applied.

W. W.

*Long Island*, Aug. 2, 1858.

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*From Hunt's Merchants' Magazine.*

## What Becomes of the Bones: Their Use and Commercial Value.

Mr. Green, one of the many engaged in the business of calcining bones in New York, gives the following information as to the use and value of bones. Mr. Jones' boiling, calcining establishment is situated on the Jersey side of

the Hudson, sixteen miles up, nearly opposite Yonkers. To collect the bones from the *chiffonniers* he employs in this city eight men, eight horses and four carts. A labourer invariably goes with each driver. The greatest collections are made in the Eleventh, Seventeenth, Eighteenth, Nineteenth, Twentieth and Twenty-first Wards. They commence their rounds as early as 7 a. m., and by 1 p. m., the collections are deposited in the vessel that is to convey them from the city. The law requires all the carts engaged in this business to be boxed or covered with canvass. The price paid for bones varies according to quality. Thigh bones of bullucks rank first, as they are the only bones in an ox that are fit for turners' use; they are mostly manufactured into handles for tooth brushes, the natural curve of the bone giving the desired shape to that indispensable article to the toilet. They are worth from ten to twelve cents each. The jaw bones rank next, and are worth eighteen dollars a thousand. The "short bones," as they are termed, such as leave the family table, are worth from forty to fifty cents a basket. To give some idea of the amount of money paid for bones, when we consider the number engaged in the business of bone-boiling, exclusive of the Barren Island business, we will state that Mr. G. pays for bones in this city alone an average of one hundred dollars a day. The fore leg and hoof are usually bought by manufacturers of glue, Peter Cooper being the heaviest purchaser of this description of offal; and when they are done with, they are sold to the bone-dealers at two cents a pound. The hoofs are disposed of at the rate of forty dollars a ton, and are afterwards made into *horn* buttons and Prussian blue. Horse hoofs and sheep hoofs and horns are sold at fifteen dollars a ton.

On the arrival of the bones at the factory, the thigh and jaw bones are sawn so as to admit of the removal of the marrow. They are then thrown into a vast cauldron, and boiled until all the marrow and fatty substances attached to them are thoroughly extracted. The fat is then skimmed off and placed in coolers, and the bones are deposited in heaps for assortment. The thigh bones are placed in one heap for the turners; the jaws and other bones suitable for buttons are placed in a second pile; the bones suitable for "bone black" comes No. 3, and the remainder are ground up for phosphates and manures.

"Bone black" is used by sugar-refiners, and is worth from 2½ to 3½ cents a pound. To judge of the amount used in this city alone of this article, in the eleven immense sugar refineries in operation here, it is only necessary to state that "Stuart's" and the "Grocers" refineries pay annually in the neighbourhood of the city 40,000 dollars a year each for "bone black."

Of classes Nos. 2 and 3 we were furnished with no reliable data. No. 2 is used in the manufacture of phosphates. No. 3 is made into manure, and sold at prices ranging from thirty-eight to fifty-five cents a bushel, according to quality, but generally averaging about fifty cents, delivered at the factory.

Of the amount of soap-fat produced from bone-boiling, we can only say that our informant showed by his books that the sale of soap-fat from his factory from June, 1856, to June, 1857, amounted to 19,000 dollars. Of this amount 14,000 dollars was paid by one house, and we were assured that this was but a moiety of the amount the house annually purchased.

## Guinea Fowl.

These birds are so semi-wild in their nature and habits, that it is impossible to induce them to inhabit and lay eggs in a house, and observe the rules and regulations of an orderly poultry family; nevertheless, they are worth the attention of those who have an appropriate locality for them. They must have liberty, and they delight in a nest of their own choosing—a bed of nettles, or some similar secret thicket pleases them. When they have chosen a nest, they will keep it, unless they have reason to suspect it is found out. To find these nests, therefore, that the owner may not lose the eggs, it is necessary to watch the female very warily in her daily visits to it, which may be done the more easily, as the mail bird has the habit of standing guard over his mate while she is laying. Do not let the birds know that their secret corner is discovered, and the eggs may be removed with impunity. Guinea fowls mate in pairs; supernumerary hens are useless. The chicks are generally reared by common hens. They are rather delicate little creatures and require to be encouraged to eat often. The treatment followed in rearing turkey poults will do for them. Authorities differ as to the period of incubation, naming times varying from twenty-six to thirty days, and we have never had the opportunity of taking accurate note. Although the Guinea fowl delights in an extensive range, we have known a pair kept successfully in a well-walled kitchen garden, and a numerous progeny was raised from them. The important point is, they *must* have an opportunity of finding an undisturbed secret nest. There is little difference between the cock and the hen. Nolan says the wattles of the cock are of a more intense red than those of the hen, and stand out more from the beak; and that the hen only uses the peculiar call "Come back, come back." It is worth while, for those who have an appropriate place, to keep a pair or two, since, except in early attention to the chicks, they require little care. Their small eggs are a great delicacy, and the young birds are very good for the table, and very useful in the *menage*, when pheasants go out of season.—*London Field.*

*For the Planter.*

## Tobacco Exchange—Reply to Bush & Briery.

MR. EDITOR:

When lately controlling the Southern Planter, I judged it my duty to uphold the new Tobacco Exchange. But having sold my interest in that paper, I felt no further concern in the Exchange than may be implied in my desire to promote all sorts of commerce by proper facilities; and I meant to take no farther part in a question which, I should think, was now pretty well understood, and whose merits had been pretty well canvassed by those directly concerned. But a friend of mine from Prince Edward writes me to "enlighten" his "moral sense" in regard to a question of fact—rather a difficult undertaking—and calls on me so pointedly, that it were uncivil to him, and those he represents to decline the effort at least.

The pith of his objection, I think, to the Tobacco Exchange, is an "apprehension" that under some future organization it may change its rule of permitting planters to sell their Tobacco at the Exchange, and compel them to rely on the agency of a commission merchant. Against this apprehension, he asks a guaranty. I candidly confess I have none to give him. I can neither foresee nor control the future; but I can advise him to wait until his apprehensions be realized before he acts upon them. Then his argument may or may not be good, and the policy may or may not be justified. For the present, "the precedent" of Exchange, without a blind imitation of their details in other cities, has been followed; and a feature which, in the view of usages elsewhere, Bush & Briery must concede to be very liberal on the part of the Richmond merchants, has been allowed. To demand any assurance of its continuance appears to me to be no more necessary than for each man to exact a bond from his individual commission merchant that he will not only never charge him over 2½ per cent. commission on sales, but that, he will never combine with other merchants to raise the rates of factorage, and will never submit his rules of trade to the supervision of "a self-constituted Board of Trade."

As competition among individual merchants regulates the rates of their charges, so competition among commercial cities regulates the usages of trade, to such an extent at least, as to induce reformation or abolishment of injurious or impolitic rules and regulations. In respect to the usages of Exchanges of the large cities whose example is quoted and deprecated by Bush & Briery, I have no doubt that these have been found to be necessary; and when the Tobacco trade of Richmond becomes as large as the grain trade of New York, or the cotton trade of New Orleans, such or similar usages will be necessarily adopted here, (though hardly in the lifetime of my opponent or myself.) The reason whereof is plainly this: a seller of cotton, for instance, goes to a merchant in New Orleans to obtain an advance on his crop, or to sell it by sample, a personal inspection of the whole being out of the question. But the merchant is a stranger to the planter: he knows not whether to trust his statement as to the quality or quantity of his crop; he has no time to inform himself of those facts; and he declines to buy under such circumstances. The rule must be general, not to be offensive in its particular application; and because it is part of a system, and system is one of the most imperious laws of commerce. But he can buy of a factor whom he knows, and whose representations he can trust. It is the only safe mode of doing business in a crowded mart, and, therefore, the only practicable mode. But it is not the mode in Richmond, because the trade, until recently, has been small, and the purchaser could attend the "breaks," and generally know the planter personally. But it would be the mode if much Western Tobacco came here, as it would come, but for a silly law,—silly at least as to that description of Tobacco.

We would rather argue if any guarantee were necessary, it should be against an inspector; for his rates of commission *have* increased, and under the law he now claims the right to do what formerly he was allowed to do as a favour, and really did at about half price. Indeed, may he not claim an increase now, and argue in this wise: "A most intelligent planter of Prince Edward, says, 'We cannot sell our Tobacco; you must *see* that not one planter in fifty could collect the proceeds of the sale of his crop divided among half a dozen purchasers without *great loss of time and incurring expense.* It is almost impracticable, as the counting rooms of the dealers are scattered over a large portion of the city, and unknown to the planters.' Now, this is true; but how must it be with us poor inspectors who get only six thousand dollars a year from the State—a bare maintenance—and must make our living by under-bidding the regular merchants? We cannot stand it. Our concern, sir, sells the crop of three hundred planters, and if one man can't attend to his own business '*without great loss of time and incurring expense,*' how can we attend to the business of three hundred like him, at a dollar a hogshead and extra cooperage, and extra charges on 'loose?' It may be six thousand dollars more, but it don't pay, sir. You may make the calculation by the rule of three,—no, by the rule of three hundred, I should have said, and you'll see it don't."

What objection, Bush & Briery asks, have I to an Exchange, regulated by law, where each inspector may sell the Tobacco he inspects, by sample, of course. I have several objections

1st. It converts the inspector, in whom the law contemplates a disinterested sworn officer, into an agent of one of the parties between whom he is presumed to arbitrate. I think "moral sense" and common sense agree with me there. 2nd. It takes the inspector off from duties which the law requires him to perform from eight or nine o'clock in the morning until four in the afternoon. I think that is the law. 3rd. It gives him exclusive privileges (as compared with other factors) *not* "in consideration of public services." I quote the Bill of Rights on that point. 4th. It violates the policy of the Revenue Laws, which in all similar cases require a tax on license to trade; and such violation is not just. Those are my objections and the reasons therefor. As then the inspector should not be allowed to sell, and it is "almost impracticable" for the planter to sell in person, I would not burden the statute with a law immoral, unconstitutional, and impolitic as to the inspector, and inoperative as to the planter. Laws are or should be passed to regulate actual transactions, or to remedy existing grievances, and not, we believe, to meet the apprehensions of suspicious gentlemen. When the grievance exists we may apply a remedy.

But I have a more comprehensive objection, and I beg leave to state it in far better terms than I could of myself have employed. I do so because I confess it has struck me with some astonishment as well as concern, that gentlemen like Bush & Briery and other friends of mine, gentlemen of intellect and of enlarged minds, should take,—I beg pardon of them all —such narrow views as to legislative interference, on a question, not very large, it is true, but yet involving an abstract principle of some magnitude.

"It is," says Edmund Burke, "one of the finest problems in legislation, and what has often engaged my thoughts whilst I followed that profession, 'what the State ought to take upon itself to direct by the public wisdom, and what it ought to leave with as little interference as possible to individual discretion.' Nothing certainly can be laid down on this subject that will not admit of exceptions,—many permanent,—some occasional. But the clearest line of distinction which I could draw, whilst I had my chalk to draw any line, was this: that the State ought to confine itself to what regards the state of the creatures of the State, namely, * * * its magistracy, its revenue, its military; the corporations that owe their existence to its fiat; in a word, to everything that is truly and properly *public*, to the public peace, to the public safety, to the public order, to the public prosperity. Statesmen who know themselves, will, with the dignity which belongs to wisdom, proceed in this only the superior orb and first mover of their duty. Whatever remains will in a manner provide for itself."

Stimulated by our precious new Constitution, which is of the very essence of small things, and which, when people proved themselves incapable of electing legislatures fit to choose judges, imposed that far more delicate duty on these very *non compotes*, are not our tendencies to legislate on small details?

But I wander from the questions of my friend, another of which is, why the auctioneer at the Exchange is not permitted to collect. Answer—Because then he would be an agent of one of the parties, and could not be impartial.

Bush & Briery states a case of a commission merchant who refused to obey the instructions of his principal,—asks my opinion of it. I have no hesitation in saying, that I think the agent transcended his powers, and should have held the Tobacco subject to the order of his principal. But I do not see the bearing of such a transaction on the question I assumed to discuss.

It is suggested to me to consult with those highly respectable gentleman, Messrs. William Gray and John Caskie, on this subject. I believe they are very sagacious buyers, but their reported practice of attending the Breaks with uncommon diligence, is not exactly in keeping with the assertion of the Bush & Briery Resolutions as to the satisfactory operation of the Inspection Laws; for, were these laws properly, that is to say, skilfully, executed by the officers whose duty it is to sample fairly and report truly, there would be no occasion for such vigilance, and "nesting" would not be attempted. We freely admit the eminence of these gentlemen in the trade, and claim their practice as testimony against a system which is said to have "operated satisfactorily." They trust neither to the opinion of the inspector nor to the "care" or "honesty" of the planter. But if they bought of a factor, as good a judge as themselves, and bought by sample, they would get as good bargains and be saved a world of trouble.

I am thankful to Bush & Briery for having designated certain portions of my former argument as "special pleading," *without pointing out* the speciality, as he has thereby saved me some time, if not trouble, and left the fallacy to work into such minds as may not accept his dictum as a refutation of my argument. But I protest he does me injustice in supposing that I meant a "fling," when I stated as "the alternative of the position of his club, either that a useless office should be continued that they might have the benefit of sales at less than the regular commissions or that they should have, for a small consideration, the benefit of services already pledged to the public for a very large one. I did not hold the view a correct one but I did not deem it immoral, and meant no "fling" by it. The propriety of the corolary is strengthened by Bush & Briery's objections that a planter cannot sell his crop, that a "fil-

uster," to use his own phrase, should be al-wed to sell it, and that the merchants are heming to get the sale of all Tobacco. And know that one member of the Bush & Briery ub did object that the commissions on the le of his Tobacco by a merchant would ex-ed his taxes. Now, as the merchant cannot ord to sell at less than 2½ per cent., and that ntleman insisted on having his sold for less, iat else could he have desired than that *his* tor should have an extra allowance from ne quarter? Such an allowance as inspec-s alone can have. But "fling" or not: the e pinches just there.

I am asked if the merchants are not trying break up sales at the warehouse, and to put wn the inspectors. They profess to be try-g to break up sales at the warehouse, and I pe they may do it. As they avow it, why k me? As to putting down the inspectors, annot say,—I wish they were aiming at t, too; but I fear they are not. Their only rt seems to be, to restrain the inspectors hin the limits of the law of their appoint-nt, and to prevent what my friend condemns "fillibustering"

Bush & Briery wishes to know how I ascer-ned that a large majority of planters favour-the Exchange. Simply in the fact of ac-iescence. Hardly a merchant has lost a tomer by the Exchange, and the merchants for seventy-five per cent. of the planters. e "official" returns are not in. But I be-e when a house is distanced it is not cus-ary to enquire how many yards he was left ind the post.

Hoping my friend may find herein a suffi-nt answer to his enquiries, or content that shall deem me to have failed to answer any, e will only not require a "*respondeat ous-*" unless it be at his or my table, I am at a y low rate of "exchange,"

His friend,

F. G. R.

## Value of Sheep to the Farmer.

Sheep are profitable to the farmer, not only n the product of wool and mutton, but from tendency which their keeping has to im-ve and enrich his land for all agricultural poses. They do this:

. By the consumption of food refused by er animals, in summer; turning waste veg-tion to use, and giving rough and bushy tures a smoother appearance, and in time dicating wild plants so that good grass and te clover may take their place. In this re-ct, sheep are of especial value to pastures soils too steep or stony for the plow. In ter, the coarser parts of the hay, refused horses and cows, are readily eaten by sheep, le other stock will generally eat most of t left by these animals.

For these reasons, among others, no grazing farm should be without a small flock of sheep —for it has been found that as many cattle and horses can be kept with as without them, and without any injury to the farm for other purposes. A small flock, we said—perhaps half a dozen to each horse and cow would be the proper proportion. A variety of circumstances would influence this point; such as the character of the pasturage, and the proportion of the same fitted and desirable for tillage.

2. They enrich land by the manufacture of considerable quantities of excellent manure. A farmer of long experience in sheep husbandry, thought there was no manure so fertilizing as that of sheep, and (of which there is no doubt) that none dropped by the animal upon the land suffered so little by waste from exposure. A German agricultural writer has calculated that the droppings from one thousand sheep, during a single night, would manure an acre sufficiently for any crop. By using a portable fence, and moving the same from time to time, a farmer might manure a distant field with sheep at a less expense than that of carting and spreading barn manure.

The value of sheep to the farmer is much enhanced by attention to their wants. Large flocks kept together are seldom profitable, while small assorted flocks always pay well, if fed as they should be. To get good fleeces of wool, and large, healthy lambs from poor neglected sheep is impossible. It is also true, that the expense of keeping is often least with the flocks that are always kept in good condition. The eye and the thought of the owner are far more necessary than large and irregular supplies of fodder. Division of the flock and shelter, with straw and a little grain, will bring them to spring pastures in better order than if kept together with double rations of hay, one-half of which is wasted by the stronger animals, while the weak of the flock pick up a scanty living, and often-times fail to get that through the whole winter.

We commend this subject to the consideration of our correspondents—it needs attention on the part of the farming public.

*Country Gentleman.*

*From the Southern Homestead.*

## Smut in Wheat—The Remedy.

EDS. SOUTHERN HOMESTEAD:

I will state to your readers, what I *suppose* to be the cause of smut in wheat, and likewise, what I *know* to be a prevention. I have supposed that pure wheat, like various other productions of the earth, might degenerate and produce smut, or, that owing to some casualty, such as cold, heat, wet or disease, it might fail to blossom, and produce smut. These causes, acting separately or conjointly, may be the first moving cause of smut, while smut itself, being an efficient agent in propagating its kind, becomes the continuing cause.

When I was a boy, I one day observed my father washing wheat to sow. I asked him why he did thus. He replied, to rid it of smut. I observed that, after he had skimmed off all the balls of smut from the first water, he washed it thoroughly in the second and third waters. I asked him why he washed it so much after he had taken off all the kernels of smut. He replied, that particles of smut, adhering to the wheat, will cause it to produce smut. Young as I was, I had imbibed the idea that smut germinated, and was too incredulous to relinquish my notion on the subject. To satisfy myself I took a number of balls of smut, rubbed them in my hand, and added a handful of the washed wheat. On one side of the field, where the pure wheat had been sown, I sowed what I had prepared, and, boy like, rolled it in with stones. At harvest, I had a fine crop of smut, while the adjoining wheat was entirely free from it. I then felt that inexperience should not be too confident.

In the course of time, I contracted with a gentleman to take charge of his farm. When seeding time came, I could not conveniently obtain any other than smutty wheat for seed. My employer was not slow to condemn this "mess of smut." I told him perhaps I might be able to teach him a "thing or two" concerning smut. I washed this wheat thoroughly, sowed it, and raised excellent pure wheat. From the result of the first experiment, it appears reasonable to infer that smut does not germinate, but by adhering to the wheat, contaminates or diseases its roots and blades, imparts to them a vitiating principle, which prevents the head from producing a sound grain. This is proved, as there was no kernel of smut in the seed sown, and as there was nothing but pulverized smut in it, the smut must have been produced by some process similar to that above described. The result of the second experiment proves that if smutty seed be washed, smut will be prevented.

I have not the temerity to suppose that I can instruct the experienced. But as often as I see smutty wheat, or black bread, its result, upon the table, I am furnished with a demonstration that there are farmers who do not know there is a remedy. In fact, the very existence of smut, in any quantity, calls for something on this subject, and let this be my apology.

Now, if you have smutty wheat, just take it and a couple of tubs, a bucket and a seive, to a brook or pool of water, and give it a thorough washing, through several different waters. If you do this, you will no longer behold upon the table, the *black* loaf of *wheat* bread.

A Kentucky Farmer.

*Christian Co., Ky.*, July 1, 1858.

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To cure scratches on a horse, wash the legs with warm soap-suds, and then with beef brine. Two applications will cure the worst case.

*From the American Agriculturist.*

## Old Time Agriculture in America.

INTERESTING REMINISCENCES.

Our New England fathers pursued farmin under difficulties of which we have little co ception. The country from wich they emigra ed was further advanced in civilization, ai better tilled than any then on the globe; ar this they exchanged for one entirely new them, and for a soil and climate unlike tho of which they had before some experienc Thrown into a savage wilderness, their kno ledge of farming on the smooth plains of th old country would avail them but little. A most everything must be learned anew, ar their knowledge of farming in America mu be acquired by slow and painful experienc Who will wonder, then, that their progress w slow? Rather let us wonder that they did n succumb to the difficulties and hardships.

The early settlers had no beasts of burd for many months after their arrival. Ar when at length a few cows were sent over, b ing poorly fed on coarse meadow hay, ma of them drooped and died, and others survivi this, were killed by the wolves or the Indian Besides, the difficulty and cost of importati were then so great, as to raise their price abo the means of ordinary farmers. In the ye 1636, cows sold from twenty-five to thir pounds sterling, $125 to $150, and oxen at for pounds a pair. The cattle, too, were great inferior to those of the present day. The was small and ill-shaped, and the horse ve unlike the noble dray horses of Boston ar Baltimore of the present day, and the she were inferior, both in size and form, and in t fineness of the wool. In 1638, there were horses in the Plymouth colony; and histo tells us that one John Alden, the rival suit of Miles Standish, carried home his bride " the back of a bull, which he had covered wi a piece of handsome broadcloth, he leading t ungainly animal by a rope fastened to a ri in its nose."

Agricultural implements could then be i ported from the mother country, but all p sons could not afford to obtain them in th way. A farmer of the present day would r think the best of them worth much, they w so rudely made, so heavy and unwieldly. Ma of their tools were made from bog-ore, the on metal then to be had, and were very brit and easily destroyed.

Twelve years after the landing at Plymou the farmers of the colony had no plows, a were obliged to prepare their lands for se with the hoe. As late as 1637, there were on thirty-six plows in the whole of Massachuset For a long period after this, the State paid bounty to any one who should buy and keep plow in repair, making it his sole business go from farm to farm, breaking up land. Th must have been a real plowman!

It was a great advantage, surely to the first ettlers, to acquire the use of the several new lants employed by the natives for food. Yet took some time to learn how to cultivate them, nd hardly less, how to relish them. Indian orn was one of these plants. and pumpkins, quashes, potatoes and tobacco were almost qually strangers to them. It is said that the otato was so rare in England, at the beginning the seventeenth century, as to be used only the smallest quantities. "It was sold at vo shillings a pound for the Queen's table, nd was used as a fruit, baked into pies, sea- oned with spices and wine, and sometimes aten with sugar."

The colonists adopted, to a great extent, the ndian mode of cultivating the plants above amed, and as the times then were, it answer- d a good purpose. For example, like the na- ves, they planted their corn four feet apart; nd those living near the sea-coast, manured eir plants in the hill with horse-shoe crabs; ose living on streams in the interior used shes for the same purpose. They planted eans among their corn, that the former might e supported by the latter. They hilled their orn about two feet high, supposing it neces- ary to sustain the stalks.

*For the Planter.*

## Reasons for Pulling Fodder.

In the September number of the Southern lanter, Mr. "W. F. Doyle," of the "Hole nd Corner Club of Dinwiddie and Bruns ick," reports on "pulling fodder, cutting ps, cutting up corn and shocking with blades nd all on; and on allowing the corn plant to main entire until November." With the nclusions drawn from his experiments I gree, and have long been of the opinion, at to cut the corn up and shock it, was e meanest system ever pursued, although llowed by some *fine* farmers; but as a short t, I always believed, to pull fodder and cut ps, is the *necessary* system,—to allow the lant to remain entire, the correct system. But hat then? We have no tobacco to suffer and jure whilst we are saving fodder, but we have *ams* to *suffer* and *starve* if we *don't* save our dder.

A farmer must either cure a large amount of y, raise large crops of oats, or save fodder. ith myself, I find that after all these are ne, my teams are never too fat, and there is ver much left. In a climate like ours, the ving of fodder is a necessary evil,—one evi- nce of which is, the universal habit amongst rmers of saving it.

If Mr. Doyle can suggest *a certain* equiva- nt for fodder, I would be pleased to learn it, for, besides the loss to the corn *grain* in mpness and weight, there is the loss of ne to us, and in this country an increased tendency to ague and fever. The few with us who cut up and shock their corn, rarely have a good team, though they buy a good many,—and never have a fine or stylish horse, which is indispensible to the agreeableness of a country life—at best monotonous. Gentlemen will make more money by having those things within their reach, and essential,—attractive, for their very attractiveness causes them to give that attention which their being unattractive and dull would drive off. A lively attention is the soul of farming, as it is of all other vocations; and when one goes to the stable to see to a fine pair of horses, idle curiosity is very apt to carry him in the mule stable—a happy thing! The mules find it out, eat cleaner, kick less, and altogether improve. The *gear*, too, is less apt to fall down! In fact the *stable* improves. When teams are in order they show well in the field; so do well-fed, well-clothed negroes. The master likes to look at them, and on fine days stays more in the field. That, the corn finds out, and grows faster, may be out of compliment. So that, until we are sure of a substitute, we had better not give up the fodder.

Though it does, certainly, take weight from the corn grain to strip off the fodder, yet cows give more milk in winter from being fed on it, and that is a sufficient reason for saving it, since it always keeps Madam in a good humor, —that is, the want of it is sure to keep her in a bad one, and then you have butter to buy, which is as bad as "worms and succors," on tobacco!

We would suggest to the "Dinwiddie and Brunswick farmers, to use lime, improve their lands all they can, and so increase the volume of their corn crops, that the loss caused by pulling fodder will not then be felt; corn will be above the standard, although the fodder is stripped off, where the land is strong and well limed. That I know from experience; and I consider the advantage of a large amount of good provender as more than paying for the time occupied in gathering.

TIDE-WATER FARMER.

*September 3d*, 1858.

## The Pedlar Hole and Corner Club, of Amherst.

The subject of manures already occupies a large space in the present number of the Planter; but, we have no fear of wearying our readers with it, since all must regard it as the sheet-anchor—the main reliance for promoting agricultural improvement.

We shall always receive with peculiar welcome the reports of our agricultural clubs, because of their adaptation to the purpose of im parting instruction—derived from experience and personal observation—upon just those sub-

jects of inquiry which arise in the daily business and practice of the farmer, in respect to which he is most anxious to obtain useful, practical and reliable information. The report of the Pedlar Hole and Corner Club, of Amherst, is, in the main, of this character, and is, therefore, commended to the attention of our readers.—[Editor.

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*For the Southern Planter.*

## On the Making, Preserving and Applying of Manures.

Mr. Planter:

*Sir*—Some eighteen months, or more, ago, "The Pedlar Hole and Corner Club," of Amherst county, appointed a committee to write an essay on "The Making, and Most Judicious Application of Manures;" and directed that, that committee should have especial reference to the red lands of the district in which this club flourishes, in this writing. The resolution of the club was complied with, and the result is herewith sent to you, supposing, that with the usual tact, and experience, of an Editor, you may find something in it which you may clothe with flesh, and breathe the spirit of usefulness into, in order that, instead of lying dormant in the Secretary's drawer, it may go forth on a mission of power. "Line upon line, line upon line;" "precept upon precept, precept upon precept; here a little and there a little"—used to be, and will always be, the principle of action, in order to the attainment of perfection in any of the avocations of life—these things have to be repeated, and re-iterated, to have their effect!

Secretary.

*Pedlar Mills, Amherst*, Aug. 27th, 1858.

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Mr. President:

In treating the subject assigned them at the last meeting of your honourable body, your Committee suppose it was not intended that they should take a scientific, or theoretical view of the various plans for raising manures, but that the resolution of the body meant simply, that they should bring the subject up for the consideration of the Association, in a few plain, practical remarks, simply telling their own thoughts, and giving their own experience, and observations, on the subject of Making, Preserving, and Applying Manures.

If this body intended that a scientific view of the matter should be presented to them, or supposed that their Committee would tell them by what chemical process fertilizing properties are to be imparted to substances which, in themselves, have not a particle of fertilization in them—if your body expects its Committee to tell them by what chemical processes, or combination of gases, or acids, masses of matter, entirely inert in themselves, are to be co verted into really rich manure heaps—v must tell you, Mr. President, that you ha misplaced your honours. So far behind tl age are we, that we know but little of tl science of chemistry in general, and less of i applicability to agriculture in particular; na so ignorant are we, that one of our number, least, is led to doubt whether, if applicable all, the world has, as yet, found out its co nection. Out of very many instances of tl faultiness of the science, as applied to ag culture, your Committee may be allowed to ci two or three:

The profoundest chemists tell us that tl noxious plant, called "*sheep-sorrel*," is indic tive of an acidity in the soil, which preclud the growth of any other plant, and that liberal application of lime will correct th acidity and destroy the sorrel—that as lime a corrective of acid, when mingled with it, produces an alkali destructive of the sorr and favourable to the growth of the mo nutritious and valuable plants. The chemi tells this, and the man of sound, practic sense, will tell you, that so far from lime ha ing that effect, this *horrid* pest grows rampa under its application; that the most luxuria bunches you find in a field thus infested, a found on the heaps of lime! The chemis tell us that the action of gypsum, or plaste is by agency of the atmosphere; hence, th broad-leaved plants should always be used, the cover for fallow fields, the effects of tl plaster being far more visible on such plan than elsewhere. Now, every practical m knows, and your Committee ought especially be acquainted with the fact, (for they ha been part and parcel of too many *expensive e periments* to that point,) that plaster does more good on the sandy lands of our Sta than the application of the same amount *saw-dust*, or any other entirely inert matte From these, and many other instances th could be adduced, your Committee might be l to say more on this subject, but they forbea simply remarking, by the way, "from thes learn all." (*"Ab uno disce omnes."*)

Your Committee, therefore, infer from t resolution, that they shall take up the subje of the Making, Preserving, and Applyin Manures, best adapted to the resources, a lands, of the individuals composing our bod

We speak first, then, of the means whi we ourselves have used, and which we ha seen most successfully practiced among fa mers for the accumulation, and application manures gathered on their own farms.

We begin with the month of October, wh the wheat seeding is going on, or rather, wh it should have been nearly completed. T good husbandman should, by the 10th or 15 of this month, have had his farm-yard, stab yard, the scrapings of his kitchen and cab yards, and all his manure spread on a

shoveled in, from three to four inches deep, along with his wheat. This process completed, those receptacles for manure heaps should all be filled immediately with straw, leaves, or corn-stalks and weeds, to such depth as will insure the absorption and retention of all the droppings of the horses, cows, and such stock as may be enclosed, and of all such nutritious matter as may be collected and emptied into these receptacles. This crude matter should be renewed frequently during the winter, and previous to every application of fresh matter, an appliance of lime,(?) or plaster, of an inch or more, over the whole body, would be recommended. This application of these foreign substances, we know by experience, facilitates the decomposition, or rather increases the value of the manure, probably from the aid it affords in the retention of the valuable gasses attached to all heaps of the kind. We would recommend that a log pen, ten feet square, three to four deep, be made, convenient to the dwelling, the kitchen and the negro cabins, into which—having received its prescribed quantity of weeds, leaves, or straw—should be emptied all the soap-suds, the scrapings of the houses, the night vessels, and all things else; the scrapings of the hen-houses, and most especially the scrapings of the "*Temples*," or "little houses," or by whatever name, this important appendage to every finished establishment, the house may be called—these, all, should be emptied carefully into this common receptacle, to which should be added, weekly, such a quantity of lime as would destroy the fœtidness arising from such a conglomeration of substances, not forgetting, from time to time, the scrapings of the corners of fences, and all other odds and ends that serve, if left to themselves, to render a farmstead unhealthy and unsightly to the eye; these should all be collected with the utmost care, and preserved from the sun and rains by a shelter of slabs or planks, put up shed-fashion, as we build our cow-shelters—and your Committee would remark here, that in the absence of lime, charcoal is an admirable preservative and retainer of the ammonia arising from these piles of matter. This mode of increasing our manure-heaps can scarcely be less highly commended to your notice, than the most careful preservation, in a dry state, of the ashes which may be accumulated during the months from October to May, inclusive. The value of this latter is so well understood, your Committee deem it useless to say a word more than that 'tis money itself.

It is scarcely possible, in the present condition of things among us, to have stables for any other than our horses, milk cattle, and work oxen; therefore, your Committee are not prepared to suggest any plan for the preservation of the *farm-yard manure*, other than as early application of it, to the land, as can be made consistently with its being in proper condition. But where stock are confined in a close stable, it will be found necessary for their health, as well as convenience, that their stables be frequently cleaned out; this should always be carefully kept dry—a shed, similar to the one before suggested, should be provided, into which this "cleaning" may be thrown. Your Committee would suggest here, the value of oak leaves as a litter for stables, and cow, and hog pens, over any other that they have used. Whether from their stringency, or some other peculiarity, they have proven themselves to be much more healthful, especially for those animals that are confined to a close stable or pen, and are not subjected to the curry-comb and brush each day, than any other litter we have ever tried.

Hogs, or cows, kept on beds of leaves from the woods, will always, other things being equal, be found in better condition in the Spring than those having wheat-straw, or corn-stalks; hence cattle, or hogs, suffered to run at large, if, during the winter, they can find shelter in a thicket of pine or oak woods, are preserved better than those for which ordinary shelters are made; they are far less liable to the vermin and mange, to which they are so subject when kept on straw for a bed.

The farmer having used industry and the same energy in the collection of manure, which he uses in making his crop, will find that from the sources which we have suggested to him, he will have a most surprisingly large quantity of this valuable production to carry out upon his lands when the month of *May* arrives, when the accumulations of the Winter's industry should all be carried out on his corn, tobacco, or peas, as the case may be; whether applied to corn, wheat, or tobacco, it should be sown broad-cast, and plowed in three or four inches deep, in order to prevent the escape of the more valuable and much more evanescent portions of the manure, and we would commend its being put on, in all cases, as immediately before the crop is put on as possible.

Generally, we can put out our manures, judiciously, but twice a year, namely: before wheat-sowing, and before corn-planting—but, being good at all times, and under all circumstances, we would recommend its application whenever it can be done with advantage to the crop—with this emphatic remark, that the gasses from manures are continually escaping, and the sooner they are applied after being prepared the better, and the more benefit the crop will derive.

We will now suppose the month of May to have passed, and that the manure heaps have all been carefully removed and treated as we have suggested above, and that all the pens have been again supplied with the material out of which a dressing for the poor spots in the next year's fallow field is to be had, but we suppose that there is still a large portion of the wheat-straw left unconsumed by the demands

of the previous winter. We have, in very many instances, seen this offal of the wheat spread upon the Spring wheat and oats, in early Spring, in order, as its advocates contend, to insure a good stand of the grasses. We consider this mode of applying straw injudicious, because, in the first place, it is extremely liable to be blown off into heaps by the Spring winds, thereby leaving much of the land exposed, and entirely destroying those portions where the heaps lie, and in the next place injuring the grain very materially where it may be applied, although it may continue in the situation in which it was first placed. The crops of grain, and a stand of the grasses may much more certainly be expected to be benefitted from a free use of a heavy roller, both in the Fall and Spring. The roller is particularly beneficial to our lands, in all crops, from the corn to the smaller grains, and therefore, in passing, your Committee cannot too highly recommend their use. Instead, then, of applying the straw as indicated above, your Committee would recommend rather, that the clover, or fallow field, of the succeeding Summer, be dressed with all the surplus straw, either as soon as the wheat is threshed, or early in the ensuing Winter, and that such as may not be consumed in the farm pens during the Winter, shall be spread on the poorer parts of the fallow field, and the cattle penned on it during the Summer and Fall months. A pen of twelve or fifteen cattle, put on straw after this plan, will manure from an acre to an acre and half per month quite thoroughly, and will do this for six months in the year, provided the pens are moved every ten days. From the month of July to the last of November the seeds of the grasses, upon which they feed, are so very rich that the pens may be moved much more frequently. We have seen such decided benefit accrue to fallow fields, or the succeeding fields of corn, (as the farmer may prefer,) from this plan of manuring, that so far as our limited observation goes, we doubt whether we could not confidently recommend this plan of making and applying manures above that of almost any other that we know of. And so much are we impressed with the importance of it, that we have been led to doubt whether we would not do well (infested as our lands are with bushes and noxious shrubs, which we know from experience are more easily eradicated by stock than by anything else,) to keep more of them than we now do, in order that we might, as a very judicious farmer of our acquaintance is wont to say, have them as "manure machines," or for the purpose of thus manuring our poorer lands. However this may be, the mode above indicated for using our wheat-straw and other crude stuff that the farmer may be enabled to lay his hands on, cannot be too highly commended to the respectful notice of their appointing body. For the purpose of facilitating the removal of these pens, we have, ourselves, sometimes adopted the plan of having long poles, with legs—from three and a half to four feet long, bored into them—with a strip nailed on the outer leg; these, when well made, will last from two to three Summers, and are removed with great expedition by two hands. This plan of manuring is so prompt and decisive in its action, that your Committee, we hope, will not be considered obtrusive if we again urge gentlemen to try it.

We have thus, in a manner by no means commensurate with its importance, very briefly presented for your consideration the subject of Making and Applying Manures! The facts and suggestions, a part of which we have been, as it were, and a part of which we have seen, are presented, we fear, in too hasty and undigested a manner; but if they shall have a tendency to promote the interest of agriculture in the least degree, your Committee will consider their trifling labours as having been well rewarded.

But, Mr. President, nothing is easier than to give advice; nothing is easier than to present thoughts or suggestions for others to carry out or put into execution. The price of liberty is said to be "eternal vigilance"—so the judicious system of raising manure, is emphatically eternal, *never sleeping energy and industry;* these faculties must not be suffered to slumber nor to sleep. The attainment of excellence in all things is arrived at only by perseverance and industry. The attainment of excellence in farming is not arrived at by the man who lies in bed 'till sun-rise. The farmer's, certainly, beyond all other avocations of life, requires "*a day-break*" start and *a day closing return.* One of the most celebrated farmers in Virginia, and of whom it was said by a knowing man: "Sir, he would have made a celebrated anything to which he had turned his attention," was asked by a young farmer, how much a judicious farmer ought to stay at home, to have his business well conducted? The reply was, "Sir, if *you wish to manage well, and be what I should esteem a first rate farmer, you should stay at home* 365 *days and* 365 *nights, but you may go from home* 52 *of those days and still be a good manager, if you will be careful to be at home at night.*" In the manufacture of manure, Mr. President, it will not do to trust to overseers, or managers, of any description. The master must give his personal, individual, attention to the whole process. However judicious the overseer may be, in the management of his crops—however industrious and energetic in their culture—they being made, he generally considers his work as done, and that his reputation is not at all concerned in the size of the manure heap; and therefore he goes about the composition of that important "*pile*" with a lack-a-daisical sort of energy which insures failure.

"He who by the plow would thrive,
Himself must either hold or drive."

Let the master, then, attend to the getting together of his manure heap, above all things else pertaining to his vocation, with the full assurance that in that heap lies his earthly treasure, and with the equally confident assurance, that if he does not attend to it no body else will.

*For the Southern Planter.*

## Clover as a Fertilizer.

*Experiments with Lime, Ashes, &c.—Lime a Remedy for Sorrel and Garlic—Value of Bone-Dust.*

MR. EDITOR:

Having a large intercourse with the agricultural interests of our State, and having had some personal experience in "tilling the soil," both in Maryland and Pennsylvania, I have hastily thrown a few vagrant thoughts together, for publication in the Planter, if in your judgment and discretion you think proper to do so. You will scarcely find in them anything new, but such as they are, they are entirely submitted to your disposal.

So far as my knowledge extends, I have thought that, in comparison with some States, especially Pennsylvania, the neglect to cultivate clover as a fertilizer, has been most unpardonable in many sections of Maryland, Virginia, and States further South. I consider *that manure* which will produce the best crop of clover, the cheapest in the end to the farmer who recognises the *durable* improvement of his land as an object of paramount importance.

My experience has taught me to believe that the shading of the soil, by a luxuriant crop of clover, is worth a dressing of twenty bushels of slacked lime, and the ploughing of it down is equal to twenty-five more. In saying this, I assume the land to be under judicious cultivation and in good heart. Land so light and sandy as not to produce clover, can rarely be brought to a condition of *permanent* renovation, although by repeated applications of fertilizing elements, it may be made to produce good crops. In the use of lime upon this character of land, it is a remarkable fact, (which is attested by actual experiments,) that where stone-lime, and oyster-shell lime, and ashes have all failed to make a favourable change, *Magnesian lime has had a most remarkable effect*, even to the extent of producing both sod and grass. I am of course speaking, not of a loamy, but a thoroughly sandy soil. I made these experiments in 1856, since which time many farms have been greatly improved by the use of that description of lime. I have found bone-dust as expensive as stone lime, when used for the rapid renovation of soil, but more economical on account of its lasting quality.

Reverting again to clover, a Pennsylvania farmer, where I once farmed myself, uses equal care in the production of a crop of clover, to that of any other he grows. Once covered with this luxuriant grass, he considers his land as made. However luxuriant the crop may be, he rarely mows it down. It is left to cover and shade the ground one year, and the following year he ploughs it under. He seldom sows wheat except upon *a clover sod*, and hence we *rarely* hear of the *ravages of the fly in that State*. Who has failed to observe the fancy of this destructive insect upon a wheat crop *sowed in stubble?* and yet whilst the clover is not touched by the scythe, it is made profitable, independent of its qualities as a fertilizer. Here his hogs find a rich food and a rapid growth, his cattle find abundance of food, and his land, if hilly, is protected against washing. A great mistake is made by many in regard to the quantity of clover-seed sown to the acre; it is the very worst economy to make the smallest quantity go the farthest. Above all things, every farmer in using this seed should be liberal in the quantity sown.

Plantations are frequently much impaired in value by the growth of sorrel and garlic. The evil is increasing every day, particularly in respect to the former. Caustic lime, properly applied, will kill them; but how many are there who have no possible way of applying the remedy? A high state of cultivation will also destroy garlic, but it takes time to accomplish it. I have destroyed *both* without ever having experienced a failure, by watching for a mild spell of weather in January, February, or the early part of March, and then ploughing the land as deep as possible,—the coming of a second freeze, after ploughing, has utterly destroyed these evils, so noxious both to land and crop. The use of clover, peas, or phosphate of lime, is absolutely necessary where there is a free and continuous use of Peruvian guano. This fertilizer has no where been so long, or so continuously used, in our country, as in Montgomery county, in this State; and the acid produced by the useless excess of ammonia in the Peruvian, has covered whole farms with sorrel, and demonstrated the truth of what I have stated beyond controversy. The good this fertilizer had done, seems to be terribly neutralised by the evil it has left in the soil.

K.

*Baltimore*, Aug. 27th, 1858.

*For the Southern Planter.*

## Remedy for the Hog Cholera.

From almost every section of our land we hear of great fatality among *hogs*. This pestilence became so epidemical among our large pens in Baltimore, (the disease being precisely similar to what we read of elsewhere,) that immense loss was sustained, frequently, by the death, in rapid succession, of one 10th of three or four thousand hogs, belonging to a single owner. Of course it attracted a deep interest and thorough investigation. My friend, Dr. Hig-

gins, recently State chemist of this State, recommended small doses of pulverised barilla with their feed, which not only cured those that were affected, upon the slightest appearance, at once checked all symptoms of disease. Mr. Orren Smith, one of our largest distillers, who applied to me for the preparation, has no question of its complete efficacy. He is never without it, and would, no doubt, take great pleasure (if addressed) in communicating all the facts, should this communication attract the eye of any one who is interested. It has never before been made public, that I am aware of.

K.

*Baltimore*, Aug. 27th, 1858.

NOTE.—The above remedy, contained in the report of the Maryland State Chemist, was published in the March number of the Planter. "There is some trouble," says Dr Higgins, "in the solution of barilla, and on this account soda-ash should always be used with it. About ten grains of soda-ash, and the same amount of barilla, should be given to each hog two or three times daily, mixed in their food."—[EDITOR.

## Black Tongue.

The wide extent to which the Black Tongue, among cattle, has diffused itself, renders it important that the pathology of the disease should be generally understood, and the proper treatment publicly made known. We have, therefore, selected from YOUATT ON CATTLE, for insertion in the Planter, so much of what he has said respecting the symptoms and remedies of the disease as may serve to accomplish these important objects.

### "GLOSS-ANTHRAX OR BLAIN."

"There is a disease of the tongue in cattle, which, from its sudden attack, its fearful progress, and its frequently fatal termination, requires particular notice. The animal is dull, refuses his food, and rumination ceases. A discharge of saliva appears from the mouth; it is at first limpid and inoffensive, but it soon becomes purulent, bloody and exceedingly fœtid; the head and the neck begin to swell; they become enormously enlarged; the respiratory passages are obstructed; the animal breathes with the greatest difficulty, and is, in most cases, literally suffocated. This is the BLAIN or GLOSS-ANTHRAX—inflammation of the tongue.

"On examination of the mouth, the tongue is apparently enlarged, but it is, in fact, only elevated from its bed between the maxilary bones; and the cause of this being examined into, large vesicles or bladders, red, livid, or purple, are found running along the side and base of the tongue, and particularly towards its anterior part. These bladders are strangely rapid in their growth; they become of great size; they quickly break; and they form deep ulcerations. Other vesicles immediately arise in their immediate neighbourhood, of a similar character, but of a still larger size. Sometimes the animal dies in twenty-four hours from the first attack; but at other times fever rapidly succeeds of a typhoid or malignant kind. In a few cases these bladders have been found on the upper part of the tongue, and even nearer to the top of it than to the frænum. The tongue soon becomes really enlarged, and particularly when the lateral or inferior parts of it are the seats of the disease. General inflammation of it speedily follows, and that part of it on which the ulcers first appeared, becomes mortified, and may be cut into, or cut away, without the animal expressing the least degree of pain. Incisions into the tongue are not followed by blood, but they bring to view tissures decomposed at some points, and black at others, and bearing the marks of incipient gangrene."

"When it becomes epidemic—when many cases occur about the same time, and over a considerable extent of country, * * * * it is usually in the Spring or Autumn. Most epidemics of an inflammatory character occur at those periods, for the process of moulting is then going forward, and the animals are to a certain degree, debilitated, and disposed to inflammatory complaints; and these assume a low and typhoid, and then a malignant, form, much oftener and more speedily in cattle than in other domesticated animals."

"While the blain sometimes assumes an epidemic character, we fear that there can be no doubt of its being *contagious*, and especially under the malignant form. The disease, however, like glanders, in the horse, is not communicated by the breath; but there must be actual contact. The beast must eat from the same manger, or drink from the same trough, or be in such a situation that the saliva, in which the virus seems to reside, shall be received on some abraded or mucous surface. The malady is readily and too frequently communicated when animals graze in the same pasture. The farmer and practitioner should be aware of this, and should adopt every necessary precaution.

"We fear that we are justified in stating, that this is one of the maladies which may be communicated from the brute to the human subject, and the list of these is fearfully increasing. We are unwilling to excite unfounded fear, and we do not believe half the stories that are told us of herdsmen that have attended on cattle suffering under the blain, and becoming afflicted with a similar disease; but there are several accounts which are too well authenticated to be for a moment disputed. We relate one—A man held down the tongue of an ox with a silver spoon, in order to examine the mouth, which had many of the characteristic vesicles. He afterwards, and

without any great care about cleaning it, ate some broth with the same spoon. Not many days had elapsed, when his mouth felt sore, pustules appeared on the side of the tongue, malignant fever succeed, and he died. When this disease raged at Nismes, in 1731, it was communicated, not only to the human being, but to various species of domesticated animals. The appearance of this epidemic was strangely accounted for. It prevailed in the Autumn, after an exceedingly dry Summer, and when the beasts, all the grass being burned up, were compelled to feed upon the leaves of the trees covered with snails. The danger, however, so far as it can be ascertained, is trifling, and easily avoided; and a man may attend on a hundred of these animals without injury: *he has to take care that the saliva, or discharge from the mouth, does not touch any sore place or lodge upon the lips:* and if he should fear that it may have come into contact with any little wound or sore, he has only to apply the lunar caustic lightly over the part, and there will be an end of the matter.

"The treatment of blain is very simple; and, if adopted in an early period of the disease, effectual in a great majority of cases. Blain is, at first, a local malady, and the first and most important means to be adopted will be of a local character. It is inflammation of the membrane of the mouth along the side of, and under the tongue, and characterized by the appearance of vesicles or bladder; perhaps pellucid at first, but becoming red or livid, as the disease advances: *These vesicles must be freely lanced from end to end.*

"In some parts of the south of Scotland, the farmers, and the practitioners, too, are anxious that the bladder should be carefully taken away with a piece of cloth after it has been thus lanced, and especially that the yellowish fluid which it contains should be removed; the swallowing of which is considered to be very dangerous. There is no necessity for this; it is quite sufficient if the vesicle is freely lanced. There will not be much immediatate discharge; the bladder was distended by a substance imperfectly organized, or of such a glairy or inspissated nature as not readily to escape. If this operation is performed when the saliva first begins to run from the mouth, and before there is any unpleasant smell or gangrenous appearance, it will usually effect a perfect cure. If the mouth is examined four-and-twenty hours afterwards, the only vestige of the disease will be an incision, not very healthy at first, but that will soon become so and heal.

"Some rub a little salt into the incision as soon as it is made, and others apply a solution of alum. Either may be done, and the first is preferable, if the owner should appear to wish that something of the kind should be attempted, but neither of them is necessary. If the disease has made considerable progress, and the vesicles begin to have a livid appearance, or perhaps some of them have broken, and the smell is becoming very offensive, the mouth must be carefully examined, and any vesicles still remaining whole, or new ones beginning to rise, must be deeply and effectually lanced, and the ulcers washed half-a-dozen times in the day, or oftener, with a diluted solution of the chloride of lime (a drachm of the powder to a pint of water.) By means of a syringe or piece of sponge, this may be brought into contact with every part of the ulcerated surface.

"In a very short time the unpleasant smell will diminish or cease, and the ulcers will begin to assume a more healthy character. When all fœtor is removed, the mouth should be bathed with a lotion composed of equal parts of tincture of myrrh and water, or a pretty strong solution of alum, to which a fourth part of the tincture of catechu has been added.

"This plan of treatment will also be usually successful if the ulceration has not assumed too much of a gangrenous character, and if symptomatic or low fever has not appeared in too intense a degree. These are very important circumstances, and should not be passed lightly over by the proprietor of cattle; for several of the most fatal diseases to which they are exposed, are of comparatively little importance, and easily got rid of in the early stage, and it is neglect that produces all the danger. It does so here; for the blain, although easily cured when attacked in its early state, becomes uniformly fatal if neglected. We do not, however, mean to say that, in these early stages of the blain, the disease should be always so simply treated, and that the mere lancing of the vesicles should be the only means adopted; but it should be the first thing done, and that on which we place the greatest dependence, as attacking the fountain-head of all the after mischief, and getting rid of the danger of suffocation at least.

"The blain, suffered to take its course, speedily becomes connected with fever, and that fever is not long in taking on a typhoid form; even then we should certainly abstract blood. Four, or five, or six quarts should be taken away according to the size of the beast, and the urgency of the case; or, rather, we should bleed until we begin to perceive its effect on the general circulation.

"In addition to this, as constipation usually accompanies the commencement of fever, and is never absent in cases of blain, we should administer a purgative—from a pound to a pound and a half of Epsom salts; and we should likewise throw up some laxative injections. * * * * They want noting to ensure or increase their effect.

"From the inveterate apathy and neglect of the farmer, the practitioner may not be called in until gangrenous ulcers fill the mouth, and the membrane of the mouth, and the tongue

itself, seem to be sloughing away in pieces; ulcers, perhaps, have also began to appear externally behind or under the jaw, and most of all to be dreaded, and frequently accompanying the worst stages of blain, ulcers begin to break out about the feet, and particularly at the junction of the hair and the hoof, and threaten the loss of the hoof.

"What is the practitioner now to do? He must be more diligent in his local treatment. That invaluable disinfectant, the chloride of lime, must be used from morning to night, until the gangrenous character of the ulcers is changed; and then the tincture of aloes, or the tincture of myrrh may be substituted. The ulcers that may appear in any other part, and particularly about the feet, must undergo a similar treatment. Some have recommended the application of the cautery to the bottom of the ulcers, but there is no necessity for this. The chloride of lime, the solution being by degrees strengthened, will not only remove the fœtor, but usually give the ulcer a healthy surface.

"No bleeding will be required here: the stage of acute fever is passed. Physic should be given—one dose at least, whatever is the state of the bowels, and even although the diarrhœa of typhoid fever should be established; but, at the same time, the system must be roused and supported. A double dose of aromatic powder should accompany the physic; and, after that, the gentian, calumbo, and ginger roots should be regularly administered in powder, suspended in gruel; the half-pint of strong home-brewed ale not being forgotten. Two drachams of gentian and calumbo, and one of ginger, will constitute an average dose, and may be repeated morning and night.

"The practitioner should pay considerable attention to the food. It is not always that the appetite fails in this disease; nay, we have seen it, as in tetanus, remain unimpaired to the last; but the soreness of the mouth has prevented the animal from either eating or ruminating. He should be fed with gruel—some of it should always be within his reach, and he will occasionally sip no inconsiderable quantity of it. More should be poured down, or given by the stomach-pump—the latter being the better way of administering it. When poured down bodily from the horn, it will generally find its way into the rumen, and there it will be retained, and be in a manner lost; but when given from the small pipe of the pump, and not too strongly forced on, it will trickle down the gullet, and be likely to flow on into the fourth, or true digestive stomach, and be converted into immediate nutriment.

"There is reason to hope that this one of the somewhat numerous class of diseases, under which the animal either cannot labor a second time, or to which the constitution betrays an evident insusceptibility for a considerable period. Cattle that have recovered from the blain have been afterwards purposely subjected to the danger of contagion, but without effect."

## Ornithological.

In the absence of anything recent from the sprightly pen of our interesting correspondent, "F.," on the subject of ornithology, we lay before our readers the following extract from the "*Commission*"—a missionary periodical conducted in this city, under the auspices of the Baptist denomination—a brief notice contained in the Journal of the Rev. A. B. Cabaniss, one of their missionaries in China, on the characters and habits of the hawk and the crow:

### HAWKING.

"A man passed our boat this morning carrying a tame hawk, which he had taught to catch pheasants and hares. It is of the same size, and has the appearance of our common chicken hawk in America. I have, since the above date, met with an old hawker near Shanghai, who let me into the mystery of training them.

The hawk is taken from the nest before it is able to fly, and kept confined in the owner's house, where it is fed and petted. When it is grown, a live hare or pheasant is frequently put in the room, and the hawk let loose with an empty stomach. As soon as it seizes the prey, the owner takes it away; but rewards the hawk with something to eat. When it has thus been well trained in a room, the same process is continued out in the yard, till the man thinks he can trust his hawk in the field. He then takes it out—perched on his arm, with a string on its legs, and does not let it loose till in sight of game. When let loose, the hawk pursues and seizes the hare or pheasant, which it holds till the hunter comes up and takes both the game and hawk in his hands. He takes care to reward the latter with a bit of meat, lest he should "take it into his head" to start off hunting "on his own hook."

It takes two or three years for them to be well trained. When they have been kept ten years, they may be trusted in the fields by themselves and will return to their master's house.

Some two hundred years ago, when the Manchu Tartars conquered the country, as a precautionary measure, they forbade arms, of any kind, to the Chinese. These hawks are, therefore, substitutes for guns.

### TAME CROWS.

As the Chinese peasantry have no guns, it is surprising how tame the crows become. I had been of the opinion that the crow was instinctively shy, and always kept away, as much as possible, from the habitations of man. But it is all a mistake; the crow is as tame as any

other bird here. Last year they built a nest in a tree at my yard gate. The large trees about the temples, inside of the city walls, are favorable places for them to build in every year. In a town, not far from Shanghai, I, last week, counted eleven crows' nests in one tree, standing in the yard of a budhist temple. The crows were busily engaged in feeding their young, regardless of the many persons passing below. Their preference for trees about the temples, shows that they have learned to take advantage of the inoffensive nature of the priests, who will not kill any living thing."

*For the Southern Planter.*

## Ditch Banks and What to do with Them.

*Dear Planter:*

In your September number you very properly censure the custom of cutting ditches, and allowing the banks to stand alongside of them in such a way, as to dam the water out of them. In my country (Edgecombe, N. C.,) the practice obtains, of letting the banks remain until their productive fertility is developed, which can be clearly ascertained by the growth of the weeds and grass, along the edge. The banks are then carted to the compost heap in the fields, where they are composted with cotton seed, stable manure, &c. But to protect the growing crop, and soil, whilst the bank is left to acquire fertility, we cut through it every few feet, thus affording free passage for the water into the ditch.

It strikes me if you throw off the bank you will create a slight elevation—and thereby you only diminish the difficulty without removing it. The advantage, I think, in the custom of Edgecombe, is that the farmer *thus acquires* a good deal of *valuable manure*—while the efficiency of the drain is not at all injured.

J. L. B.

Remarks.—We are obliged to our correspondent for this note, as it gives to our readers a hint on a *profitable* manner of carrying out a good, reasonable course in ditching. We hope our farmers, all of them, will adopt the method proposed for treating ditch banks.

Make *use* of them, and don't allow them to remain in the fields—a nuisance, and, "eye sore." When we spoke of throwing them off, we did not intend to be understood as sanctioning a "slight elevation," as the *remainder* after their removal. The best way to throw down, is to plough off with a large plow (a hill-side or shifting mould-board, is the best,) and then drag them back with a two-horse scraper. Of course a *neat* farmer will take care to empty some of the loads into any adjacent "sinks," so as to fill them up even with the surrounding surface. We like our friend's suggestion, however, as the better plan of the two, as it helps to augment the size of the manure heap.

*For the Southern Planter.*

## The Sheaf.

Before man was acquainted with the use of iron, or knew how to fashion any tool of metal, it is probable that he was accustomed to tie up grain in sheaves.

Even before the plow, with which he breaks up the soil, or before the sickle, with which he reaps the crop was used, the sheaf was known and formed.

When a pointed stick, sharpened by a stone-axe, and hardened in the fire, was the only implement wherewith man dug the earth and prepared it for sowing seed; when he had neither barn nor boundary fence; even when a stone was a substitute for the flail; even then, man was accustomed to pull up the grain that formed his crop, and to tie it into sheaves.

At the present day some nations use only the pointed stick, and guard their fields from injury by the presence and care of watchmen, without having either tool of metal or fence of wood or stone, yet they all use the sheaf.

Every age has had it, every nation has known it; from the most barbarous and ignorant to the most civilized and cultivated, (even to modern England and America, rich in every means and instrument for diminishing human labor) this early custom of tying grain in sheaves has remained in use and practice.

The pointed stick has been abolished; the sickle is no longer used; grain is no more trodden out by the feet of horses; these have all passed away.

I recommend that the sheaf be in like manner abolished.

It is easy to see why it was introduced and retained. The scattered stalks of grain were easily tied together with a wisp formed from other stalks, and they readily made into a bundle for carrying the crop to a place fit for threshing out the grain even without the aid of animals. When the flail was introduced it was easy to place the heads of the sheaves together and thus strike them to more advantage, because no useless labor was struck; the head of the stalk was alone beaten, that it might yield up its treasure.

Beside this, when man had no house of his own, (perhaps only a tent or cave,) or if he possessed a house, no barn or any means of carrying his crop into one; or if he possessed the house, the barn, the horses and the carts necessary, no time or inclination for such housing of his crop; then, I say, it was easier and better for him to tie up his crop into sheaves and put these up in shocks upon the spot where

they grew, than treat the crop in any other manner.

The Reaper has substituted the sickle and the cradle, why cannot the Horse Rake replace the binder?

Consider the process of harvesting; if cradling be used, for every cradler there must be one binder; and a good cradler will cut from three to four acres a day, which his follower is expected to bind in sheaves.

Let the Reaper take the place of the cradle, there will have to be as many binders still; these follow, rake up and tie in sheaves what is cut; all hands occasionally stopping other work to put up these sheaves into shocks. That is, unless the force employed be very strong.

Now some stalks are necessarily left; the short ones are often left out in tying, even when they have been grasped; so that a careful farmer finds it to his interest to go over his field with a horse rake after the sheafing is ended and gather up what is left by the binders.

The wheat is now left out in these small, hastily constructed shocks, and this exposure does not benefit the crop, but rather injures it; yet, it not uncommonly remains thus exposed until it is convenient to have it threshed for market.

When carried to the threshing machine, the first thing done is to untie these sheaves, that the stalks may be readily put in the hopper and pass through the rollers of the machine.

Why not use the Horse Rake at once, save the expense of all the binders usually employed, and arrange the grain in cocks, just as hay is treated; and then, as soon as possible, have it put up in properly made stacks?

Here would be saved, first, the time, labor and expense of the binders, (the time spent in shocking would be equalled by that employed in forming cocks, so that I leave this out of the comparison) second, the time spent in tying up the sheaves and untying them when threshed, and third, the injury resulting from leaving the open shock in the field for any length of time. I do not add the increased quantity of grain saved, for I have supposed that the farmer carefully went over his ground with the horse rake after the binder. Still, I believe that the rake, used without the binders, will save all the grain; whereas some is now lost in bundling and carrying the sheaves.

It may be objected that the heads of grain might touch the earth, and be injured, if it was raked up and formed into cocks after the manner of hay! I answer that one strong reason for abolishing the sheaf would be to induce farmers not to leave their grain in shock or in cock at all; save only during the time of harvest, when too much pressed by the amount of work to be able to stack it properly at the barn.

No farmer leaves hay in cock for any length of time, whilst many leave grain in the shock long enough for it to be seriously injured.

I make no calculation of the amount of labor, time, money, &c., that would be saved to the State, if this suggestion was universally adopted. I show no long and carefully prepared statistics; let every farmer consider it for himself and see if his own interest is not sufficiently involved to induce him to substitute the Horse Rake for the binder in his harvest field.

To preserve grain in the barn in a small space, or to transport it conveniently to a distance, I suppose it might be treated just as hay is treated; and be pressed into bales, of larger size however, or looser bulk, because straw is more brittle and will not bear the pressure sustained by the more flexible grass.

ECONOMIST.

## Composition of Fish Manure and some Sorts of Animal Refuse.

Professor Anderson in the *Transactions of the Highland Society*, furnishes the following valuable information:

Although the importance of all sorts of animal matter as a manure has long been familiar, and has been frequently insisted on, both by science and practice, the immense quantity of such refuse has hitherto become very partially available. The main difficulty which has stood in the way of their profitable application has been the want of a good process by which they can be converted into a portable form. The enormous quanties of fish refuse annually produced in Newfoundland, and even on some parts of our own coasts, has been frequently pointed out as a source from which agriculture might derive valuable assistance. Considerable interest was excited, some time since, by the proposal of various methods by which the desirable object of rendering fish offal portable might be attained, and very important results were anticipated from them. As yet these anticipations have not been fulfilled, material difficulties having been encountered in carrying most of the processes into operation on the large scale, some of the plans proposed having proved too expensive in practice, while others are so obviously impractical that no one has been found willing to invest capital in carrying them out. The error, in most cases, has lain in the employment of expensive machinery, which the conditions under which such a manufacture must be carried out may be said to preclude. It is probable that the quantity of fish offal to be obtained at one spot wil

not generally be very large, and will be chiefly collected at one period of the year, so that the machinery would require to be sufficient to work up with rapidity the whole of the offal produced, and would lie idle during the rest of the year. It is in some such way that most of the plans have hitherto failed; but I have recently analyzed a sample made by a patent process, which is said to be simple and inexpensive; and should the manufacture yield, on the large scale, a material of uniform quality, and equal to that I have examined, it will undoubtedly prove a very important addition to the list of ammoniacal manures. The manure was in the form of a yellowish powder, in grains about the size of fine oatmeal, remarkably uniform in appearance, very dry, and almost devoid of smell. Its composition was:

| | |
|---|---|
| Water, - - - - | 8.00 |
| Fatty matters, - - - | 7.20 |
| Nitrogenous organic matters, - | 71.46 |
| Phosphate of lime, - - | 8.70 |
| Alkaline salts, - - - | 3.80 |
| Silica, - - - - | 0.84 |
| | 100.00 |
| Nitrogen, - - - | 11.25 |
| Equal to ammonia, - - | 13.68 |
| Phosphoric acid in the alkaline salts equal to 1.41 phosphate of lime, - | 0.65 |

There can be no doubt that, if fish manure, of equally good quality, can be produced, a large demand for it will soon be created. It is, in fact, a very valuable manure, and its price may be estimated very readily, according to the mode employed for Peruvian guano, by taking the commercial value of each of its important manurial constituents as derived from other sources. The values adopted by chemists have been at the rate of ¾d per lb. for phosphates, and 6d. per lb. for phosphates, and 6d. per lb. for ammonia; or, expressed in tons, £6 for the former, and £56 per ton for the latter. Upon this plan, and taking all the phosphates under one category, we estimate the value of 100 tons of the fish manure as follows:

| | |
|---|---|
| 13.68 of ammonia, at £56, - | £766 |
| 10.11 of phosphate of lime, at £6, - | 60 |
| Value of 100 tons, - | £826 |

or almost exactly £8 5s. per ton; and this will probably be its average value. At the present time, however, owing to the high price of bones and ammonia, its value would considerably exceed this. Sulphate of ammonia is now selling at £16 per ton, and at this price *ammonia* is worth £64, and phosphate of lime can scarcely be reckoned under £10 per ton, bones at present selling as high as £6, or even £6 10s. If these data be taken for calculation, the value of the fish manure comes to be—

| | |
|---|---|
| 13.68 of ammonia at £64, - - | £875 |
| 10.11 of phosphate of lime at £10, - | 100 |
| Value of 100 tons, - | £975 |

or £9 15s. per ton. In connection with this subject, it may be well to observe, that there are many sources of animal matter which must, at the present moment, be entirely wasted, although they might, with a little management, be turned to good account. Of these, perhaps, the most prominent is the blood and other offal of slaughter-houses, in our small towns and villages. In the larger towns, the blood is collected, although not very carefully, and finds its way to certain classes of manufactories in which it is employed; but in country places it is, for the most part, allowed to escape. It would be a matter of some interest to ascertain the annual value of the blood and offal thus lost, which is undoubtedly very large, and a great part of which might easily be saved by a very small expenditure of care. Such, however, is the carelessness of the workmen employed in slaughter-houses, that I have been informed, that, even in the large towns, it is with difficulty that they can be persuaded to save the blood, although its price is really considerable.—Fresh blood contains nitrogen, equal to about 3 per cent. of ammonia, and is worth about 2d. per gallon, or nearly £2 per ton; and any farmer, living near a small town, might advantageously contract to take the whole of the blood at this price. There are many other sources of animal matters which will at once occur, available for manures. Of these, we may particularise the refuse of glue and oil-boiling works, which yield, annually, a considerable quantity of nitrogenous offal; and the two analyses of seal and glue refuse which follow will show that, even when they are prepared without much care, they may become useful manures:

| | Seal Refuse. | Glue Refuse. |
|---|---|---|
| Ash, - - | 36.81 | 53.18 |
| Organic matter, - | 41.85 | 38·60 |
| Water, - - | 21.34 | 8.22 |
| | 100.00 | 100.00 |
| Ammonia, - | 2.24 | 2.00 |

The large quantity of ash in these cases is due to the admixture of earthy matters, for the purpose of drying up and rendering portable the animal matter; and, tho' this has not been done in the most suitable manner, the value of the manure is about five times as great as that of good farm-yard manure.—*Farmer's Magazine.*

## The Economy of Food.

In order that the reader may arrive at a right understanding of the economical uses of food, it is necessary for him to know not only that food is of several kinds, but also that it serves several different purposes in the animal economy.

In the first place, every effort of thought, every contraction of muscle, every change of texture, is attended by the combustion or loss to the animal economy, of a certain quantity of food; or, in other words, it takes a given amount of food to keep a horse or other animal in the same state of flesh. We have so many pounds of corn or oats, or hay, to keep him alive and in condition. The quantity and quality of this necessary quantum of nutriment vary with the activity or exercise of the animal and also with the temperature of the atmosphere. Now the uses which in this case the food serves are compared. In the first place, a certain quantity is expended in making good the daily waste of the tissues—chiefly the muscular; in the second place, a certain other quantity is used up in maintaining the animal heat and assisting in the manufacturing processes concerned in the maintenance of these great functions

On the other hand, the quality of food required for these several purposes varies with the purposes. For nitrogenized food is required for the growth and maintenance of muscular tissues; and non-nitrogenized substances for the production of animal heat; while the alkaline earths seem to be necessary for the elaboration of those results as well as those accessory changes necessary for the processes of purification. When the horse works hard in warm weather, he will need a food rich in nitrogenous matters; and when he stands without work, he will need the alkaline earths.

These premises being admitted it is only necessary now to know the most accessible sources of these several kinds of food.

The grains and grasses are almost the only kinds of food which can be economically gathered and preserved for such uses. All of these yield, though in varying proportions, the several varieties of nutriment. Oats, wheat, rye, barley, peas, and beans, are richest in nitrogenized or muscle-producing material: while corn, linseed, and the grasses, if cut at the right season, yield the largest proportional quantities of heat and fat-producing food.

It follows from this, that, if a working horse is fed upon corn alone during the hot months, he must consume an excess of heat and fat-producing elements in order to obtain the quantity of nitrogenized substances necessary to maintain his strength; while, if fed upon wheat, in winter, he would have to consume a large excess of nitrogenized food in order to obtain the necessary supply, of food for heat production. Whenever an excess of one or the other of these materials is consumed, that excessive consumption entails a direct loss upon the feeder, and also, by surcharging the animal, impairs his usefulness and increases his liability to disease.

The same considerations apply to feeding all other animals. In the case of the horse we want to obtain muscular force, activity, strength, endurance, &c.; but in the hog we want chiefly fat and some muscle.

In the production of animal substances for food, the feeder desires to get the largest amount of bulk, including fat and muscle. All that food which is expended in repairing waste and supporting animal heat is lost, at least for all economic purposes. A bullock or a hog fed upon only that which maintains its conditions contributes nothing to the wealth of the farmer. His only gain is that surplus bulk which can be acquired over and above the daily necessities of the creature's life. In the growth of animals from early to adult life, the food required is mainly such as contributes to the growth and maintenance of muscular tissues and bones; but in the adult animal such food is needed in smaller quantities. The only increase in value in such an animal is derived from the accumulation of fat. How is such animal to be fed? Food that contains sugar, starch, and oil in excess, possesses the largest fattening properties. No one thinks of fattening hogs on rye, wheat, barley, or oats, while universally, experience points to corn, pumpkins, potatoes, parsnips and the like.

The feeder must remember, however, that if the animal runs at large or is exposed to the inclemency of the weather a large amount of food that would otherwise go to increase the bulk of the carcass is consumed in making good the waste induced by exercise or in meeting the large demand for animal heat.

Thus, the horse standing still in a warm stable soon fattens on that quantity of food that only keeps him in present condition when laboring.

A consideration of these facts shows the necessity for two external conditions which contribute to the economy of food. These are protection from the weather and quietude. Now

the crude experience of feeders shows that if cattle or hogs are kept, the one in stables and the others in pens, they fatten with much greater rapidity and of consequence with more economy. How much is gained by quietude and how much by protection has not been determined with accuracy even in general terms, much less in relation to actual practice in varying degrees of cold.

But still observations are sufficiently abundant to show that the general proposition is universally correct.—*Louisville Journal.*

## Progression.

Grand are the achievements of mankind, and noble are the deeds of mental heroism that adorn our race. Looking back upon what are called the triumphs of genius, we find them to be almost innumerable, and as great in the past as they are to-day; yet they go on still increasing in number as in usefulness, in magnitude as in permanent good.

An all-wise Providence has so constituted man's mental faculties that they know no rest, but are ever watchful and at work. The same great cause has also made man's wants—his necessities increase, so that the governing principle of both demand and supply is progression. This is illustrated in the newspapers of to-day. We have just made a glorious conquest over natural difficulties; the rising Orient has by human ingenuity been made to kiss the setting Occident, and the name of Cyrus W. Field is more elevated than was ever that of Cyrus the conqueror, Persia's king. The world gives him laudation, and mankind regards the success of the Atlantic cable with mingled reverence and heart-joy; but in the midst of all this due praise and earnest thankfulness, there comes from the daily newspapers a small suggestion, which we may briefly state as follows:

One cable will not be enough—we shall shortly want another.

The daily press is the actual reflex of the national mind, and this even in its moments of natural exultation, cannot forget the God-inspired principle of progression. The throbbing genius of human nature cannot be idle, but must let its pulse beat on some material substance, and it continues to improve, and shall continue to invent, until there is perfection—but there is no perfection yet. Many years ago, when Fitch's first steamboat steamed through the waters of the Delaware or Fulton's *Claremont* passed between the beautious shores of the Hudson, everybody was surprised, astonished! and some thought that they were indeed perfect; but we know their deficiences, and there are now thousands of mechanics who could make a better steam engine than had then been seen. Let but the same period of time elapse, and the thousands of fire-breathing machines—locomotive, stationary, and marine—that we think so perfect and complete, shall appear clumsy, uncouth and imperfect; or, (who knows?) steam itself may be superseded, and some more economical motive power be used. The weekly records of the Patent Office also illustrate this progressive principle—improvement on improvement crowding on us, and yet their is room enough for all. We see one improvement crowding another in such rapid succession, that if to-day we exclaim, "how perfect," to-morrow we see an advance towards still greater perfection, so that in reference to the very best that *is*, we must also add, "but it is not the best that *can be*."

Many persons ask, almost in tones of fear, "to what is this impulsive and progressive spirit carrying us, and where are we going. Our answer is the axiom—If the principle be good, then must its results be also! That which is honestly conceived, and truly carried out must bring forth general, universal good; and he who puts into practice or forms original ideas is, in short, an inventor, whether of ideas or machinery—is a contributor to man's comfort, convenience, and elevation, and leaving the lower walks of life, he becomes raised to the dignity of a philanthropist.

Let us then carry out this idea—progression, exercising a judicious check that we do not run to extravagance; and as a community or nation, let us make use of each improvement as we originate it, and ever have for our motto—"Excelsior."

*Scientific American.*

## A Profitable Forty Acre Farm.

To show what "much labor on little land" accomplishes, we present a brief statement drawn from the Hampshire County (Mass.) Agricultural Society's Transactions, there given in the statement of Mr. STEBBINS, of South Deerfield, on entering his farm for the premium of the Society.

The farm in question contains 41 acres, ten of it worn-out sandy land, when it came into his possession, over twenty years ago. But he "resolved to have a better farm." To this sandy field (three acres the first year) he applied clay at the rate of fifty loads per acre, followed by twenty-five loads of manure and 200 lbs. of plaster. This was all plowed in together, the land planted to corn, and fair crop was the result. After corn, oats were sown, and the ground seeded to clover. "By the use of clay and manure," he says, "I have made all my land as good as the best, and increased my pastures one hundred per cent, in quanity and quality of product.

As to deep plowing, he finds the best way to be to employ the subsoil plow. He turns under his manure four or five inches deep, and then subsoils the bottom of the furrow as deeply as possible. Corn is planted two years in succession, the better to mix soil and manure and to fit the land for grass, and he now sows barley instead of oats, as a more profitable crop.

The secret of his success lies in the fact that instead of one hundred loads of manure as formerly, he now makes three hundred and fifty loads, supplying his yards freely with absorbent earths, and using salt, lime and plaster to considerable extent.

In 1854, the products of the 41 acre farm in usual farm crops, were worth a fraction under $2.000, and the net profits $1.116.75. There were twenty-three acres in mowing; thirteen acres in corn and potatoes, three in barley, and two in wheat. The reader may here see that a large farm is not an essential requisite to profitable management.—*Telegraph.*

## Calico Printing in America.

If there is any one thing of which our manufacturers in this country have more reason to be proud of than any other, it is that every stride they have made towards perfection has been done upon ground as thoroughly contested by unchecked transatlantic rivalry as the most exacting European opponents could desire. No one will dispute that the advances which have been made in this country in the various departments of manufacture were achieved and sustained on the score of intrinsic merit, rather than through the fostering hand of any extrinsic assistance. If, then, the progress has, in consequence of this, been less rapid, it has certainly been more solid and substantial, and hence more independent. The competition thus nurtured by the hand of a self-relying energy is every year resulting more and more to the honor of the industrial genius of our country. We had on Saturday last, the privilege of examining specimens of American prints, which, for richness of coloring, beauty of design, and accuracy of execution, we have rarely ever seen excelled by the chintzes of French and English production, costing twice the amount for which these are being sold. The prints we allude to are the production of the extensive works of Messrs. A. & W. Sprague, Providence, R. I., and were shown to us by Messrs. Welling, Coffin, & Co., who are the sole agents for their sale in this city. The particular style to which we have now more special reference is a rich broken plaid, with a bold chene stripe, in colors so tastefully arranged and strikingly brought out as to give it the appearance of a very expensive silk. There are seven colors in the goods, (the combinations being so varied as to produce some six different patterns in the case) requiring three separate processes of printing, and the whole produced in all the wonderful perfection of block work itself. What is most astonishing is that these chintzes are afforded by the manufacturer at prices allowing them to be jobbed in the market at the low figure of fifteen cents. We hope our lady readers will exercise an American spirit (and we have not the least doubt but they will) and embrace the first opportunity of showing their preference for home fabrics when they are offered equally rich, quite as reliable in colors, and at half the price charged for the imported article. This will be one of the best "crisis" preventatives in the world. The Messrs. Sprague deserve great credit for their untiring zeal in carrying the process of printing cotton fabrics to this high state of perfection. We understand they have some five millions of capital invested in their gigantic enterprise, and the great progress made by them in perfecting their experiments within the last few years has won for their goods an enviable reputation. So rapid was the sale of the new designs referred to, that the entire ship-

ment from the mills was exhausted by our jobbing houses, from the pattern cards, prior to their arrival. Upon the whole, we regard these goods as decidedly the greatest American triumph in the art of calico printing that has yet been achieved.

*Philadelphia Press.*

### Hogs vs. Dogs.

"What a dog lives upon will keep a hog." If anybody doubts the truth of the saying, let him kill his useless dog, and put a pig in the pen and give it the dog's allowance. He will find in a few months that he has a fine, fat porker, fit to be eaten, a use the dog could not be possibly applied to by any christian man.—There are too many; if they had all been killed a year ago, there might be 200 lbs. of good, fat pork in the country to balance against every dog so set aside, which would be no inconsiderable item in the present scarcity of supplies. Dogs are a nuisance, and should be taxed. While every farmer keeps his dog and every free negro his two or three dogs, sheep stand a poor chance to get through the world, and yield their annual fleece with untorn throats. The increase of the dog population accounts for the scarcity of sheep.

[*N. C. Planter.*

### An Item for Cotton Planters.

The Belton (Texas) *Independent* says: "In the Patent Office Report of 1855, we find that Townsend Glover, Esq., who is a scientific man, and who was employed by the Department for that purpose, has made a report of his investigations regarding insects. He reports that spiders, Carolina tiger beetle, the predatory beetle, devil's coach horse, Ichneumon fly, Syrphus lady-bird and the lace-wing fly are very benefical to the plant, being constantly engaged in destroying those insects which feed off the cotton stalk and its product.

### Fat vs. Milk and Stamina.

"In trying to breed animals with too great a proportion of fat flesh in proportion to the lean, not only are the stamina and size, but the milk is deteriorated, which caused the Bakewell, alias long-horned cattle, to degenerate in size, lean flesh, bone, and milk, being now nearly shadows to what they were in Mr. Bakewell's day. Animals may be bred until they lose nearly all their milk, and many of the Bakewell or Leicester sheep have been bred until they have reduced their size, constitution, milk, and lean flesh." As a remedy for the defect, some of the Lincolnshire rams, "which has increased the wool, size, constitution, and lean flesh," and now the breed is more profitable, from producing more weight of wool and mutton per acre.—*Country Gentleman.*


# THE SOUTHERN PLANTER.

RICHMOND, VIRGINIA.


F. N. Watkins, Esq'r., at the office of the Farmers Bank of Va., at Farmville, is our authorized Agent to receive money due for subscriptions to this paper and to grant receipts therefor. Our subscribers in Prince Edward and the counties adjacent will please call on him.

### To Correspondents.

We hope gentlemen who have addressed letters to us, which may not have been answered, will accept our apology for the apparent neglect. Both Mr. August and I have been prevented by sickness from attending to the duties of the office for the past two weeks. To those of our friends who have written to us in response to our advertisement for a farm in the Salt-water region of Virginia, we would say, the gentleman for whom we wished to get such a farm, has supplied himself. The present number of the Planter has, in consequence of our indisposition, had less labour and care bestowed upon it, than we wished to give it; so we must throw ourselves upon the generosity of our friends, and beg they will excuse any deficiencies.

JAS. E. WILLIAMS.

We should be glad to know our friend H., of King and Queen. We lived so many years in that county, and have there now so many friends to whom we are warmly attached, that *we feel very much as if we had a right* to know every body there. A communication from that quarter (old Drysdale especially) would seem much like a letter from *home*. We hope to get one soon.

### Seasons and Crops of Present Year.

The present year has been one of more than ordinary vexations and difficulties to the far-

mers of our own and many of our sister States. Unpropitious seasons, myriads of insects, together with diseases fatal and sudden, have attacked both his vegetable and animal possessions so vigorously, that he can form quite a vivid idea of the features of "blue ruin," and imagine—not without good reason, too—that his coming is postponed for but a short season. The failure of field crops has been extensive. Wheat, corn, and tobacco, in many places, won't pay for the labour expended on them. Even the "garden sarce" has been burnt up by the excessive drought. We had, early in the season, *too much* rain—now, too much sun and heat; while the whole "bug kingdom" seems to have turned loose to destroy any little balance spared by the unfavourable elements.

The farmer among us who can keep up his spirits in spite of the disasters common to the fraternity during the past months of the present year, might surely win commendation from "Mark Tapley" himself, for being "jolly under *creditable* circumstances." What shall we do?

It is permitted us to *hope*, when we can do nothing else. We *will* hope, then, that this dark cloud merely precedes, and hides from our vision, a bright and glorious season in reservation for us. We will *persevere*, and bear as best we can the untoward circumstances of the present, assured of this truth—

"There is a divinity that shapes our ends."

Let us increase our diligence, constancy and fidelity, to the cause of our own and our neighbour's agricultural prosperity and interest, that we may *deserve*, if we do not win, the smiles of fortune. We must sow if we would reap next year, and do well *our part* towards "Mother Earth." If we do, *we shall have a right to hope*, that she will yield the fruits of her increase to sons who have proved faithful, and that we may all "next time" reach that condition of mental quietude, and bodily enjoyment, said to be at all times so easily perceptible in the physiognomy and deportment *of the man who has corn for sale!*

## The Marion Visitor.

A new weekly paper, published at Marion, Smythe county, Va., by Messrs. George J. Curtis and James W. Kennedy. Price, two dollars a year in advance.

We have received the first number of the above paper. It is neutral in politics,—gotten up in creditable style and good taste, and gives promise of being conducted with dignity and ability. One of the cardinal principles laid down by the Editors—as honourable to themselves as it is important to the character of journalism—is this:

"The feelings of all shall be respected; and we shall give to the "Visitor" a dignified and respectful tone—a feature which should characterize every public journal. We have no taste for personal detraction and recrimination, or an attack on private character. Our object is, to promote the cause of Truth; and truth needs no such aid to advance her cause."

We have transferred the above to our columns with pleasure, and will venture to hope that the faithful enforcement of the principle, in the future conduct of the paper, will be found to be entirely compatible with the complete success of the enterprise.

## Vinwood Grape Nursery.

We are indebted to the courtesy of the proprietor, Mr. J. D. Ingersoll, for his Catologue of Grape-vines, cultivated at the above establishment at Ilion, Herkemer, N. Y., for the autumn of 1858 and spring of 1859.

## Important to Stock Raisers.

We have seldom met with an article embodying, as concisely, such useful, practical instruction, on any one subject, as that on our 597th page, entitled "The Pernicious Influence of Water and Watery Food on Young Stock." We earnestly commend it to the especial attention of our readers.

## New Biographical Series for Youth.

Messrs. J. Woodhouse & Co., of this city, have laid upon our table the three first of a series of American Biographies, which, when completed, will comprise ten or twelve volumes. They are written by George Canning Hill, and published by Messrs. E. O. Libby & Co., Boston.

"In pursuing his original plan along to its termination," says the author, "he has set before himself the following objects, to which he invites the reader's attention:

"To furnish from the pages of the world's

history a few examples of true manhood, lofty purpose and persevering effort, such as may be safely held up either for the admiration or emulation of the youth of the present day;

"To clear away, in his treatment of these subjects, whatever mistiness and mustiness may have accumulated, with time, about them, presenting to the mental vision fresh and living pictures, that shall seem to be clothed with naturalness and vitality;

"To offer no less instruction to the minds, than pleasure to the imagination, of the many for whom he has taken it in hand to write;

"And, more especially, perhaps, to familiarize the youth of our day with those striking and manly characters, that have long ago made their mark, deep and lasting, on the history and fortunes of the AMERICAN CONTINENT."

The volumes we have received consist of the following:

1st. The Life of Capt. John Smith—The Founder of Virginia;

2nd. The Life of Gen'l Israel Putnam—The hero of Wolf's Den and Horseneck;

3rd. The Life of Benedict Arnold—The Traitor.

The two first are well chosen "examples of true manhood, lofty purpose," &c.; but how comes it that the Traitor Arnold finds a place in such company? Let the author answer. "I am sure"—says he—"it is needless to add that the life of Benedict Arnold offers no such example. . . . . Yet, it is not impossible, that the highest forms of manhood may be studied, sometimes, by the contemplation of the strongest contrasts."

Our youthful readers, then, will accept the third as a counter-charm to the very pleasant and inspiring narratives in the two first, and derive additional incitement to that which is virtuous, and noble, from the contemplation of the fearful retribution reaped by the detestable Traitor as the wages of his most heinous sin.

We commend these volumes to popular favor. They are of uniform appearance, and very creditable to the taste and liberality of the publishers, for the neatness of the style in in which they are finished.

## Manures.

We commence in this number of our paper, the publication (from the Transactions of the Virginia State Agricultural Society) of the Premium Essay of Edmund Ruffin, Esq., "*on the economy of farm-made putrescent manures, —in reference to their preparation, preservation, and best application.*" It is too long for insertion *entire*, in one number of the Planter, and too good in all its parts to admit of abridgment, without detracting from its value as a Manual of Instruction. This purpose it is well adapted to subserve, both from the convenient and systematic order of its arrangement, and from the eminently practical character of its directions. It admits, however, of convenient subdivision, into three, nearly equal, parts, and will, therefore, be continued and completed in our November and December issues.

We also publish, from the Society's Transactions, another Premium Essay, by Dr. Richmond A. Lewis, of this city, "*on Vegetables as fertilizers of the soil—their necessity and mode of action, and the Vegetables best adapted for fertilizers, chemically and practically considered.*" We commend it to our readers as an able and well sustained argument in support of the thesis announced in its title, and also as a valuable compendium, or hand-book, of science applicable to the subject of vegetable manures.

While on the subject of these premium essays, we cannot forbear to express our surprise that the Transactions of the Virginia State Agricultural Society—replete as they are with practical and scientific instruction on some of the most important branches of husbandry—should be treated with almost total neglect, when, at an expense of from 25 to 50 cents a volume, according to size, a rich treasury of Agricultural knowledge might be possessed by every farmer willing to adventure his dollar for a dollar's worth thrice told.

## De Bow's Review for September.

The new and enlarged series of this work, which commenced in July last, is most successfully continued, and those who are still intending to send on their names should do so at once, so as to be supplied from the beginning of the series. The terms are $5 per annum. For a club of three, $10 in advance. Address Washington or New Orleans. The old series of xxiv volumes may also be ordered.

The editor announces his intention to resume, after December next, permanently, his residence in New Orleans, at which point the main business of the work will then be conducted.

CONTENTS OF SEPTEMBER NUMBER.

Trans-Atlantic Telegraph; American Coal Fields; Geographical and Statistical Society; Justice Even From the North; Diplomatic Relations with Mexico; Agriculture—Commerce—Manufactures; Internal Improvements—Education; Editorial, &c.

## The Kentucky Farmer.

We have just received the first number of "The Kentucky Farmer," a new monthly paper, published at Frankfort, "devoted to Horticulture, Agriculture and Stock-Raising, and their kindred arts and sciences"—a quarto of sixteen pages, at one dollar per annum—printed on fine white paper and clear new type—and quite imposing in its artistic arrangement and mechanical execution. The Editor makes his *debut* in a very neat and graceful "salutatory," and like a brave Kentuckian, enters upon his work with the avowed "intention of deserving success, and a full determination to achieve it." We cordially offer him the right hand of fellowship, and welcome him into the Editorial Fraternity, earnestly commending his enterprise to the public generally, and especially to the intelligent farmers of Kentucky, invoking at their hands a support worthy of themselves and of his cause, and such coöperation as will enable him to sustain a high character for his paper, and make it a valuable and popular exponent of the Agricultural interests of that rich and renowned commonwealth.

We are indebted to Messrs. Wm. R. Prince & Co., of the Linæan Botanic Gardens, of Flushing, N. Y., for their descriptive catalogue of select varieties of strawberries, &c.

## Virginia Central and United States Agricultural Societies.

It is known to our readers that the United States Society will hold its next Annual Exhibition in this city, in connection with the Virginia Central Society. We received from the Secretary of the latter, a copy of the very liberal Schedule of Premiums offered by the United States Society, but too late for our September number, in which we should have been pleased to have published it, had we received it in time. The Exhibition is now too near at hand for any valuable purpose to be accomplished by its publication. There is reason to think that the public expectation of a brilliant and successful Fair is in no danger of disappointment, and we sincerely hope these favorable auguries may be fulfilled. We also hope it will be the means of contributing, essentially, to the interest and success of the State Society's Exhibition, to be held in Petersburg during the week following.

The Editors of the "Scientific American," and "The Plough Loom and Anvil," have our best wishes for their success and continued prosperity. Both papers are well known and deservedly appreciated in the Agricultural, and Mechanical Communities. The prospectus of each will be found in our advertising columns.

Major Philip Williams is our authorized agent to receive subscriptions, and give receipts for us. See his card in our advertising sheet. Our subscribers in Washington City, and Georgetown, D. C., will confer a favor on us by settling their bills with him.

August & Williams.

## To Subscribers.

In consequence of the change in the Proprietorship of the "Southern Planter," it is very important that our subscribers should remit the amount of their indebtedness with as little delay as possible.

The amount due from each subscriber is in itself comparatively trifling, but in the aggregate it makes up a very large sum, and if each subscriber will consider this as a direct appeal to *himself*, and promptly remit the amount of his bill, it will be of infinite service to us.

We commence sending with this number the bill to each subscriber who is in arrear, and shall continue to do so until all shall have been sent out. We ask, as a favor, a prompt response from all.

The bills are made up to 1st January next. The fractional part of a dollar can be remitted in postage stamps, or the change returned in the same.

August & Williams.

## To Postmasters and Others.

We are satisfied, that with proper exertion, any person who will interest himself for us, will be able to make up a list of *new* subscribers for the "Planter," in almost any neighborhood, in this or any other of the Southern States. We offer, as an inducement to those who are disposed to aid and encourage us in our efforts to extend the circulation of this paper, the following premiums in addition to our hitherto published terms:

To any person who will send us clubs of

3 *new* subscribers and $6,— .

The So. Planter for 1857.

6 *new* subscribers and $12,—

The So. Planter for 1857 and '58.

9 *new* subscribers and $18,—

The So. Planter for 1857, '58 and '59,

15 *new* subscribers and $30,—

The So. Planter for 1857, '58 and '59, and a copy of the Southern Literary Messenger for one year.

To single new subscribers we will send *the present* volume, (commencing with the number for January, 1858,) at the low price of $1 50, *paid in advance.*

We call upon every one interested in promoting the progress and improvement of agriculture, to lend us his aid in contributions of original articles on practical or scientific agriculture, in order that our paper may continue to be worthy of the confidence and support of those who have hitherto so liberally sustained it, and to whose interests its pages will continue to be zealously devoted.

August & Williams.

*For the Planter.*

## Epidemic amongst Cattle.

Mr. Editor:

Agreeably to your wish, I give my experience of the disease which has been so fatal amongst cattle in the part of Ireland in which I then resided, and the practical results of my mode of treatment, &c.

*Symptoms.*—At the first appearance of the disease, the cow is less active; its flanks drawn up; its nose or muzzle warm and dry, instead of its natural coolness and moisture; the eyes troubled or suffused; the inside of the eyelids red; the horn near the roots warm, and great tenderness over the spine under pressure; pulse quicker than natural—up to sixty or seventy in the minute; the animal refuses its food, but is anxious to drink, and is unwilling to lie down. If the cow is giving milk, its secretion is suppressed; the urine is scanty and high coloured; the bowels constipated; the dung being dry and hard. If the disease is allowed to go on uninterruptedly, the animal is troubled with a cough, and utters a moaning sound with each respiration, and discharges a thick mucous from the mouth and nose.

*Treatment.*—On the first appearance of the disease, let the animal be bled from a large orifice, until symptoms of fainting appear. This may be done in six or eight hours again, if the pulse has risen again or the cough continues very urgent. In about an hour after the first bleeding, let a brisk purgative be given, as a pound and a half of epsom salts, with two drachms of ginger, and a pound of molasses. If this dose does not operate in six hours, let another dose be given of a pound and a half of epsom salts, and one drachm of tartar emetic.

In this stage of the disease the mouth, tongue, and every part of the throat has become ulcerated so that the animal cannot make use of any rough food. A nourishing material, such as bran-mash, should be given, and continued until the mouth is well.

*Treatment of the Mouth.*—Prepare a wash of vinegar mixed with a little *arminian bole;* then get a piece of stick about a foot in length, fix a piece of sponge on the end of it, and have the mouth opened and well washed with the above preparation twice a day, until the animal shows an inclination to eat the mashes you have prepared.

I only add, that the above recipe had the desired effect with me.

J. H. Butterfield.

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This disease is, we believe, now rapidly disappearing. Where prompt treatment was resorted to, in the way of "swabbing" the mouth with caustic or strong astringent lotions, and the administration of purgatives, but little damage resulted from the attack. We had but one case in our herd of cattle, and that yielded readily to an application of lime and salt sprinkled over the tongue, and rubbed on the inside of the jaws. This case, we suppose, was a very mild one; but presented the usual symptoms of lameness and stiffness at the outset—followed by a profuse salivary discharge, and soreness of the mouth.

A friend who had the disease among his herd, sends us the following prescription, which he used very successfully in the treatment of several cases—none of which he lost.

| | |
|---|---|
| Take of Soot, | 1 pint. |
| " Salt, | 1 " |

| | | |
|---|---|---|
| Take of | Water, | 1 pint. |
| " | Bl'k Pepper, | 1 table-spoonful. |
| " | Cayenne do | 1 " |
| " | Tinct. assafœtida, | 1 " |

Mix. Dose table-spoonful three times a day. The animal to be kept in the shade, and purgatives to be used as occasion may require.

*From the Canadian Agriculturist.*

## The Dinner at the Chester Meeting of the Royal Agricultural Society, England.

The dinner was numerously attended, and several distinguished foreigners were present, among them Mr. Sanford Howard, of the *Boston Cultivator*. We subjoin the greater portion of the eloquent and suggestive speech of the Right Hon. W. E. Gladstone, M. P., a distinguished statesman, merchant, and scholar, which will be read with nearly as much interest on this side the Atlantic as in the mother country:—

The Right Hon. W. E. Gladstone, M. P., was received with loud cheers. He said:

*My Lords and Gentlemen*—I am quite sure that I could not fail of addressing what would be acceptable to you this evening if only it were true that the subject with which a man has to deal inspires with it ideas that appropriately belong to it; for you have chosen me, my lord—and its only in obedience to your commands that I acquiesce in your choice—you have chosen for me an undeserved honour in entrusting me with the charge of proposing to this company that they should drink what every man will drink with the utmost satisfaction and joy—"Prosperity to the Royal Agricultural Society of England," (applause.) For this is a toast, my lord, that carries written upon its very brow, the whole of its claims to an enthusiastic reception, (applause.) A society founded under the highest auspices, a society which invites in its support every class of the community; and which, therefore, is itself among the efficacious means of exhibiting to the world the union of classes, without which there is no strength in any community—(applause)—and with which every community is irresistible and indestructible; and this society is so founded, and so combines the universal suffrages of the country, directed, as it is, to such a purpose as that of promoting the most essential and the most venerable among all the arts that furnish material for the industry of man, (applause.) Whatever else may come and whatever else may go, this at least we know, that no vicissitude of time or change can displace agriculture from the position it has ever held—(Hear, hear)—from the very first state of the generation of man until the last day in the crack of doom itself, (cheers.) Now, my lord, as one having indeed little claim to address you, but not uninterested in agriculture and its results, I will state in a few words to this company why it is I think we ought to feel grateful to the Agricultural Society, for having chosen Chester as the scene of one of its meetings, and for the general prosecution of its labours, with that energy, intelligence, and success that have ever marked its progress. In the first place I take it, that it is of the utmost importance to agriculture, that it should have the means of recording its ascension and its decline. We must not suppose that because it is an ancient art, and one that has been prosecuted in its simplest forms, it is therefore otherwise than an art which, of all others, perhaps, affords the most varied scope and the largest sphere of developement to the powers of the human mind, (Hear, hear.) And it is most essential, if, indeed, it be true, as true it is, that a large part of the national welfare hangs upon its prosperity—it is most essential that you should have the best and most efficacious means of comparing its state in one year with its state in another—of recording for future encouragement the progress that has been achieved in the past; and if perchance a time should come when in any one of its branches of enterprise some partial failure should be perceived, that that failure should be noted at the first moment when it becomes visible, in order that the sense of the defect may lead to its being at once repaired, (Hear, hear.) My lord, I think it may be truly observed that this—I must say distinguished—I may say illustrious society, appears to me to supply a want which is the greatest inherent want of agriculture. If we look to the case of manufactures, it is their nature to collect themselves in enormous masses around great centres of industry. If we look to commerce, incessant communication between every part of the commercial system of the country is the very vital it breathes, and is naturally inseparable from commercial development. But with agriculture the case is different; for, on the contrary, its nature is to be gathered around local centres, which, under ordinary circumstances, have little or no connection or communication with one another. It is, in comparison, an isolated art, and therefore it might follow, under general circumstances, that agriculture was languishing in various quarters of the country, simply from the want of a knowledge of the progress achieved in other portions of the land. (Hear, hear.) Well, now, if I am right in saying that this is the besetting danger and difficulty of agriculture, is it not true and obvious that the society, whose festival we commemorate to-day, is, by the very principles of its construction, adapted effectually to supply that want—(Hear, hear)—for its business is to bring together the men and the minds of all

portions of the country. The stock of Devonhire, the horses of Suffolk, the various products of England, are exhibited in the yards o-day. The agriculture of England, through he means mainly of this society, is rapidly ataining to the position to have but one heart nd one mind—one common pulse that causes he circulation of the vital fluid throughout the whole system—one common stock, into which verything that skill, that industry, that inteligence, that capital had achieved in every ingle part of the country, made the common roperty of the other portion of the country, applause.) Well, again, my lord, I will venure to give another reason why myself, an uninterested person, ventured to feel a sentinent of gratitude to those who, in this matter, gives us the benefit of their instruction. If ve look to the trade of the farmer, it seems to ne to stand distinguished from all other trades —not in the less, but in the greater amount of he demand that it makes upon his mental owers. In point of fact, if we are to regard he farmer as an isolated man, he has got to truggle with everything. He ought to understand the whole universe in which he lives, nd almost every science that belongs to the ntire range of the human intellect. He ought o be profound in meteorology; he ought to be consummate chemist; he ought to have such knowledge of birds and animals as scarcely life could acquire. He ought to be a machinst of the first order; and in point of fact there s no end to the accomplishments which the ndividual farmer, to be a good farmer, if he tand alone, ought to possess. (applause.) And f I take the case of two men setting out in ife with a moderate capital at their command —say two men who have £5,000 to dispose of; nd the question being whether they are to nter into some ordinary trade, or whether hey are to enter into the business of farming, say that man who takes his £5,000 to stock farm, which is let to him as a tenant farmer, will require far more of intelligence in order o enable him properly to transact his business han if he opened a shop in some street in a reat city, (Hear, hear.) Well now, gentlenen, it is eminently desirable, but you will gree with me that it is not possible, that the armer should be a profound chemist, an accomlished meteorologist, and the possessor of hose other arts which it is desirable he should ossess. A pretty good knowledge of some of hem he may attain through practice, but he annot be possessed of every accomplishment ecessary. What has he to know of the workng of machines? Does not the comparative alue of machines turn often on matters of rofound calculation? What is he to know f the analysis of soils? What of the manures which he employs? Here, again, comes in he Royal Agricultural Society. The Royal Agricultural Society applies to the machines hat are offered to your patronage, the severest test that science has devised. It applies to the manures with which you are to fertilize the ground, those searching analysis which enable you to know with what materials you are dealing; and, in point of fact, in general enables you to prosecute the arduous path of improvement under the safeguards and guarantees of a knowledge which no single individual can possess, but which this society amasses and accumulates, brings to the door of every man, and places therefore at his disposal, (applause.) Well, now, my lord, I think, reasons enough why we should be grateful to the Royal Agricultural Society for having come here to hold its meeting in the ancient and venerable city of Chester. I feel indeed ashamed to be the organ, in any sense, of the sentiments of this neighbourhood, when I remember the recency of my own connection with it, and when I recollect that I speak in the presence and in the neighbourhood of those whose families have been rooted to the soil for more centuries almost than I could count years. But, at the same time, I cannot help feeling how appropriately this scene has been chosen for the present anniversary. In this town we meet under the shadow of a venerable cathedral. We meet in a city which derives its name from a denomination established in England 2,000 years ago. But yet we see this ancient city, which has been lately subjected to the influence of change—we see it now becoming the centre of the new traffic—stretching forth the arms of its suburbs right and left, and promising so to flourish and to grow that the Chester of the eighteenth century will by-and-by be scarcely recognized in the expanded dimensions of the Chester of the nineteenth. It associates the new and the old—it associates them as they are associated by the Royal Agricultural Society, which, aiming at the improvement of the one great primitive pursuit of man, brings to bear upon the primitive pursuit of every discovery of history, all the patient thought of to-day, all the hope of to-morrow and the future, (applause.) And let me add this—for I am sure, if there be one cause more than another that has given to this society its place in your universal confidence, it is that which I am about to mention. I have no doubt you love it for the purposes to which it is directed. I have no doubt you rejoice in the union of classes which it exhibits. But, as it appears to me, there is nothing more admirable in its constitution and machinery than that prevailing spirit of publicity and fair play which attends the whole of the proceedings, (applause.) It has functions to discharge which involve the reward of merit. The reward of merit, involves constant comparison of merit. The comparison of merit necessarily grates upon the feelings; and yet, notwithstanding, here is a body which deals with every kind of product of agriculture, and every kind of instrument applicable to agri-

culture, which yet continues to retain universal confidence—the confidence alike of the victors and the vanquished in their honourable strife, (cheers.) And why is this? It is because its proceedings, like all other agricultural proceedings, pretty nearly, are completely in the face of day. There is no secret about its details. The spirit of secrecy it abhors. Everything that is done is done subject to the free judgment of Englishmen. The judges themselves, who pronounce upon your performances, are judged, in your free, unlicensed, and unrestrained liberty of communication. And the spirit that I believe has, more than anything else, tended to preserve for us the vital power of our public institutions—I mean that of a thorough, and unshrinking, and unswerving publicity—is the spirit which we regard as the guarantee of fairness, and is the spirit to which every proceeding of this society appears to be made to conform. (Hear, hear.) I cannot help reminding this company with reference to what has fallen from the distinguished Ambassador of France, that he, perhaps, has done us more than justice when he speaks of the benefits that the industry of his own country has received from the industry of ours. It is but fair that those acquainted with the history of the commercial, and particularly of the manufacturing progress of this country, should here publicly acknowledge in return for the compliment he has paid you, that it is to Frenchmen, and to the sedulous imitation of what Frenchmen have done, by their taste and skill, that we owe no small part of the rapid progress of the day to the manufacturing prosperity of England, (applause.) And to you, gentlemen, who know nothing, thank God, of rival interests as between class and class, to you I am sure it will be matter of deep satisfaction if you hear from authority so distinguished and illustrious the assurance that some part of the benefits at least which British manufactures have received from those of France have been repaid and compensated in what France has learned from the industry and skill of the British farmer, (applause.)

M. de Trebonnais said, the toast I have to propose is, "The Railways." If our age wanted an appropriate emblem to stamp its peculiar character in the annnls of history—if a great fact was wanted—who, among the living generations of mankind, would for a moment hesitate to proclaim with grateful and exulting acclamations, the words "railways," a mighty engine of peace, civilization and progress. Like living arteries, they propel through the land life, judgment and activity. They equalize the remunerations of our labour and industry by bringing the best markets to the door of our barns and the gates of our paddocks. With the swiftness of lightning, the resistless might of steam, they scatter abroad light, knowledge, and morality. They bring near distant men and things; they throw the broad light of comparisons into hidden corners, and deep-rooted prejudices which, beneath their benign influence, melt like the wintry snow before the beams of the spring sun; and raising our speculations to a more solemn and more exalted sphere, are the mighty instruments of God's providence, in promoting grace and good-will among men by fostering general acquaintances and connections between communities, and bringing within the ready reach of our wants and comforts all the treasures and luxuries which nature, the work of his almighty hand, has so bountifully scattered in endless profusion and variety all over the world? If as members of the great human family, we are bound to revere this toast with an enthusiasm commensurate with its merits, are we not more so, as agriculturists, as Englishmen or foreigners, and especially as members of the Royal Agricultural Society? Without the existence of railways, could the truly magnificent spectacle we now contemplate under the ancient walls of this city, have been displayed to our delighted admiration? Could the vast concourse of people which have flocked from this densely populated neighbourhood, from your blue Celtic hills, and even from foreign lands, have gathered together within the frail enclosure which contains such valuable riches? And lastly, let us contemplate with a moment's thought, the great influence this spectacle cannot fail to exert over the agricultural population of this district—an influence which, without the existence of railways, would have been confined and narrowed into a limited circle, (loud cheers.)

*From the Southern Homestead.*

## The Atlantic Telegraph.

We compile, from different sources at hand, the following sketch of this grand undertaking, over whose success the civilized world is now rejoicing:

In the year 1856, Cyrus W. Field visited England. The result of his visit was the formation of the Atlantic Telegraph Company, with a capital of £350,000, for the purpose of connecting Europe and America by a submarine telegraph cable. In August, 1857, an attempt was made to lay down the Submarine Cable, resulting in a disastrous failure. The cable was 2,500 miles in length, weighing near one ton per mile, capable of bearing a direct strain of over five tons without fracture. The centre of the cable was formed by seven fine copper wires, twisted into a cord 1-16th of an inch thick. This strand was coated with gutta percha, forming a small rope, ⅜ of an inch thick; then coated with hempen twine twice soaked in pitch and tar; lastly, an external sheathing of 18 iron wires, each wire being a strand of seven finer wires, making in all 126 wires.

The submersion was commenced on the 5th August, 1857. There were present the six steamers, Niagara, Agamemnon, Leopard, Susquehanna, Willing, and Mind, intended to assist in various parts of the operation. The cable came up from the hold of the ship, around a central block, so to the open space above decks; it was then wound round grooved sheaths, geared together by cogs, and firmly planted on girders. Thence it passed over a fifth sheath, out over the stern into the sea, sinking by its own weight. A trifling accident happened on the 6th; this was repaired; and on the 11th, 380 miles (statute) had been submerged. The engineer here concluded that there was too much "slack" in the cable's course, and some modification in the machinery was consequently made. This appears to have been badly attended to by a subordinate. The cable snapped, and thus ended the attempt of 1857.

It having been concluded from Lieut. Maury's calculations that the average state of the weather was much better on the Atlantic in the early part of summer, it was decided this year to make the attempt of laying the cable in June. It was also thought best to begin the submersion in mid-ocean, and pay out towards either shore. Accordingly the telegraph fleet, consisting of the United States steam frigate Niagara and her Majesty's steamers Agamemnon, Valorous, and Gorgon, left Plymouth on Thursday, June 18, 1858. The Niagara had 850 tons, and the Agamemnon 450 tons coal, and each about 1,290 nautical, or a little less than 1,300 statute miles of cable on board. The weather, at first favourable, became unusually boisterous, so that the fleet were not ready to commence operations until late on the 25th of June.

The first splice was made between the Niagara and Agamemnon on the morning of Saturday, the 26th of June, and after each ship had paid about three miles the eable broke on board the Niagara, owing to its overriding and getting off the pulley leading on to the machine. Both vessels put about and returned; a fresh splice was made, and again lowered over at half past seven. The paying out proceeded beautifully until early on Sunday morning, when the signals suddenly ceased. The cable was cut, and the Niagara repaired to the rendezvous. The cause of the rupture was equally mysterious to those on board the Agamemnon, and no satisfactory conjecture has since been made.

The cable was again spliced on the 28th, and the steamers parted. Everything worked beautifully during the night and the next day. But at 9 o'clock, P. M., on the 29th, the announcement of "no signals" was made on board the Niagara. At the time 142 miles of the cable had been paid out. It was subsequently ascertained that the cable parted, for some reason unknown, about six fathoms from the stern of the Agamemnon. About 400 miles of cable were lost during these trials, the effect of which upon the public confidence in the final success of the undertaking was most depressing.

But the managers continued indefatigable. The fleet sailed a second time from Queenstown on the 17th of July, joined the cable on the 29th, and on the 5th of August the world had news of SUCCESS.

The cost of the telegraph cable has been put down as follows:

| | |
|---|---|
| Price deep sea wire per mile, . . | $200 |
| Price spun yarn and iron wire per mile, . . . . . | 265 |
| Price outside tar per mile, . . | 20 |
| Total, . . . . . | $485 |
| For 1,500 miles, . . . . | $1,212,500 |
| For 10 miles deep sea cable, at $1,450 per mile, . . . . | 14,500 |
| For 25 miles shore ends, at $1,350 per mile, . . . . | 31,280 |
| Total cost, . . . . . | $1,258,250 |

Professor Morse has already a world-wide reputation. The first forty miles of line built in the United States was between Washington and Baltimore. There were then two operators. Now they exceed the army with which General Taylor won the field of Buena Vista against Santa Anna and his 20,000 troops! In immediate connection with the Atlantic Telegraph, Mr. Cyrus W. Field has made him a name that will never perish. It is due to his zeal and untiring energy more than to any other person, that the success has been achieved. Through his efforts the stock, $1,750,000, was soon subscribed—$505,000 in London, $440,000 in America, $430,000 in Liverpool, $185,000 in Glasgow, $140,000 in Manchester, and $50,000 at various other places in England. Subsequently the capital stock was increased to $2,500,000. Congress gave the use of two steamships for the laying of the cable, and granted an annuity of $70,000 a year for twenty-five years. The British Government were equally liberal.

The distance between Valentia Bay, Ireland, and Trinity Bay, New Foundland, is 1,950 miles.

It will be seen that the trans-atlantic submarine cable is somewhat differently made from any previously manufactured. The core, or conductor, is composed of seven copper wires wound together. The protecting wires are made into strands, each composed of seven of the best charcoal iron wires. The aggregate length of the smaller wires required in the manufacture of one mile of the cable is one hundred and twenty-six miles, and as there were three thousand miles provided for the attempt this summer, the whole cable was conse-

quently composed of three hundred and seventy-eight thousand miles of this wire, more than enough to pass fifteen times round the whole earth.

The first dispatches that passed over the Cable, were between the Queen of Great Britain and the President of the United States, which were as follows:

THE QUEEN'S MESSAGE.

Her Majesty desires to congratulate the President upon the successful completion of this great international work, in which the Queen has taken the deepest interest.

The Queen is convinced that the President will join with her in fervently hoping that the electric cable which now connects Great Britain with the United States will prove an additional link between the nations whose friendship is founded upon their common interest and reciprocal esteem.

The Queen has much pleasure in thus communicating with the President and thus renewing to him her wishes for the prosperity of the United States.

To the Hon. President of the United States.

THE PRESIDENT'S REPLY.

The President cordially reciprocates the congratulations of her Majesty, the Queen, on the success of the great international enterprise accomplished by the science, skill, and indomitable energy of the two countries. It is a triumph more glorious, because it is more useful, than was ever won by the conqueror on the field of battle. May the Atlantic Telegraph, under the blessing of Heaven, prove to be a bond of perpetual peace and friendship between the kindred nations, and an instrument destined by Divine Providence to diffuse religion, civilization, liberty, and law throughout the world.

In this view will not all the Nations of Christendom spontaneously unite in the declaration that it shall be forever neutral, and that its communications shall be held sacred in the places of their destination in the midst of hostilities.

Signed at Washington City, August 16th, 1858.

## Difference of Time.

The success of the Atlantic cable has called attention to the difference of time in various cities in different parts of the world. A table prepared some time since by Mr. John R. Burnet, gives the following interesting information. When it is 12 o'clock high noon at New York, the time is as follows at the stated places:

| | A. | M. |
|---|---|---|
| Newark, N. J., | 11 | 59 24 |
| New Brunswick, | 11 | 58 08 |
| Morristown, | 11 | 58 00 |
| Patterson, | 11 | 59 20 |
| Plainfield, | 11 | 58 12 |
| Princeton, | 11 | 57 16 |
| Trenton, | 11 | 57 00 |
| Burlington, | 11 | 56 32 |
| Easton, Pa., | 11 | 55 00 |
| Alton, Ill., | 10 | 12 28 |
| Buffalo, | 11 | 56 32 |
| Charleston, | 11 | 36 40 |
| Cincinnati, | 11 | 16 18 |
| Dubuque, | 10 | 53 00 |
| Harrisburg, | 11 | 48 44 |
| Macon, Ga., | 11 | 21 16 |
| Key West, Fla., | 11 | 28 22 |
| New Orleans, | 10 | 55 40 |
| Philadelphia, | 11 | 15 22 |
| Salt Lake City, | 9 | 27 40 |
| Oregon City, | 8 | 46 40 |
| Honolulu, S. I., | 6 | 24 08 |

| | P. | M. |
|---|---|---|
| London, Eng., | 4 | 55 42 |
| Montreal, | 12 | 01 44 |
| Sebastopol, | 7 | 10 28 |
| St. Petersburg, | 6 | 57 20 |
| Turin, | 5 | 26 52 |
| Jerusalem, | 7 | 17 24 |
| Hamburg, | 5 | 35 48 |
| Geneva, | 5 | 20 42 |
| Edinburg, | 4 | 42 16 |
| Constantinople, | 6 | 51 44 |
| Calcutta, | 10 | 49 56 |
| Madrid, | 4 | 40 32 |
| Bremen, | 5 | 31 20 |
| Athens, | 6 | 31 08 |
| Rome, | 5 | 46 03 |
| St. Helena, | 4 | 33 40 |
| Stockholm, | 6 | 08 20 |
| Liverpool, | 4 | 44 36 |
| Dublin, | 4 | 30 54 |
| Florence, | 6 | 41 24 |
| Albany, N. Y., | 12 | 01 08 |
| Lubec, Me., | 12 | 28 00 |

The difference of time between the extreme East and West points of the United States is 3 hours, 50 minutes. When it is Monday noon at New York, it is 6 58 a. m. Tuesday at Tabiti, and between 12 and 1 a. m. of Tuesday at China. In the China sea, between Singapore and China, it is midnight when it is noon at New York.

The time at St. Johns, New Foundland, is 1 26 08 p. m., and the difference in time between Trinity Bay and Valentia Bay is about 2 hours and 48 minutes.

*Richmond Dispatch.*

## God's Laws Illustrated by Science.

*Extract from a Discourse Delivered by Rev. Charles A. Smith, D. D., on the Completion of the Atlantic Telegraph.*

The stately steamer moves in majestic strength upon the broad deep ocean, a monu-

ient of the ingenuity and enterprise that ave applied to the ends of commerce the ex-ansive force of steam; so that now, seas and ivers are traversed with wonderful comfort nd speed; but God has appointed the law by vhich heat converts water into an elastic fluid f such immense power and unmeasured utili-y. Whether men employ this law in the pre-aration of their food, or in the movement of ie machinery by which their flour is made nd their fabrics are woven; whether on the ailway, speeding their freights of merchan-ize or living men along nodding precipices, nd over bridged mountain gorges; or on the cean, carrying on the intercourse of nations— is in every relation in which man has placed , God's law; and to him belongs the praise of very useful result which human discovery is llowed to bring out of it.

Electricity is known to be an important gent in the physical economy of the Universe. Vhether in the tempest, lighting up and re-ealing the intense gloom of the clouds, or im-risoned in the dew drop, or pervading the at-iosphere in the still hours of a star-lit night, is all the same. How far as an element of tility it is employed, science has not yet de-ermined, and we suppose never will. Much owever has been revealed, both as to its pre-alence and power; and investigation has gone ar beyond the vestibule in this department f inquiry. An eminent experimentalist has hown "that a single grain of water contains s much electricity as is developed from a harged thunder-cloud." Another has explor-d the secrets of a November mist, and has hown that "those who have pushed their way hrough these raw, cold, dreary phenomena, ave as often been sheeted in fire, and have almly passed through a furnace more deadly han Nebuchadnezzar's, without a hair of the ead being singed in the flames." And it is emonstrated in every telegraphic despatch, hat by chemical action this powerful agent nay be so evolved as to annihilate distance and ime, and bring men, as it were, face to face. Who would suppose, but for these experi-nents, that "streams of sparks" could be lrawn from the "drifting fog;" or that by a ombination so simple as the immersion of two netals in an acid, impressions of human hought would be borne, in a moment, hun-lreds of miles along the hidden pathway of the leep? There seems to be so much of the su-ernatural, so much of the miraculous about he process, that we almost dislike to talk of he simple physical means by which the phe-iomenon is produced. Now in the wide diffu-ion of an element that by the simplest adjust-nent of material substances, may be made to ring the very ends of the earth together, and n the laws on which this result depends, do we see the Omnipotent hand. That same hand rocks it to sleep in the spray of the ocean, and rouses it to intense action in the bounding thunder-storm, and endows it with its prerogative as the carrier of human thought from land to land. His is the will by which "the great forces of nature are curbed and muffled, when their activities would be injurious to man," and his the vigilance by which they are held subservient to useful ends.

For this is only saying that God is the First Cause—the Infinite Fountain from whence all causes and activities proceed. Take away the affinities which his wisdom has contrived, which his power has endowed, and what becomes of human ingenuity; and in what would investigation and experiment terminate, but in the absolute failure of any scientific results like those which mark the history of the present generation.

Man is not an originator. He but employs the materials which God has made ready to his hand. He only searches out and applies the laws which have been from the beginning. Man himself is but a monument, with other monuments of the same uncreated, all-creating skill; a miracle among miracles, gifted with prerogatives which make him the most stupendous of all the wonders of creative power on the earth; and yet only a creature, bound to recognize in all laws and influences the wisdom and the power to which he owes his existence.

——————"while the mists
Flying, and rainy vapors, call out shapes
And phantoms from the crags and solid earth,
As fast as a musician scatters sounds
Out of an instrument—"

He is but

——————"one
Among the many there,"—

an intelligent, and it may be an adoring spectator of the divine glory as it is reflected from field and flower; but yet, with field and flower, obligated to reflect that glory in a life of intelligent, humble acknowledgment and praise.

Again we see the propriety of the concession which science is making to the God of Revelation, in the fact that the powers of the human mind, that trace effects to their causes, and bring hidden laws to light, and adapt them to new relations, are his gift.

We talk of genius sometimes, as if it were and originator, when it is only an inspiration; not creating any thing, but gifted with the power of discerning and revealing what is already created. Man may be invested, and often is, with extraordinary endowments of mind, which qualify him to lay open hidden wonders in the path of discovery; yet these endowments are only a gift, and the larger and the more resplendent they are, only the more do they reflect the glory of the Infinite Givsr.

Human perseverance ought to be praised,

but not worshipped; and the achievements that grow out of it, while they should stimulate the energies of others, are only a proof that the man who has won them for his generation has been true to himself—true to his endowments and responsibilities. We would pluck no leaf from the chaplet of well-earned fame; but we would not forget to give God the praise of all the success which human energy has earned, as the Bestower of that energy, and the Creator of the laws through which it has wrought for human good.

PROGRESSIVE DEVELOPMENT A DIVINE LAW.

All this working of the mental powers, and the progressive development of scientific truth under their action, instead of taking any honor from God, only adds immeasurably to it. It would have been quite possible for the Creator to have revealed all the relations of physical laws at once to the human mind, instead of making the revelation to depend upon its own activities. But then the mind itself would have lacked its present elevation and grandeur; would have been a very different thing from what it is—a mere surface on which to produce impressions, instead of an instrument of intelligence, capable of tracing analogies, and bringing to light the hidden relations of things. According to this plan, the race would have been stationary, instead of progressive, and though there would have been no danger of deterioration, neither would there have been any hope of advancement. The highest endowment of humanity then would have been instinct instead of reason; and while the human being might have possessed more than the skill of the beaver or the bee, it would have been a possession quite incapable of enlargement. The glory of our race, the glory of every individual intellect, is the capability of progress; and better far the danger of relapsing into the lowest condition of savage ignorance, with no sphere of enterprise or ambition beyond that of the bow and the rod; better far have that the starting point of humanity, and yet have the capability of pressing on indefinitely in the career of improvement, than to have a fixed state, however far beyond the point of savage simplicity that might be. The glory of angelic minds consists in the ability of knowing more of God—of searching out his ways—of investigating the laws according to which his vast and varied administration is conducted. It is said of the angels that they desire to look into the mysteries of Redemption. And this desire denotes that there is something for them yet to learn—that they are progressive beings, with illimitable fields of inquiry out before them, over which they are permitted to expatiate, and out of which they are allowed to gather continually fresh testimonies of omnipotent power and love. And in this, man's nature is linked to theirs. He has a lower starting point, but the ladder is before him, and he can mount it just as surely as they.

If then the mind is endowed with capacities that enable it to unfold one by one the mysteries of nature; to discover hidden laws and apply them to new and wonderful ends—i only adds to the glory of Him who has gifte the human intellect with such transcenden powers. Whether it be Galileo pointing hi telescopes to the satellites of Jupiter, or de monstrating the truth of the Copernican sys tem; or Newton studying the lunar motions and revealing a guide in the firmament whic should point to the mariner the way across th deep; or Oersted bringing to light the electro magnetic principle, which "was to transmi with the velocity of lightning" man's utter ances to man; just as little has the intellect t boast of in all these achievements, as had th prophets of old, when they lifted the veil o the future, and unfolded to their own times th coming destinies of ages.

And there is still another obvious consid eration that falls naturally in the line of ou argument here; and that is the adaptation o the times to the event. The telegraphic unio of the two continents has been reserved fo this century, and for the present year of thi century. And all we know of the divin methods forbids that we should regard this a a mere coincidence, to be ascribed to nothing but chance, or the force of human energy ac complishing ends, over which the divine in sight has no control. This adaptation of phe nomena, whether they be political, moral o scientific, or physical even, to the circumstance of the periods in which they occur, is shown i all history. Strange would it be, if this exac fitting of events to the circumstances that de mand them, or render them desirable, shoul not constitute part and parcel of a divine, un failing purpose. If God is in history—in th adjustment of its occurrences—in the shapin of its revolutions—in the progress and fal of empires—so is he also in science; not simply in the laws on which scientific discovery de pends, but in the peculiar adaptation there i in every new development, to the age in whic it transpires. If there was a fullness of tim for the proclamation of the Gospel to the whol world, and for the coming of Him whose deat opened the way for man's recovery from sin so is there a fullness of time for every even that has a bearing upon the world's progress Columbus went not on his errand of discovery until the seeds of intellectual and religiou freedom had begun to spring up in the Ol World, ready for a new planting and a fulle development in the New. Luther found no the Bible in the cloister of Erfurt, until th press was ready to light the torch of truth i ten thousand minds. Let infidelity say what i will of the floods of water that swept away the race, and of the floods of fire that descend ed upon the guilty cities of the plain, and cal

hem, if it will, but natural phenomena instead f divine judgments—nothing could have been nore appropriate, it is certain, than these oc- urrences, regarded as the vindications of an utraged moral law. If they were the results f chance, then there chanced to be a most re- narkable adaptation, to say the least; or if hey flowed in the current of nature's inflexi- ble laws, then the working of these laws, and he demands of the insulted majesty of heaven, were strangely coincident. Faith reasons other- wise. She believes events are made for ages; nd that scientific investigation will be allowed o bring new truths and new applications of liscovered principles to light, only so far and o fast as the moral, and political, and social preparedness of the world will warrant. If it was needed that Israel should have a school erm of forty years in the wilderness, and of four hundred previous years in the land of ondage, before it was fitted for an independ- ent national existence, so was it needed that he world should have a school term of six housand years, and that the Christian world should pass through its minority of eighteen hundred years and more, before electrical science shall annihilate, as it were, "one of the great oceanic gulfs of the globe," and be- fore telegraphic wires should belt the world, and create a new era in its social, commercial, and moral intercourse.

Is there no divine management in the fact that scientific discovery and invention are keeping pace with the progress of Christianity? Is there none in the fact that to the most prominent Christian nations—those among whom worship is free, and who are doing most for the world's enlightenment—was reserved the privilege of realizing the last and greatest achievement of science? If there is not an intimation here of divine supervision, we know not where, in the ordinary events of history, to find it.

At what period could such an achievement have harmonized more completely with the manifest wants and preparedness of the na- tions? Completed just when the two countries engaged in its construction are more than ever, we believe, disposed to preserve the peace of the world, and when there is less likelihood than at any former period of their own inter- course being disturbed by antagonistic inter- ests and intense jealousies—just when it is conceded that their united moral power is greater than that of all other nations com- bined—just when the doors of the most popu- lous empire on the face of the earth are thrown wide open to the influence of Christi- anity—just when the tribes of men are more disposed than ever to listen to the messages of peace which it brings—when steam is driving the press, and a thousand writers pledged to Christianity are driving the pen, and when hu- man thought is intensified in the right direc- tion beyond any former precedent; what could have been added to the agencies of human progress more influential than this; what other period could have been chosen when its power would have been more advantageous to human good?—*Christian Observer.*

## University of Virginia—School of Modern Languages.

At their recent meeting, the Board of Visitors made important improvements in the School of Modern Languages. Here- after, its force of teachers will consist of a Professor and three Assistants. Great care will be taken to teach the students, not only to read and write the Modern Languages but to *speak* them easily and correctly, and for this precision, the sever- al classes will be thoroughly drilled in sec- tions by competent instructors who are *na- tive* to the languages they teach. Such a measure is urgently required by the in- creasing importance of a familiarity with these languages, and a ready command of them in conversation.

While the practical advantages of the School are thus increased, the Professor will be able to give a corresponding exten- sion to its scientific importance. More time can be given to the History of the Literature of the several languages and there will also be taught the History of the languages themselves, the general princi- ples of the formation and growth of languages, and of Comparative Gram- mar and Philology, with the laws, which regulate the formation of new words and of new grammatical forms, where differ- ent races are intermingled

*Jeffersonian Republican.*

## Selecting Seed Corn—Timely Hint.

Farmers will remember that for two or three years past, a great deal of corn came up badly. Last spring, especially, much of it "rotted" in the ground. The loss from this cause is hundreds of thousands the present season. On our own ground (with some 14 acres in corn) the loss was next to nothing. The same is true of some others we could name. What is the reason of the difference? Why does the seed in one field grow, and in another rot? That is just what we wish to come at.

One great cause of the rotting of seed, is that it was never *well ripened.* Another reason is that it is *badly dried.* Poorly ripened and badly dried seed is very little

fermentation, and moulding will destroy vitality. Last autumn, we had the best, largest and ripest ears carefully selected, and braided together by the husks in tresses, and hung in a dry place. This was planted, and notwithstanding the drenching rains and mud, all came up,—not a missing hill or stalk,—and the field is noted as one of the best in the county.—The same has been the experience of some others. Those who made selection and took no care of their seed, have had "very bad luck." Another field was planted with King Philip corn, not trussed; but as this sort ripens so early and perfectly, this operation appears not necessary. It came up as evenly as the other.

Let farmers select their best and ripest ears, and either truss and hang them up, or place them, in the ear where they will dry thoroughly, (unless it be some very early, quickly ripening sorts,) and there will be better success and *better luck* with the corn crop.—*Country Gent.*

## POETRY.

*Selected for the Southern Planter.*

### Music of Labour.

* * * * *

I love the plowman's whistle,
The reaper's cheerful song,
The drover's oft repeated shout,
Spurring his stock along,
The bustle of the market man,
As he hies himself to the town;
The halloo from the tree top
As the ripened fruit comes down;
The busy sound of threshers
As they clean the ripened grain;
The husker's joke and catch of glee
'Neath the moonlight on the plain;
The kind voice of the drayman,
The shepherd's gentle call—
These sounds of pleasant industry,
I love—I love them all.

Oh, there's a *good* in labor,
If we labor but aright,
That gives vigor to the daytime,
A sweeter sleep at night,
A good that bringeth pleasure,
Even to the toiling hours,
For duty cheers the spirit,
As dew revives the flowers;
Then say not that Jehovah
Gave labour as a *doom*,
No!—'Tis the richest mercy
From the cradle to the tomb.
Then let us still be doing
Whate'er we find to do,
With cheerful, hopeful spirit,
And free hand, strong and true.

### The Farmer's Guide.

"'Tis folly in the extreme to till
Extensive fields, and till them ill.
The farmer, pleased, may boast aloud
His bushels sown, his acres ploughed,
And, pleased, indulge the cheering hope
That time will bring a plenteous crop.
Shrewd common sense sits laughing by,
And sees his hopes abortive die,
For, when maturing seasons smile,
Thin sheaves shall disappoint his toil.
Advised, this empty pride expel;
Till little, and that little well.
Of taxing, fencing, toil, no more
Your ground requires when rich than poor;
And more one fertile acre yields
Than the huge breadth of barren fields."

"Neat be your farms: 'tis long confessed
The neatest farmers are the best.
Each bog and marsh, industrious, drain,
Nor let vile balks deform the plain
No bushes on your headlands grow
Nor briers a sloven's culture show.
Neat be your barns, your houses neat,
Your doors be clean, your court-yards sweet;
No moss the sheltering roof enshroud,
No wooden panes the window cloud,
No filthy kennels foully flow,
Nor weeds with ranklin poison grow;
But shades expand, and fruit-trees bloom,
And flowering shrubs exhale perfume.
With pales your garden circle round:
Defend, enrich, and clean the ground;
Prize high this pleasing, useful rood,
And fill with vegetable good."

"Let order o'er your time preside,
And method all your business guide.
Early begin and end your toil,
Nor let great tasks your hands embroil:
One thing at once be still begun,
Contrived, resolved, pursued and done.
Hire not for what yourselves can do,
And send not when yourselves can go;
Nor till to-morrow's light delay
What might as well be done to-day.
By steady efforts all men thrive,
And long by moderate labor live;
While eager toil and anxious care,
Health, strength, and peace, and life impair.

"Nor thine a life of toil severe;
No life has blessings so sincere.
Its meals so luscious, sleep so sweet,
Such vigorous limbs, such health complete,
No mind so active, brisk and gay,
As his who toils the livelong day.
A life of sloth drags hardly on;
Suns set too late and rise too soon.
Youth, manhood, age, all linger slow
To him who nothing has to do.
The drone, a nuisance to the hive,
Stays, but can scarce be said to live;
And well the bees, those judges wise,
Plague, chase and sting him till he dies."