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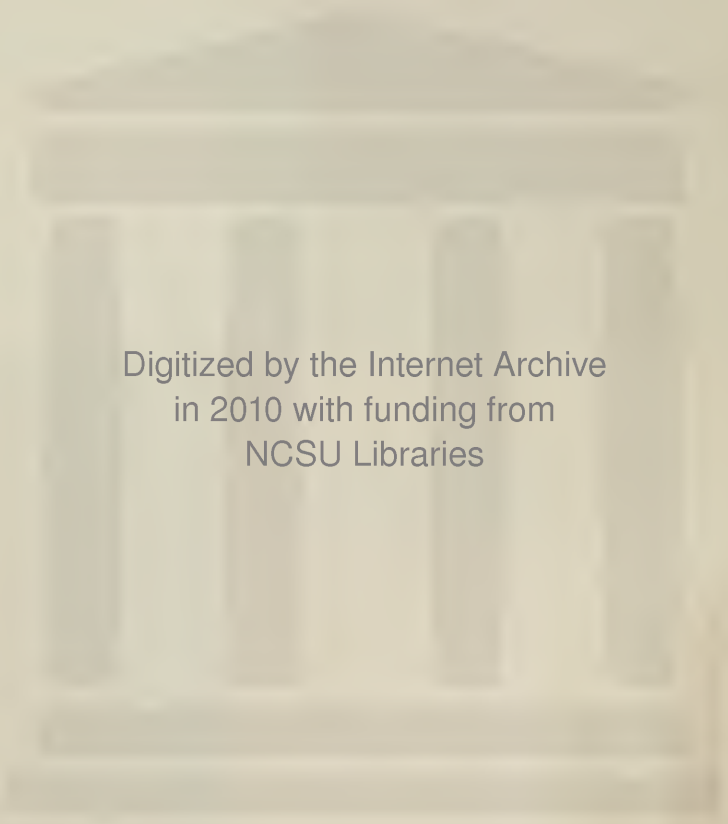
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THE

SOUTHERN PLANTER

DEVOTED TO

Agriculture, Horticulture, and the Mining, Mechanic and Household Arts.

Agriculture is the nursing mother of the Arts.—XENOPHON.
Tillage and Pasturage are the two breasts of the State.—SULLY.

CH: B. WILLIAMS, - - - - EDITOR AND PROPRIETOR.
WM. L. HILL, - - - - GENERAL AGENT.

New Series. RICHMOND, VA., MARCH, 1867. Vol. I.—No. 2.

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Agricultural Department.

[From the Transactions of the Highland and Agricultural Society.]

On Breeding and Rearing Cattle.

BY HENRY TANNER,
Professor of Agriculture, Queen's College, Birmingham.

[PREMIUM—THE GOLD MEDAL.]

[No. 1.]*

This subject is invested with deep interest, for it involves one of the most important branches of agricultural industry. Errors are often multiplied and perpetuated, and consequently must be more jealously avoided. The management of breeding cattle claims our most careful attention, because not only are the sources of remuneration from many districts chiefly dependent upon it, but the profits of every farm are, in a greater or less degree, under the influence of the system adopted, whether good or bad. I shall at once proceed to notice those points which appear to me to be of the greatest importance, and which I believe to be worthy of consideration in Breeding and Rearing Cattle.

I need scarcely stay to remark that, by the process of domestication, our breeds of cattle have undergone great changes of form, both externally and internally; so much so, indeed, that there is scarcely any part of the animal which has not yielded to the change of circumstances which has resulted from their being brought under

* Divided into numbers by Editor Southern Planter.

the care of man. The deviations from the standard character of our wild breeds only continue so long as they are kept under this artificial system, for we find that as a more neglectful course of management is adopted, so the original character of the wild animal will again be developed. Hence the peculiar conformation of our improved breeds of cattle must not be looked upon as any permanent modification of form, but as entirely dependent upon their being continued under the same system by which the change was originally produced.

The characteristic points possessed by cattle in a state of nature, are all eminently adapted for the preservation and perpetuation of the species, for Nature is perfect in all her details. Under our artificial system, we require certain modifications which are better adapted to our requirements. For instance, instead of having an animal almost destitute of fat, which is the condition of our wild breeds, we desire a fuller development of this material, together with a more tractable disposition; but to attain these results we have to alter the entire system of the animal. It does appear extraordinary that man should have control over the animal race, but experience teaches him how to accomplish the desired result. We cannot accomplish this without the aid of Nature, and it is chiefly done by adopting two simple principles—1st, That the development of any part is promoted or checked by the degree of exercise which that part may have; and, 2dly, That under similar conditions like produces like.

To illustrate these points more fully, I shall state as briefly as possible the principal changes which are observed in our improved breeds of cattle. I do so as concisely as possible, because I conceive it is desired that the report should be restricted as much as possible to the management of breeding cattle, and not extend to the more general treatment of cattle.

If we take either of our improved breeds of cattle, and examine one individual of the class, we shall find that there is a marked difference in the general outline of the body. The wide and deep chest, the roundness of the barrel, and the full development of muscle and fat over the body, give the improved animal a certain squareness of outline which is totally at variance with any specimen of the original breed. Nor does the difference end here, for the internal conformation presents peculiarities of which the external form may be taken as a constant indication. The lungs and liver are found to be considerably reduced in size when compared with those possessed by animals having perfect liberty. The cause

is evident, and admits of easy explanation. In a state of nature the animal is accustomed to violent exercise, and this brings the lungs into active work, and the result is a full development of the part. But suppose an animal of the same breed, kept in a very confined space the greater part of its life, the lungs, not having been equally exercised, would not be as fully developed. The progeny from this animal would also possess a tendency in the same direction; and if such an offspring were kept in a state of confinement, it would probably possess even smaller lungs than its parent. Thus the restricted exercise of our cattle has produced and perpetuated a small development of this part of the body. The same results are observable in the liver in an equal degree with the lungs; for similar active exercise induces increased energy in the liver, whilst the luxurious life of the improved animal produces a torpid and inactive liver.

Thus we observe that domestication has modified the development of the lungs and liver, and hence the functions they perform are proportionately diminished. It is well known that the food which an animal consumes chiefly consists of two classes of bodies—those which form muscle, and those which maintain the heat of the body. It is the latter class to which we must now refer. The heat of the body is maintained by the combustion of the carbonaceous matter of the food. Combustion is not necessarily attended by that manifestation of flame which is generally observed; but the same change and the same results may be produced in a much more gentle manner. This change actually takes place in the animal body, and the carbonaceous matter of the food under this action yields to the body the heat which is more necessary for the healthy discharge of its functions.

The blood, on passing through the body, bears with it the heat-giving matter of the food, and also carries other important chemical agents in its coloring matter; when these bodies come together, a change takes place and heat is produced. Now this change does not take place to any great extent in the arteries, but it is whilst the blood is passing through the capillary vessels, which pervade every portion of the body, that the action is rendered complete, and thus these vessels not only carry nourishment for the support of the system, but also distribute an equable supply of warmth.

It is clear, then, that the larger the lung the more fully does the body receive the oxygen which is to develop heat in the body; and the natural result is that a more perfect combination of the carbonaceous matter of food takes place. Fat is composed of the same

materials as are thus used for keeping up the heat of the body, and, consequently, the more there is used in this way, the less remains for being stored away as fat. Thus large lungs are prejudicial to the formation of fat.

We may here observe that food may be very much economized by being consumed by "high-bred" animals; but it must be added that there are other attendant circumstances which act prejudicially. We may modify the operation of Nature; but she, with jealous care, guards these alterations, and continually places obstacles to check, and frequently to prevent, the perpetuation of the *unnatural* conditions which we desire so much to produce. These difficulties are constantly arising in breeding from animals of this class, and we shall subsequently have occasion to notice this fact.

With these introductory remarks I will proceed to the practical portion of this subject, and in it we shall find the principle thus briefly noticed more fully illustrated. It will be convenient to notice this subject under the following divisions:

The Management of Cattle before Breeding.		
...	...	whilst Breeding.
...	...	after Calving.

THE MANAGEMENT OF CATTLE BEFORE BREEDING.

In treating of this subject we are naturally led back to the period of the calf's birth, and we cannot do better than to trace its course through life. A great difference of opinion exists upon the best and most advantageous course to be pursued, and in various localities different systems are adopted. There are two modes of rearing calves; either the calf is removed from the cow immediately after birth and reared by hand, or else the calf is allowed to suck the cow. The peculiar circumstances of different farms may lead us to modify our course; but before commenting upon these various practices, it may be desirable to state them more fully.

In those cases in which the calf is never allowed to suck the cow, it is removed immediately after its birth, and, having been placed in a separate building, is well rubbed with straw. After a few hours, the first milk of the cow (generally called the *beastings*) is carefully given to the calf. This is best done by supporting the head on the hand, and allowing the milk to run gently into the mouth. This method is preferable to the more usual plan of making the calf suck from below. Indeed, for a few days it is better to supply the animal in this manner. Warm milk is the only food the young calf receives for about three weeks, and during this time it

ought to be fed three or four times a-day. A strong, healthy calf will take from eight to ten quarts daily.

The calves are gradually trained to eat sliced turnips and linseed cake. The general plan is to put a bit of cake into the calf's mouth immediately after taking its milk, when it will continue to suck and dissolve the cake. When about six weeks old the same quantity of milk is given at two meals instead of three, and at noon some other food can be given. This will be chiefly cut roots, hay and crushed cake. These are gradually increased in quantity as the calf is able to consume larger quantities, and the milk is decreased proportionately. When the calf is first put out to grass for a few hours, the house food is steadily decreased, so that it may be prepared for grass food when turned out for the summer grazing. The advantages of this method are the economy of milk, and its division amongst the calves according to the discretion of the feeder.

The second plan differs from the above in the calf being allowed to suck the cow for the same length of time, instead of the milk being drawn and given to it. When this plan is adopted, the calf is not removed after birth, but is allowed to remain beside the cow; and she soon dries it by the natural process of licking, which, at the same time encourages the circulation of the blood throughout the body of the young animal, and acts as a purgative on the cow. Within a few hours the calf will probably be strong enough to stand and suck, but if not it must be assisted. Should there be great weakness, a little milk should be drawn and put into the calf's mouth at intervals until it gains strength. Generally, it is kept in a crib within a short distance, and allowed to run to the cow on her being brought into the homestead. In too many cases the calf only receives its food morning and evening; but the mid-day meal is much to be desired, and should always be allowed, for the little additional trouble is well compensated by the progress of the calf.

If the cow is an ordinary milker she will have more milk than the calf requires, and may adopt the plan of letting one cow rear two calves; or if this is not done, the milk which the calf does not require is drawn from the cow by hand. If, however, the cow is an inferior milker, she will do but little beyond supplying her calf, and in some cases afford it only a bare sustenance. When such is the case, the cow must have food given her to promote the formation of milk of good quality—such, for instance, as oil-cake. When a cow is rearing two calves, we frequently observe that the one being the fastest feeder gets the lion's share of the milk, whilst the other has only a spare allowance. This must be overcome by allowing

the weaker one to have the start of the other in commencing its meal—unless it appears that the cow's milk is insufficient for both of the calves, in which case give the cow richer food.

The course of practice is modified by some breeders, who, after allowing the calf to suck ten days, allow it six or eight pints of new milk twice daily, and after this has been continued two or three weeks, *gradually* substitute *skimmed* milk for the new milk, adding oatmeal porridge, and allowing the calf cut roots and hay until it is ten weeks old, when the milk is entirely stopped. Other breeders, when the new milk is removed, use as a substitute $\frac{1}{4}$ lb. crushed linseed, $\frac{1}{4}$ lb. bean meal, $\frac{1}{4}$ lb. molasses, daily, made into eight or ten quarts of soup. And this is decidedly a good artificial food for calves.

The stomachs of all ruminating animals—and cattle are of this class—it is well known, differ from those possessed by other animals, in consisting of four compartments, or stomachs, instead of only one. In the calf, these stomachs are not fully formed—in fact, one only is intended for action at this period of life, and the other three are but slightly developed. The stomach which the calf possesses is the true digesting stomach, and this is the only one which ought to be brought into play during the period it is living upon milk. Unfortunately, however, it frequently happens otherwise; especially in cases where the calves, from rapid drinking, have the rumen brought into action prematurely.

The process of digestion in the calf is invested with much interest, because it illustrates the simplicity, and at the same time the perfection, of all the functions of life for accomplishing the object in view. It devolves upon food to assist in building up the body of the young animal; hence it should supply all the materials required for forming the various parts of the body. These parts consist of muscles, sinews, nerves, fat, membranes, arteries, veins, bones, &c.; and it is possible that in milk we have all the requisite elements present. Yes; we learn from daily observation that such is the case, and a knowledge of the composition of milk confirms and explains the fact. The following analysis of cows' milk has been given by Chevalier and Henry:

Casein,	4.48
Butter,	3.13
Milk sugar,	4.77
Saline matter, . . . . .	.60
Water,	87.02
	<hr/>
	100.00

In this food we have the saline matter required for the growth of the skeleton, the casein for the production of the muscles and various organs of the body, together with the butter and milk sugar, which are prepared to furnish warmth and fat to the body. As soon as the milk passes into the stomach of the calf, a fluid, called *the gastric juice*, is thrown off from the coats of the stomach, in a manner somewhat similar to perspiration from the skin. This gastric juice is of an acid character, and immediately curdles the milk; for it combines with the soda holding the casein in solution, and immediately the curd is separated. Thus we have the same change immediately produced which we observe in milk which has been kept for a long period and allowed to become sour. This curdling of the milk is rapidly followed by a decomposition of its several parts, which pass into the blood and nourish the system.

Thus the internal organism of the calf points to the use of milk *alone* for the early period of its life, and a careful observation of the most successful practice tends to confirm this opinion. For the same reason we may also learn another lesson from the natural habits of the animal—that the supplies of food should rather be moderate and frequent, than larger in quantity after longer intervals. In this respect there is a great difference in the general practice of feeding the calf which is separated from the cow, as compared with others which are not taken away. We find that calves which run with the cow thrive better than others, because they can draw their supplies of milk frequently and in small quantities—in fact, at such times as they feel the want. The stomach of the calf is small, and when the process of digestion is vigorous, the food which it can contain is soon used for the support of the system, and consequently a period of want often intervenes before the fresh supplies are received. This does not arise when the calf has a freedom of access to the cow, for immediately the desire for food commences it can get a further supply. No doubt it may be questioned whether this is an economical method, and one desirable for general adoption; but there are cases which render such a course absolutely essential to success, and I believe in many other cases the question of economy is too often viewed under the contracted aspect of present cost rather than future return.

[TO BE CONTINUED.]

The Supposed Exhaustion of the Soil by the Modern System of
Agriculture.

BY PROFESSOR ANDERSON, EDINBURGH.

When the progress of any art is examined, and the successive steps by which the improvement of its practice is accomplished are carefully traced, its development is seldom found to be the simple and peaceful occupations of our fields. It most generally involves, not merely a succession of conquests gained with greater or less difficulty, but a constant and watchful struggle to maintain the vantage-ground which has been attained. Every difficulty which has been overcome carries new difficulties in its train, opens up new problems to be examined, and entails the more minute study of facts and phenomena, which in a less advanced state of knowledge may have appeared of little moment, but which acquire increased importance as a means of fortifying us in the position we have gained.

All this is very forcibly illustrated in the practice of agriculture, in which we may be said to maintain a constant struggle with nature, for we seek to obtain from the soil an amount of produce greater than it yields in its natural state; and when it has been brought into a condition in which this result is obtained, there is a constant tendency to revert to its original state, which must be resisted by artificial means; and this object is arrived at, not by forcing nature, or attempting to run counter to fixed and immutable laws by which the universe is governed, but by studying the principles on which their action depends, and thus learning how to modify the conditions under which they operate, so as to suit the ends we have in view. It is only in the latter stages of agriculture, however, that this phase in its progress is arrived at, a great part of our practical knowledge being in the first instance acquired by purely empirical observations; and it is astonishing how much information can be, and has been, thus accumulated at a very early period; but there is a limit which cannot be passed, and after it has been reached, although the art may not stand still, its progress becomes exceedingly slow. Judging from the writings of the classical authors on agriculture, it would appear that the husbandmen of ancient Rome, nearly two thousand years ago, were well acquainted with all the important operations of agriculture, and their practice appears to have been little inferior to that in use throughout Europe seventy or eighty years since. In some respects, indeed, they were in advance of that period, for their manure-heaps were

carefully attended to, and they drained their land; as a proof of which, it may be stated that the instructions given by Columella for making a covered drain with stones, might be transferred almost unaltered to any modern work on agriculture.

The reason why agriculture advanced so slowly after the time of the Romans, is due to the fact that they had nearly reached the limit which could be attained by merely empirical trials. They had learned almost all that can be easily and quickly acquired in this way, and advanced to the point at which it became a very slow, laborious, and costly method of adding to our knowledge, and whence further progress can only be made by studying the cause of the phenomena with which we meet. Agriculture, therefore, stagnated for want of an explanation of the facts which had been observed; and we find that the commencement of its recent rapid progress was simultaneous with the development of those wonders of science which afford these explanations. So soon as we began to understand that the mechanical treatment of the soil acted by admitting the atmospheric oxygen to disintegrate it, and liberate its useful elements, a new stimulus was given to the contrivance of machinery by which these operations might be more effectually accomplished; and when it was further ascertained that a manure acted by supplying those substances which were indispensable to the plant and form its food, and when their nature had been explained, we were enabled to use many substances which empirical agriculture would never have employed; and the word manure, which was formerly synonymous with dung, acquired a new and much more extended signification. Up to a comparatively recent period, the views which were entertained, both by agriculturists and chemists, regarding the nature of the food of plants, were very indefinite and erroneous. It was universally supposed that their main nutriment consisted of the humus of the soil, which was believed to be directly absorbed and assimilated by the plant; and that their inorganic constituents were unimportant and altogether fortuitous, and existed in them only because they happened to be absorbed along with the humus. It is scarcely necessary to observe that this opinion is now no longer maintained, incontrovertible experiments having shown that plants can grow and reach maturity where they have been entirely deprived of humus, but that they cannot exist without an adequate supply of inorganic matters, ammonia, carbonic acid, and water. As the substance which the plant specially requires from a very minute fraction of the weight of the soil, the establishment of these facts has directed attention very

prominently to the possibility of exhausting the supply of them; and the question has been raised whether the system of cultivation now in use is calculated to prevent this exhaustion, or whether it may not ultimately impoverish the soil.

It is quite clear that this is a question of the most vital importance to the country at large; for if it can be shown that we are gradually reducing the fertility, the sooner a change is introduced the better. It may no doubt be alleged that to a farmer all this is a matter of no interest, because his connection with the soil is a terminable one, and his object is to obtain from it as much produce as he possibly can, irrespective of those who are to come after him. And it has been maintained that modern agriculture is actually founded on this principle, and that while we pride ourselves on the increased produce which we now obtain from the soil, we have forgotten that it is produced at the expense of future diminution of the crops, although sooner or later this fact will inevitably be brought home to us. Modern agriculture, in fact, has been described as a system of spoliation, and the necessity for an immediate change been very strongly urged upon us.

It is my intention on the present occasion to consider how far these views are founded on fact; and the subject is one not unattended with difficulties, for it must be discussed in a broad spirit, and viewed, not in relation to a single field or farm, but to the general effect over the whole country.

In order that we may have definite data to go upon, let us in the first instance consider the cause of the exhaustion of a soil, and the different modes in which it may be brought about. It is to be observed, then, that all plants require for their growth an adequate supply of carbonic acid, ammonia, nitric acid, water, potash, soda, lime, magnesia, phosphoric acid, sulphuric acid, chlorine, and silicas, which are all indispensable, although some of them are required in larger quantities than others. They are divisible into two classes, one including the first four substances, which, being all gaseous or volatile, are found not only in the soil, but in the atmosphere; the remainder are confined, at least in quantity, to the soil. These two great classes are usually distinguished as the organic elements of plant food, by which it is to be understood that the former, though they are in a chemical sense inorganic, are the source of the organic or combustible part of the plant, while the latter supply the constituents of the ash. They may also, however, and with more advantage, be described as the movable and the immovable elements of the plant, because the former, existing in the air, are conveyed

backward and forward by the wind, while the latter, being fixed in the soil, cannot be removed and replaced by ordinary natural causes. It is sufficiently obvious that if a crop be grown for a succession of years, and be systematically removed from the soil, the quantity of these substances must be gradually diminished, and, if this course be persisted in, the soil must eventually become incapable of supporting the life of plants. The period at which this will occur must necessarily differ very greatly in different soils, and depend on the quantity of available plant-food which they contain. It is to be observed also that the exhaustion of the soil in such a case is not due to the deprivation of all the elements of plant-food; for the air, constantly shifting, is always prepared to yield a practically inexhaustible supply of the movable elements, so that the exhaustion must in all cases be due to the removal of the fixed or mineral substances; and, consequently, when it is wished to restore to the soil its power of supporting vegetation, it is not *necessary* to add to it all the elements of the plant, but it will suffice to give those which it cannot otherwise obtain—that is, the fixed substances—and leave it to depend entirely on the air for a supply of those which can be derived from it. We do not mean to discuss here the question whether this method would reproduce the highest degree of fertility, but only to point out that a soil thus treated would regain more or less completely the power of supporting plant-life, of which it would have been deprived by the supposed system of management.

In point of fact, then, the complete exhaustion of a soil in its natural state must always be due to the want of mineral matters, because, practically, no method of treatment can deprive it of those which the air supplies. As far, also, as these matters are concerned, it must be obvious that they would rarely, if ever, be all exhausted simultaneously, but that, in general, some one substance being present in relatively small proportion, the soil becomes incapable of supporting the life of plants, when it is entirely withdrawn, although there may still be an abundant supply of all the others. If, for example, a soil contain a sufficient quantity of potash to yield, say, twenty full crops of wheat, and of the other constituents of that plant enough to yield forty crops, the excess of the latter will be unavailing, and the soil would be exhausted by twenty crops. If now, we added to such a soil a supply of potash, it would again become capable of producing a crop, and would go on doing so until some other substance had been entirely consumed, when it also would have to be added; and so on until, all being removed, the soil would at length end in a complete infertility, which would only

be retarded, and not prevented, by this mode of operation. To maintain during an unlimited series of years a uniform amount of produce, it would be necessary to add, year by year, a quantity of the elements of plant-food equal to that which the crop removes; and the necessity for doing this is so obvious that it cannot be controverted, and it may be safely asserted that it is a point on which all scientific and practical men are entirely at one.

This being the principle on which the exhaustion of the soil is to be avoided, we have only to carry it out a little further to draw the conclusion that, if we add to it a larger quantity of the elements of plant-food than is requisite to replace what has been removed, its productive capacity must be increased, and it will become capable of yielding a larger crop than it did in its original state. This is, in fact, the foundation of the use of manures, and if it were possible to carry out these theoretical principles in their integrity, the soil might be made to produce, during an unlimited succession of years, a crop greatly exceeding anything known in actual practice. Practically, however, there is a limit which cannot be exceeded, and this depends upon several circumstances. In the first place, the effect of a manure is not due to its composition alone, but is dependent, to no small extent upon the different constituents existing in it in a state in which they are readily available to the plant. And, in the second place, the composition of manures is not entirely under our control. Although farm-yard manure, which is, and will always continue to be, the foundation of agricultural practice, is a mixture containing all the elements of plant-food, and generally in proportions not very far removed from those in which the plant requires them, yet it is impossible not to recognize the fact that differences occur in it, and that part of its constituents are not directly available to the plant, but only become so by virtue of certain changes which occur in it after it has been deposited in the soil, and do not necessarily proceed exactly as we could desire. It is a familiar fact that, owing to these decompositions proceeding in an imperfect manner, manure may, and often does, accumulate in the soil, and remains there in an inert and dormant condition. If from this or any other circumstance the supply of one or more of the substances required by the plant is deficient in the manure, then either the crop is thereby limited, or it is forced to derive the requisite supply of that substance from the natural resources of the soil itself. In fact, a manure which is deficient in any one element of the crop, does not improve the soil; and though it may produce a greatly increased crop, its effect is merely tem-

porary, and eventually it only causes its more rapid exhaustion. In the case of farmyard manure, which necessarily contains all the elements of plants, this is, of course, less likely to occur than in special manures containing only one or two of these substances. Thus, for example, the opposite effect would be conspicuously seen in the case of a soil manured during a series of years with a salt of ammonia. In that case, though the crop might be greatly increased in any one year, the total amount of produce would be no larger than it would have been without that addition, but it would have been obtained within a shorter period of time.

The general conclusion to which all these considerations lead is, that we can only maintain the fertility of the soil by returning to it all the substances which the crop removes, and that we can increase it by applying these in larger quantity; but when the mixture supplied is deficient in any one substance, it does not prevent, but hastens exhaustion.

It was formerly believed that another great source of the deterioration of the soil was to be found in the removal from it of the valuable matters in the drainage-water. But our increased knowledge of the properties of the soil, its power of withdrawing the most important constituents of plants from their watery solution, and the composition of the drainage-water, have shown that any loss accruing in this way is so small as to be quite unimportant. It appears from the analyses of drainage-water, and from knowing the quantity which passes off by the drains in the course of a year, that the maximum amount of potash thus removed does not exceed two or three pounds to the acre, and is often much less, and the quantity of ammonia is usually under a pound. On highly manured lands there is sometimes a considerable loss of nitrogen in the form of nitric acid, but on ordinary soils this also appears to be inconsiderable. When it is borne in mind that one per cent. of potash amounts on the acre of land to at least ten tons, it will be seen that the loss of two or three pounds does not merit notice, for it must be a very poor soil which does not contain from a quarter to a half per cent. of any of the constituents of plants. So far, then, from their being any loss of those valuable matters which the plant requires, there is a conservative influence constantly at work, by which they are safely stored in the soil, and preserved for the use of the crop; and when its exhaustion takes place, it is never due to natural causes, but may be safely attributed to the injudicious method of cultivation to which it has been subjected.—*Louisville Journal.*

Poisoning Land.

BY PROFESSOR E. PUGH.

[This article so aptly illustrates and confirms some of the principles cited in the preceding one on *The Supposed Exhaustion of the Soil by the Modern System of Agriculture*, that we place the two in juxtaposition, that our readers may be able with convenience to compare them.—ED.]

Notwithstanding all that has been said and written during the last few years, upon the subject of agriculture, the ideas of the great mass of the people, upon many points of the highest importance to agriculturists, are very much confused. Upon no questions is this more marked than upon those suggested by the words, nutriment, stimulant and poison, in reference to the growth of plants.

Many farmers think that certain substances stimulate the land at first, and overtax its powers, and ultimately *poison* it. Such ideas originate in conceptions obtained from false analogies which men are too prone to draw between animal and vegetable life. The early vegetable Physiologists were, for a long time, deceived as to the true character of vegetable growth in the same manner; but at present, scientific men are aware that no aid is obtained in studying vegetable physiology by the apparent analogies afforded by animal physiology. A difference of opinion sometimes exists, as to what is the correct definition of a *poison* in regard to animal life. And a more difficult question might arise on the same subject with regard to vegetable life.

But waiving these difficulties we may get at a practical definition of what nutriment, stimulant and poison, applied to vegetable food may mean, which will throw some light upon the subject we are considering.

First. NUTRIMENT.

Under this may be included all those elements, and combinations of elements that are essential to healthy and vigorous vegetable growth, whether obtained from the soil or the air, which enters into the plant to form part of its substance.

These embrace about thirteen different elements, all of which enter the plant, more or less, in combination with each other; eight of them *must come from the soil*, and the remainder *may* come from the soil, or from the air, or from both. Independent of vegetable growth, there is all the time a more or less active interchange of these latter elements between the soil and the air, so that it is difficult to decide how far they are obtained by the plant directly from the air through the leaves, or indirectly from it at the roots, through the soil; consequently while *all* scientific men admit that these

eight substances *must always be present in the soil*, to ensure its fertility, there has been a difference of opinion as to how far it is necessary to add some of the remaining five to the soil to ensure conditions "amply sufficient for the purposes of agriculture." *If all of these substances are not accessible to the plant in the soil, or the air, it cannot grow.* At times some of them fail in the requisite quantity, and it becomes the duty of the farmer to find which they are, and to apply them in manures to the soil.

Secondly. POISON.

All substances may be considered poisonous which are not included above (that is which do not enter the plant to form a part of the increase during healthy growth,) and which when placed in contact with growing vegetable matter, are absorbed by it, and prove injurious, or destructive, to vegetable growth. This may include many combinations of elements, which combined in other proportions or in different circumstances, might be nutritious; acids or alkalis might, when *alone*, act as poisons, when in the *combined* state they would be nutritious. The products of decomposition of vegetable matters are, no doubt, in some instances, poisonous to vegetable growth; the ultimate cause of the disease to which some plants, as the potato or the clover, the vine, &c., in America and Europe are liable, may be due to poisonous products formed in the soil.

The theory of the rotation of crops, which at first was explained, simply by supposing different plants absorbed different substances from the soil, and while those of one plant were being removed by it, those of another were accumulating, has become more complicated of late, by certain considerations which seem to indicate, that substances poisonous to one plant and not to another, may disappear from the soil, during the growth of the latter, and hence leave the land in a state adapted to the wants of the farmer.

All substances which are nutritious to plants in ordinary circumstances will prove destructive to them if presented in too large quantity, and hence it is not always easy to decide what is a poison in the sense of the definition just given.

Thirdly. STIMULANTS.

None of these substances which are usually considered stimulants, are such in the sense that this is applied to animal life. Nothing is more absurd and ludicrous than the common notion that certain substances, as guano, or plaster of paris, stimulate the land in any sense of the word.

It is not easy to apply this term to substances affecting vegetable

nutrition, yet if we must use it, substances like lime, which do not afford nutriment directly to plants, in the same degree that they promote the growth, could more appropriately be called stimulants, than those just noticed. Some chemical substances which promote the sprouting and early growth of plants without affording them any nutriment, might also be called *stimulants*, and others which retard this action might be called *sedatives*; but as these terms convey *improper meanings*, and imply that we know a great deal more about vegetable physiology than we do, it is best to discard them altogether.

PRACTICAL CONSIDERATIONS.

From the above we might infer,

1st. That soil to be productive must contain every one of about eight different substances, and four to five other substances must be present in the soil or the air.

2nd. That if any one of these fails in the soil, barrenness will result, no matter how much of all the others may be present. Though a sufficient number of all the other substances were present to produce crops for one hundred years, *did this one not fail, the absence of this would render the soil barren.*

3rd. If the soil contain a limited quantity of any one of these substances, and no more be added during successive years, in which crops are grown and removed from the land, this substance must ultimately all be removed, and barrenness must result.

4th. If a soil be barren owing to any of the above causes, the addition to it of the failing element will restore its fertility again, and in consequence of this fertility new crops may be raised, and hence new quantities of all the other seven substances removed from the soil. If this process be repeated, and by successive additions of the failing element, successive crops be raised, a second and a third element, will all be removed, and these, too, must be replaced in the same manner as the first, in order to maintain fertility. *The soil will be poorer after the addition of these failing elements, because with them we are enabled to raise crops which remove from the land, not only the element added, but about seven other elements that were in it before.*

5th. The substances usually called stimulants are simply such as afford to the soil certain elements of *nutrition*, which are not present in an available form for the demands of vigorous growth. They do not produce the crop, but, united with other substances in the soil and air, they do produce it. They form a *part of a whole*,

without which the plant cannot grow, just as the axletree of a wagon forms a part of the wagon, without which it could not move. Without the axletree the wagon could not be worn out, yet it would be a strange kind of logic which would infer, that because the entire wagon was worn out *after* the addition of the axletree, that therefore the axletree had acted as a *stimulant* upon the wagon, and worn it out; or that because the same result could not be obtained with the old wagon as with the new, therefore, the axletree had *poisoned* the wagon. Absurd as this kind of logic may seem, the farmer may rest assured that it is quite as rational as that which supposes certain substances to stimulate or poison the land. And the farmer might quite as rationally, refuse to replace the broken axle of his wagon, because after doing so the wagon would be worn out, as to refuse to supply the failing element in his land because the crops that would follow would exhaust the land of the substances that it already possesses.

These considerations may be illustrated by *an example*.

Suppose a soil to contain enough of an element A to raise wheat for four years; enough of an element B to raise wheat for six years; enough of C for eight years; enough of D for ten years; and enough of all the other substances S required for twenty years. If such a soil had been grown with wheat since 1856, we would have in

1860, all the A exhausted,
 sufficient B for two years,
 " C for four years,
 " D for six years,
 " S for sixteen years.

This soil is barren now for want of A; let us add sufficient A to last two years, and then we get two more crops, and we will have in

1862, all the A again exhausted,
 " B exhausted,
 sufficient C for two years,
 " D for four years,
 " S for fourteen years.

This soil is now barren for want of A and B; let us add enough of each for two years, and then we will have in

1864, all the A again exhausted,
 " B " "
 " C " "
 sufficient D for two years,
 " S for twelve years.

Now the soil is barren for want of three elements, A, B, and C. If these were added we would have in

1866, all the A again exhausted,

“ B “ “

“ C “ “

“ D “ “

sufficient S for ten years

Fertility can now only be restored by the addition of four elements, A, B, C, and D.

Now, a farmer commencing to work such a soil in 1856, might have supposed that it was inexhaustible, but in 1860 it becomes barren.

The addition of the manure A to it, then, restored its fertility, he now might get the idea that A would do to restore the fertility of *all worn out land*; but after two years more, A ceases to be of any perceptible use; he might then conclude that A had *poisoned the land*, but on the addition of B, he restores fertility. He would, doubtless, now recommend B to all his neighbors; but soon B becomes inoperative, and must be set down as a poison. We need not here dwell upon the fallacy of such conclusions, yet they are entertained by farmers all over the country.

I have avoided the use of the names of the elements of fertility to soils, in order to meet the tastes of those who do not like to be troubled with scientific terms.

Feeding and Management of Hogs.

Who can fail to admire the divine wisdom and goodness which have associated for our advantage, so many animals essentially different in size, form, structure and habitudes, each looking to different departments of human wants, comfort and happiness, and each, by nature, in special adaptation to the same climate, and soil, or in other words to one local habitation! The horse lends his strength and energy to the service of man, the ox his labor, the cow her milk, the sheep its wool, but the hog makes no return in *his* behalf during life. It may be for this reason that his praise has never found place in the songs of rural poets.

Because swine is blest with a keen appetite, strong digestion and a hardy constitution capable of resisting a great amount of neglect and ill usage, he has been and in many instances yet is the worst used animal kept for the profit of man. And as if to add to the

abuse, his endeavors to make the best of ill treatment has been charged to the account of his natural uncleanness, and the idea that wholesome meat cannot be made by feeding animals with garbage, has caused pork to become the horror of dietetic reformers, who pronounce it unfit for human food. He is the only one of our list that is omnivorous, feeding on vegetable and animal matter indiscriminately. The indulgence of his appetite in this respect is that which places him among the most profitable of all farm animals, for his chief subsistence is derived in many instances from such articles as no other animal would eat, and which would otherwise be entirely lost to the farmer. This is seen in the profitable consumption of the refuse of the mill, barn, stable, kitchen, and dairy; also in the feed lots of our cattle and around the butcher's pens.

Hogs enjoy the reputation of having a real liking for dirt; and certainly, the way in which they are kept in some farms would show that their owners are determined to give them ample opportunities for carrying out their predilection. No notion, however, can be more erroneous than this, and certainly none so productive of loss to the keeper.

The old method of treating the hog was to let him run upon the common, or in the pasture during summer, and put him in the pen only two or three months before slaughtering him. The sty was merely an ample pen with but a poor hovel for shelter by night. Let any one try the two modes of hog raising, the dirty and the clean, the food in both cases, and other general treatment being the same, and the result will not fail to show which of the two is best in the end. A great deal depends upon the mode in which swine are housed. It would be within the mark to say, that in most instances twenty per cent. of saving can be effected in food, and at the same time an addition be made to the manure heap by a well regulated building for their accommodation.

To make pork economically, the swine must have a dry, warm apartment to sleep in, and in the winter season the bottom should be of wood, or some good non-conductor. They should be fed at regular intervals. The hog knows the dinner hour as well as his master, and his stomach becomes uneasy if its cravings are not met at the proper time. The secret of thrift consists in keeping him in the most comfortable condition. If a hog squeals his flesh is wasting and the owner should take the alarm at once. But hogs should have enough to eat at each meal, and a change of food occasionally. They will grow rapidly upon a mixed diet.

The fame of the hog as a manure maker is great, but we doubt,

if he is half appreciated, even in his forte. He is commonly fed with richer food than other domestic animals, and the manure is found to be stronger than that of any other quadruped.

Taking into account the advantages peculiar to the hog, together with his superior fruitfulness, it is not to be wondered at that such numbers are annually grown. It may be safely calculated that every year, in the United States alone, over thirty millions are produced, reared and slaughtered. This amounts to over one head to each human being in the United States, and shows that with us pork is the chief article of animal food.

It will pay well to cook the meat for store hogs, as well as for those that are being fattened. Swine will not extract all the nourishment from dry corn unless it is first ground to fine meal, and even then it will be much more economical to scald it. As farmers must necessarily keep a good fire in the kitchen for a large proportion of the time during the day, the expense of cooking feed for a small herd of swine in cold weather is much less than the gain over feeding with uncooked food. Raw potatoes are frequently fed to store shoats. If the same quantity were boiled, and a few handfuls of meal mixed with them as they are mashed, and warm dish water mingled with the mass, not more than two-thirds the amount would be required to keep hogs in a growing and thrifty condition. The cooking costs nothing, as a farmer or some of his help can attend to the business when there are no other duties to perform. If grain is not ground, let it be boiled until the kernels crack open. Those who have never practiced cooking feed, will find in the reduced quantity of feed consumed, and the improved condition of the animals abundant inducement to try the experiment.—*American Stock Journal*.

Sixteen Months Experience in Raising Hogs.

In August, 1865, I purchased a boar four or five months old and a sow with three pigs with her, evidently her first litter. She weighed from seventy-five to ninety pounds gross. I sent them to Springfield farm, (my birth-place) in Hanover county. The pigs were probably six weeks old, but badly grown. The entire stock cost \$24. About the middle of September, 1865, I fenced in about a fourth of an acre of ground, which was thickly set in wire-grass, with a stream of water running through it. I fed the two older hogs on a small quantity of corn and vegetables until frost. The three pigs ran at large, eating acorns, corn that laid upon the

ground, clover, &c., at their pleasure, until their rapid growth enabled them to destroy more corn than could be afforded them. I then, about the first of November, put them up with the older hogs. In October the sow had six pigs, thus increasing my stock in number to eleven. I fed them with an abundance of corn and hauled acorns to them by the cart load, which with the roots of the wire-grass made them grow and fatten *very* rapidly. On the 1st of January, 1866, I butchered the boar which was of very fine stock and weighed 145 lbs. net, I also killed one of the pigs (a barrow) which weighed 135 lbs. net, making together 280 lbs. of pork of the nicest quality. On the 15th of January, 1866, I rented out my farm to Mr. James Bowles, a superior manager, and sold out most of my farm stock of every description. The old sow sold for \$37, one of the first three pigs, a beautiful sow which I guaranteed should weigh 150 lbs. net, sold for \$26, the other of the three first pigs, being also a sow nearly as fine as the other, sold for \$21, and the six pigs of the old sow's second litter were bought by Dr. Drew for \$40, summing up \$124 in money and 280 pounds of pork from August, 1865 to January 15th, 1866.

Mr. Bowles bought the oldest sow at the sale on the 15th of January, 1866, then fifteen or sixteen months old, and carried with her two shoats about six months old, weighing about 30 lbs each, and three small pigs. Thus, with six head of hogs, sized as above, Mr. Bowles commenced on the 15th January, 1866. The oldest sow had pigs again in March, and one of the shoats also had pigs about that time. In August the old sow had pigs again, and each of the two shoats likewise. On the 15th of December, 1866, just eleven months after he commenced at Springfield, he had a public auction at which he sold 33 head of hogs. They were all of them shoats and pigs except the three sows above referred to. One sow and nine pigs brought \$25; one sow \$15; and the 22 shoats brought an average of \$5. Besides this, he killed seven hogs which weighed 1300 lbs. of pork, and three of the old sow's March pigs he reserved for breeders, which would have weighed, gross, from 160 to 180 lbs. each. Thus he had increased his stock from six, with which he had started on the 15th of January, 1866, to 43 head, selling \$150 worth, killing 1300 lbs. of pork, reserving three breeders, and returning to me the old sow which I re-purchased at his sale according to previous agreement, all within the space of eleven months. These facts are thus particularly stated with the view of encouraging others to go and do likewise.

I will merely add that Mr. Shepperson, near Richmond, has this

sow with a brood of six fine pigs less than two weeks old. He will sell these pigs at the proper age, (or I will for him) single or in pairs, for breeders. The stock is of the most improved and approved kind, fattening readily at any age, and more rapidly than any in the country. This sow is now from 24 to 28 months old, weighs gross, about 300 lbs. is dark spotted and has had pigs five times, and now has 27 in all. They grow rapidly, keep fat easily, are healthy, and at 8 or 10 months old will weigh from 130 to 200 lbs. net if well kept. Persons wishing to purchase may get them by early application to me or Mr. Shepperson. They will be ready for delivery at six or eight weeks old.

GEORGE WATT,

February, 1867.

Plough Maker

On the Importance of the Thorough Education of those Men Whose Business it is to Cultivate the Soil.

Of all human pursuits, agriculture is indisputably the most important. That art, which underlies the whole fabric of society, supports and preserves from death more than a thousand millions of human creatures and employs in its vital work more than five-sixths of the fixed capital of the civilized world, is surely entitled to primary consideration, and justly challenges the earnest fostering care and attention of the science and legislation of all lands. But, despite the universally acknowledged importance and vital interest of the work of the husbandman, and the fact patent to all well informed minds, that no department of human knowledge affords a wider or richer field of intellectual labor, the cultivation of the soil has been doomed to subsidiary consideration in the schools and councils of all nations. Only within the last half century, have any public and efficient measures been taken in acknowledgment of the dignity and importance of this fundamental art. It is more than astonishing that Europe, which has a civilization, and a written history reaching back more than two thousand years, has established and endowed schools and colleges, to teach men to plough the oceans and seas, number, measure, and weigh the stars, to make and administer laws, practice medicine, preach the gospel, and read and speak the languages of the living and the dead; and yet until a very recent period has almost wholly neglected or ignored that art upon which all the rest depend.

Previous to the reading of Professor Johnston's Lectures to the Durham County Agricultural Society, and the members of the

Durham Farmers' Club, no British College or University had incorporated in its curriculum of study special instructions in husbandry. Indeed, before Sir Humphrey Davy in 1812 read his lectures before the Agricultural Board, no effort had been made by the learned men of the nation to impress upon the public mind the importance of the study of the Natural Sciences in their bearings upon the cultivation of the soil. From that period to 1840, it is but just to say, that a few refined and noble minds not only saw and acknowledged the high importance of this subject, but with all the force of their superior learning and the prestige of their names urged it upon public consideration. Lord Dudley in his letters to the Bishop of Llandaff, heartily laments as "mistakes of his early life, his unacquaintance with the rudiments of Agriculture, his ignorance of Botany and Geology."

Since 1840 quite a number of agricultural chairs have been connected with the Colleges of Great Britain, and a sound and elevated agricultural literature has sprung up, and spread itself over the Kingdom, and if we may fully credit the statements of the English press, their salutary influence upon every interest of the country has been little less than magical. It has been left, however, for the Continent to demonstrate the great importance of a high standard of Agricultural education. Near the close of the last century Baron Von Fellenberg established a strictly Agricultural School in Switzerland, and the present improved condition of that interesting country in Agriculture, Horticulture, and Home Manufactures, is a standing, overwhelming vindication of the transcendent importance of the thorough education of those men whose business it is to cultivate the soil.

An intelligent physician from that country assured me a few years since, that two-thirds of the Swiss Cantons had increased in actual value to a fabulous extent in the last thirty years, and that the public sentiment of the country accorded in the main the credit of this improvement to the liberal education, and consequent elevation of the masses.

Early in the present century, a private Forestry School was established at Tharandt, in Saxony, which in 1816 was transferred to the State authorities, who in 1830 converted it into an Agricultural College. In 1818, the great Agricultural College of Europe was established at Hohenheim, near Stuttgart in the Kingdom of Wurtemberg—and in 1835, a similar institution was established at Eldena, Pomerania.

Now it will be seen that these three public institutions originated

in the present century, and it will be interesting to inquire somewhat into the history, present status, and influence of these schools upon the countries in which they are located. The unprecedented success of these institutions is, perhaps, the strongest argument in their favor, and should tend more than anything else to encourage individuals and States to embark in similar enterprises. Hohenheim alone, has educated nearly three thousand men in the specialties of the establishment; nor has the progress of the other two been less encouraging. The general thrift, in the main attributed to them in the countries where they are located, is not the only argument in their favor; there have originated, doubtless in great part under their influence, 141 agricultural stations, institutes, schools, and colleges, all in the countries they represent.

These are all represented by parties in every way competent to form correct opinions on this subject, as being in a growing and prosperous condition, and as exerting a most salutary influence upon all the material interests of these countries.

In 1780, Germany exported scarcely any of the products of her soil and toil except wine, now she exports almost every agricultural product, in large and increasing quantities, not excepting Tobacco. We were astonished but a few months ago, at a published estimate of the prodigious amount of German tobacco inspected in the markets of the world.

Within the period alluded to Germany has not only marvelously increased her agricultural products, and the vigor and efficiency of the related arts, but nearly quadrupled her population. These are historic facts, which cannot be gainsaid, and are referred to by all intelligent thinkers as the legitimate results of her thorough and comprehensive system of agricultural education. There is but one opinion in Europe on this subject, and as a result nearly all the States of that country are moving in the great work. Even Russia, acting upon the suggestions of Sir Roderick Murchison, is taking the incipient steps towards a living, productive system of education. The spell which has bound the Old World for 2,000 years to its artificial and inoperative systems of education has been broken, and light has been reflected down upon the masses who hold the key to the earth's rich treasures, and they are pouring forth these stores to bless the world with plenty, peace and prosperity.

J. B. D

A Scotch farmer finds by measurement that his cattle drink over twenty-five pounds of water each day.

Our Young Men and the Pursuits of Life.

Are we under the new order of things, as we were under the old, to be overstocked in Virginia with professional men? There is some ground to apprehend that we shall. We have seen it stated that an undue proportion of the young men in some of our leading colleges are taking the law and medical tickets. We do not set ourselves up as advisers and directors, and would not arrogantly interfere with the rights or with the private affairs of our fellow-citizens, but we feel it to be our duty as journalists and patriots to combat any practice, any principle, or any idea that may prove prejudicial to the interests of the Commonwealth. We have now more lawyers, doctors, and other non-producers than are needed. There are enough to last for twenty or thirty years. Our great wants are producers and men of practical science, to aid in developing the resources of the State, and to turn them to account when developed. Agriculture, the mechanic arts, manufactures, the honest, manly industries are the great sources of wealth. We want to see our young men turn their attention and devote their talents to them, and let law and physic alone. The competition in these professions is now so great, and will be for the next quarter of a century, that few comparatively can attain the distinction and prosperity which so many covet. Most of them will be poor but proud gentlemen as long as they live. Take an intelligent, industrious young man, put him in an iron manufactory for instance, and let him learn the business thoroughly, and then start him in life with a licensed lawyer or medical graduate, and ten to one he will, in fifteen years, be rich or in a fair way to make a fortune, when the lawyer and the doctor will be without any considerable practice, or at best with only income enough to supply their commonest wants. The same result will be attained, if, instead of the iron business, any of the great branches of practical industry are selected. The fortunes are not made by the professional men, and the great influence that propels the business of life, and controls society and the destinies of communities and countries, does not emanate from them. The influence of the commercial, mechanical and agricultural classes is every year growing more potential. Formerly they were, as compared with professional men, ignorant and uncultivated; but at this epoch they are the men of expansive views, and the projectors of those great enterprises that build up cities and confer wealth, power and grandeur upon nations. The men of ideas, of real intellect and of supreme influence are, in this age, of these classes. They are the men who wield the mighty influences of

steam, the telegraph, and all those other practical agencies that control the affairs of life—the destinies of men and nations. If called upon to define this power, we would describe it as educated labor. It is that which has built up the wealth and prosperity of England, and that has placed the Northern States so far in advance of the States of the South. Labor was not honored here, under the old order of things, as it deserves to be honored. Also every young man of any pretensions studied law or medicine; or, being a landed proprietor, turned his attention to farming; or, if the son of a merchant, to merchandise. Only those who had no choice between pursuits became mechanics and artisans. There were really not enough of them for the necessities of the country, and of the comparatively small number a large proportion were ignorant and unskillful. Many came from the North—some from abroad. There was in those days an indisposition among the educated young men of the South to engage in business of any sort that was not connected with the learned professions. The mistaken notion prevailed that labor was degrading—a delusion that, more than all other things combined, retarded the growth and development of Virginia. We fear that our young men are not yet emancipated from the fatal influence of this delusion, and that too many of the present generation will follow in the footsteps of those of the past generation only to reap a harvest of disappointment—for the paternal wealth that supported so many in respectable idleness no longer exists.

We rejoice to see so many schools and colleges and to know that such large numbers of our young men and boys—much larger than we had ventured to hope for—are attending them. One chief object of education is to instil correct ideas into the minds of youth and to eradicate false ideas and opinions. We hope that our professors and teachers will not forget to combat that pernicious and too prevalent error that labor is not honorable, and that the mechanical occupations of life are unworthy of educated young men. We have known many instances of boys who manifested remarkable mechanical genius, and who, if put in the workshop, would have made their mark in the world, but who, under the fatal influence of this delusion, have been made cyphers and nonentities for life in consequence of the attempt, against their natural bent, to make lawyers or doctors of them. Every parent should give his children as thorough an education as he can afford. The more thoroughly they are educated the better they are fitted for the pursuits and business of life, no matter what those pursuits or that

business may be. The educated mechanic or artisan dignifies labor and removes the reproach of ignorance which so long existed. Education should embrace the whole range of physical science, for in the new era that will ere long dawn upon Virginia (we speak for her especially), the hitherto undeveloped resources of the State in mines, minerals and water-power will be brought into requisition. Our young men should be prepared to take the lead in this great work and profit by its rewards. Time is not distant when Virginia will be filled with workshops and manufactories of every kind, and if our own people are not qualified to take charge of them, strangers will come in and reap the harvest of fame and profit they will surely yield.—*Richmond Whig*.

The Mineral Wealth of the State of North Carolina.

Very few men give themselves the trouble to think, understandingly, of the immense mineral wealth of our State. At least ten thousand men could be profitably employed within her borders, delving for the rich treasures which underlie her surface, if the attention of capitalists could only be turned in this direction. We are credibly informed that at the copper mines of Jackson and adjoining counties alone, it requires from forty to fifty wagons and teams daily to haul the rich ore to the railroads for shipment, when the mines are properly worked; and the mines already discovered on this side of the mountains are said to be equally rich. They cannot be worked, however, because there is no coal in their vicinity for smelting purposes, and to haul the ore to a railroad would ruin the profits. Once the road is completed through the mountains, these rich ores, as well as thousands of others, which the keen eye of the mineralogist would soon discover, will be shipped down to the coalfields in Chatham county, probably to Greensboro', to be smelted and prepared for market. In addition to copper and other finer metals, the mountains of this State abound in mines of iron ore, than which perhaps none is richer on the continent. These massive beds of mineral wealth are so far removed from water or railroad transportation that the working of them cannot pay until transportation is supplied. When that is done they will at once become great sources of wealth to the State as well as to those who may be so fortunate as to own and work them. Even the immense quarries of marble, than which none on the continent is finer, which this mountain road will penetrate, would, in the course of

time, almost pay for building the road. Strange as it may seem, portions of our mountain country, equally rich in mineral wealth, and surrounded by civilization for the last fifty years or more, have been less explored and are less known to mineralogists and miners generally, than the Rocky Mountains of the far off West, where the buffalo, bear, panther and Indian still roam together in their native wildness and ferocity. Why is this? We know no reason but the tardiness of our people in penetrating those mountain regions with the fiery steed, and thus opening up the way for enterprize and commerce.

North Carolina, it seems, has been particularly unfortunate. She has been, ever since our earliest recollection until within a few years past, trying to get communication from the coalfields to the outer world, and yet, she has never succeeded. She has spent money enough, first and last, on the Deep river navigation, to build a railroad half way round the State, all to no purpose, and now, for the last, we do not know how many years, our people have been pecking away at a railroad from Raleigh to the coalfields, and it has not been completed yet.

Well do we deserve the appellation of "Old Rip Van Winkle." It is high time that we should wake up from our lethargy, invite labor and capital into our midst, and make us a State of which we shall be truly proud.—*Newbern Daily Times*.

Theory of Land Drainage.

A plant, though spreading its roots to a certain distance all around it in the soil, is stationary, and must have its food brought to it. That is the first main fact on which the need depends for a current of water through the land. Water, a powerful solvent, brings substances out of the air which the plant requires as food, and these substances increase its powers as a solvent of other matters in the soil which the plant also needs as food. Moreover, water brings from the air materials of use in the soil in manufacturing food for the use of plants. On these grounds, then, it is of importance that water should go through the soil after going through the air. It becomes laden with vegetable food by passing through the air, and it becomes still more laden with vegetable food by passing through the soil, till, when traversing the soil, it passes stationary roots, and enters them, and feeds the plants to which they belong.

And there are special reasons why rain water should be induced to pass through the soil rather than lie stagnant on it.

In the latter case it is not only useless to the plant, but it is directly mischievous. By evaporation it cools the surface, whereas, by percolation through the land it carries the warmer temperature of the surface into the subsoil; and of what value this is to the growth of crops may be gathered from the experience of the last autumn, which has been so productive of growth in our pastures to so unusually late a season—not so much from the increased temperature of the air during November and December, which has been only about two or three degrees above the average of the last thirty years, as from the increased temperature of the soil and subsoil at one and two feet deep, which has been five and six degrees above the average of the past thirteen years, during which observations have been made near London.

And not only is it of importance that the rain, by passing through the land, should carry the temperature of the surface, warmed by the direct rays of the sun, downwards, rather than by evaporating from the surface, it should carry the heat away and cool the soil; but the percolation rather than the stagnation of the water is desirable, because, in the one case air is made to permeate the land, in the other it is excluded. The chemical changes which air produces on and in the soil are desirable, and result in the preparation of useful food for plants; while by its exclusion, substances of a poisonous nature, especially where iron and vegetable matter exist together in the soil, are formed.—*Morton's (Eng.) Farmer's Calendar.*

Barley.

Mr. Editor—Barley has hitherto been rarely cultivated in Virginia. Recently, however, a great many breweries, some on a very large scale, have been erected in different sections of the State, and hereafter inducements are offered for its cultivation which heretofore did not exist. I have, therefore, thought that you would not object to the publication of a brief synopsis of the article *Barley*, in Johnson's Farmers and Planters Encyclopedia.

Barley is a species of corn,* and in Europe ranks next to wheat in importance. There are several species, of which, however, "the two rowed" and "the six rowed" are the two leading varieties. It is an annual plant; but like wheat it may be sown in the autumn, and then it acquires the habit of late ripening and is termed

* All grain is called *corn* in Europe.

winter Barley. It is frequently sown in the fall for spring grazing, and as a food for sheep it is more productive than rye, as it admits of being fed down every two or three days during summer. If intended for seed, it may be previously fed off by sheep early in the season without injury to the grain.

On the authority of Warren Hastings, it is said to be next in rank to rice; gives the greatest weight of flour per acre, and may be eaten with no other preparation than boiling. It requires but little dressing at the mill, having no husk and consequently producing no bran. It is gathered into the barn and may be consumed, when the seasons are favorable, in about eighty or ninety days after being sown.

In the rotation of crops, Barley may succeed to summer fallow, to potatoes, turnips, or any other green fallow. In England it generally follows turnips, and is a very important crop in the rotation best adapted to light soils. The usual crop is from 28 to 36 bushels, weighing from 50 to 54 lbs. Its produce in flour is about 12 lbs. to 14 lbs. of grain.

Barley contains 65 per cent. of nutritive matter; wheat 78 per cent. A bushel of Barley weighing 50 lbs. will therefore contain about 32 lbs. nutriment; while a bushel of wheat weighing 60 lbs. contains 47 lbs. Good oats weighing 40 lbs. contain about 24 lbs. of nutritive matter; so that the comparative nutritive value of wheat, barley and oats may be represented by 47, 32 and 24, the measure being the same.

Barley is a tender plant—more hazardous than wheat, and generally speaking, cultivated at a heavier expense. Its cultivation should not be attempted where the soil and climate are not favorable to its growth.

Barley is evidently a native of a warmer climate than Great Britain. It was cultivated in Syria upwards of three thousand years ago. The Romans obtained it from Africa and Spain. The land that produces the best Barley is generally of a silicious, light, dry nature; for a good, mellow preparation and free soil are essential to its productiveness and quality for malting purposes. It is sown either broadcast or in drills, the quantity varying according to the quality of the soil, cultivation and time of sowing; less being required on rich, mellow lands than on poor soils; early sowing with good tillage requiring less seed than late sowing and indifferent tillage. The quantity of seed varies from $2\frac{1}{2}$ to 4 bushels per acre, sown broadcast; if drilled, it need not exceed 2 bushels.

Barley ripens early. It may be sown at a late period, but the

sooner the better. In the choice of seed, avoid that of a reddish hue;—good seed will be of a pale, lively color, and uniform.

More care is required in the harvesting of barley than of any other white crop in the best of seasons. It must be sufficiently but not dead ripe it is said, on account of the softness of the straw and the tendency of the ear to vegetate, it is more apt to be injured and even destroyed than any other of the cereal grasses. It should never be stacked or housed until perfectly dry, otherwise it will be in danger of heating which would destroy the spear or germination of the grain.

The grain should never be threshed with a machine which would be as injurious to the spear as heating, and care must be taken that it does not lie in too large heaps—and it must be moved daily until all danger of heating has passed.

The principle demand in Great Britain (and here in Virginia, now) for Barley, is for malting purposes, but it is not only the most useful for this purpose but is the best food for fattening hogs. It is excellent for poultry, and is used in some parts for bread, which though nutritious is dark and strong tasted. In its green state it makes excellent spring food for milch cows; it comes in early and greatly increases the milk. When fed off close in April, it will spring up again and produce a fair crop in August. When mixed in the ground state with oats it makes a good food for horses and fattening cattle. Two parts Barley are fully equal to three parts oats for these purposes. The straw is lighter than the straws of wheat, or oats, and is less esteemed than either—it is mainly used for litter.

Malt is the great purpose, however, to which Barley is applied, and it is only necessary to add that malt requires the best and heaviest Barley, with the germinating powers entire.

Barley is used also for medicinal purposes. Barley water is a decoction of Barley—is soft and lubricating—a very useful cooling drink in many disorders and is recommended to be taken with nitre in fevers. The French and Scotch Barley is principally used to thicken soups.

The price of Barley I am unable to give.

F.

MANURE.—The hog pens and compost heaps should receive everything that will decay. The fermentation in compost heaps may need quickening by a few pailfuls of manure liquor. Use plaster to prevent the loss of ammonia, sprinkling it over the manure while it is in active fermentation, and upon stable doors, &c.

Report to the Farmers' Assembly on the Law of Enclosures.

By a resolution of the Farmers' Assembly, it was made the duty of the Executive Committee to examine into the subject of the law of enclosures, its bearings on the interests of agriculture in the Eastern and other sections of Virginia, and to suggest such modifications of said law as they might deem proper and expedient. In fulfilment of this duty the Committee would respectfully report :

That they find the following to be the sum and substance of the present General Law of enclosures :

1. Every fence five feet high, which if the fence be on a mound, shall include the mound to the bottom of the ditch, shall be deemed a lawful enclosure as to any stock which cannot creep through the same.

2. If any horses, cattle, hogs, sheep or goats, shall enter into any grounds, enclosed by a lawful fence, the owner of any such animal shall be liable to the owner of any such grounds for any injury thereby produced; and for every succeeding trespass by such animal, the owner thereof shall be liable for double damages. And after having given at least five days' previous notice to the owner of said animal, of the fact of two previous trespasses, the owner of such grounds shall be entitled to such animal, if it be found again trespassing on said grounds.

I. The Committee would call attention to the fact that, in principle, this law is essentially the same with that enacted shortly after the settlement of the country, under circumstances the very opposite to those which now for the most part exist. Then the lands to be enclosed and cultivated were mere patches, now they constitute large fields and farms—then the ranges for stock were extensive and valuable, now they are contracted and generally worthless,—then fencing material was abundant, and the best kind, now it is scarce and perishable. If adapted to the wants of the community, and beneficial to the interests of agriculture then, it cannot be so now under such a total change or circumstances as exists in all the eastern portion of our State.

Again, with regard to different *sections* of Virginia, the same law is made to apply to the East as in the West; where there is little or no fencing timber, as where there is an abundance,—as well where farming or planting, as where grazing is the object and pursuit of our people. If the law is beneficial under the one set of circumstances, it must be the reverse under the other, and ought to

be modified to suit the different pursuits of the people in the different sections of the State.

II. The law will be found to be unjust in operation as well as wrong in principle.

In the case of trespass it throws the whole burthen of proof on the land-holder. He has to prove, before he is entitled to damages, that his fence was a lawful enclosure, and before he is entitled to the *maximum* of damages, he has to prove the identity of the trespassing animal, after a third trespass, and after five days' previous notice has been given to its owner, during which time, and in the previous trespasses, the damage done may amount to a hundred fold the value of said animal. For it is well known that trespasses are generally committed by the most worthless of animals, the valuable being restrained and cared for at home. Now such are the difficulties of proof, and so slight is the prospect of being indemnified by an appeal to the law, that it may be confidently asserted that though cases of trespass by vicious animals, involving great loss to the farmer, are innumerable, yet such a thing as recourse to law to recover damages is scarcely known.

. It virtually puts the tiller of the soil, who, as such, is incapable of doing wrong to any, at the mercy of the stock raiser, whose property is capable, when not restrained, of immense injury to his neighbor. It virtually tells the owner of stock, if your neighbor does not enclose his land with a lawful fence, or if a sudden hurricane prostrates his fence, which he has spared no pains to make lawful, or if an unexpected freshet sweeps it away, then you may enter upon it with your hogs and your cattle, and appropriate his substance to your use. You are fully entitled to as much of his grass and his crops, as you can carry off in the bellies of your animals. Where is the justice of such license? Why not as well say, if a man does not secure his barn, or corn-crib, by a good substantial lock or bolt, or if in the night time, a gust of wind wrenches off the door or a shutter, then his neighbor is fully entitled to help himself to its contents?

3. It has failed to secure the ends which we may reasonably suppose its framers designed. We may presume the object of the law was, on the one hand, to encourage stock raising, and on the other, to protect the tiller of the soil. Has the effect of the law, which has now been in operation two hundred years, been to increase the profits of stock raising in Eastern Virginia? Let the droves of horses, mules, of fatted cattle and hogs which come annually to us from the West answer. Let the salted pork, the salted beef, the

candles, the soap, the butter, the cheese, the leather, all products of pasturage, which the Northern steamers land almost daily at our wharves, answer. Or has the effect been to improve the breed of our domestic animals? Is it not notorious, on the contrary, that under this law, with all unenclosed lands used as a common, and appropriated as a range of worthless, ill-bred bulls and boars, that strenuous efforts at the improvement of our stock by enterprising individuals, have over and over again been defeated?

Again, has it succeeded any better in giving protection to the tiller of the soil? With patient submission to the burthen imposed by the law, and at great expense, the farmer may have complied with the requisitions of the statute, he may have defended his crops by the erection of a lawful fence, and yet, if his lanes are filled with lean and hungry cattle, led on by some mischievous bull, experienced in the art of opening a way to inviting corn-fields, or with herds of rooting and climbing hogs, trespasses must and will occur. In a night the fruit of his labors may be swept away, and he is left poorer in purse, more embittered in his feelings towards his neighbor—and less bound to that country which has failed to secure to him that protection which he has a right to claim at its hands.

4. In its operation it is injurious to the interests of agriculture, because both onerous to individuals, and oppressive to the community.

Suppose a man has bought 100 acres of land, what tax has he to pay before he can appropriate its use to himself? To enclose 100 acres in the ordinary way, supposing the land to lie in the best possible shape, that of a square, will require 1120 panels of fence, or 14,560 rails, allowing 13 rails to the panel. To haul this number of rails out of such material as is now left generally in Eastern Virginia, will require the work of one man 145 days. A negro man hires at present for about \$140 per annum, provisions and clothes. So that, omitting holidays, Sundays, rainy days, and days of sickness, his labor per day is worth 60 cents. To haul the requisite rails then for the outside fence, will cost \$87—and we may safely put the hauling and building at the same, making the first cost of enclosing \$174. But it has been found in practice that this fence has to be replaced within ten years, at the farthest. Hence the annual cost of repairs will be \$17 40, to pay which requires a capital of \$290. To these amounts we must add the value of the land occupied by the fence and the value of the fence timber. It is a small estimate to say that a width of 15 feet or 5 yards all

around the hundred acres will be taken away from cultivation by the fence, making 3 acres out of the 100. The timber in most of Eastern Virginia, is worth 26 cents per cord standing, and 14,560 rails will make 146 cords. Hence the first cost of material is \$36 50, one-tenth of which has to be replaced annually. The average price of land in Virginia, according to the census of 1850, was \$8 per acre, and allowing for subsequent enhancement, we put its present value at \$10. The cost of 100 acres at \$10 will be \$1,000. Bringing together the general items of cost of enclosing, we shall have—

For first cost of labor for enclosing	\$174 00
Fund for annual repairs	290 00
Three acres of land occupied by fence	30 00
Value of fence material	36 50

Total cost of fencing and keeping enclosed 100 acres, \$530 50
 an amount more than 50 per cent. of the cost of the fee simple right to the land. So that for every dollar the buyer pays for the land, he pays half as much more to secure it to his own use. As under all such circumstances, the price comes out of the article sold, the buyer pays as much less for the land than its real value as it would cost to enclose it. Thus the price of land is depreciated, and the public treasury as well as the landholder feels the effect.

Let us now see what is the aggregate tax paid by the whole State in fence building. By the census of 1850, there were 26,152,311 acres of land, improved and unimproved, in the farms of the State, and 170,181 farmers and planters, making the average size of farms about 154 acres, of which 61 acres are improved. If we consider that the farm never lies in the best shape to be enclosed with the least fencing, that it is often cheaper to take in than to leave out a portion of the woodland, that frequently public roads and water streams penetrating the farm cause much additional fencing, and that every farmer requires some interior fencing to restrain his own stock, we may assume that the fencing required in the State is not short of what would be required to enclose at least 100 acres for each proprietor, if in the best shape. If so, taking into calculation only the cost of construction, and leaving out of view, at present, the value of the material and of the land occupied by the fences, there is now invested in perishable fences in the State the enormous sum of \$29,611,494. All of which will be lost or destroyed by the effects of time in the space of ten years. To keep up this amount

of fencing, requires an annual outlay of \$3,000,000—a sum double the revenue of the State for the year 1856 arising from ordinary sources of taxation, and three or four times greater than such revenue a few years ago.

If to this amount, we add the cost of material, \$6,211,600, and the value of land occupied, \$5,105,430, both of which are legitimate items in the cost of fencing, we shall find the whole outlay for enclosures in the State rather over \$40,000,000.

The capital thus invested, and the necessary expenditure annually for repairs would cover our State with a network of railroads, would educate all our people, and in a few years liquidate the State debt.

But the community and individuals suffer in other respects. It is susceptible of mathematical proof that the smaller the farm, the greater in proportion is the cost of enclosing it—and when trespass is committed, the greater proportion is the damage sustained. Hence, the farming profits of the smaller proprietor are necessarily less than those of his more wealthy neighbor. His products cannot long continue to sustain the unequal competition, and the consequence is that, sooner or later, he is not unfrequently compelled to sell out and seek his fortune in a more favored locality. Thus there is from the action of this law a tendency on the part of the large farms to absorb the small ones, and our population, already too thin, is made thinner by the expulsion of a class of farmers who, under the fostering care of a generous legislation, from the very concentration of their efforts, tend to carry the agriculture of a country to the highest state of improvement, to enhance the per acre value of the land, and increase the revenue of the State.

Other grievous losses occur to individuals from the operation of this law. It often happens that small landed estates, the property of widows and orphans, whom the law professes to take under its especial care, cannot be sold. At first, when surrounded with a good fence, they are rented out to the advantage of the owners. But as the fences rot down, and each year the cost of repairs becomes greater, the amount of rent becomes smaller, till finally the lands cannot be rented out at all, for they will not justify both the paying of rent and the cost of enclosing. Thus the owners lose not only the small revenue formerly derived from the rent, but the land is given up by the law as a common to the public, and soon its farming value as capital is greatly lessened. Such cases are of frequent occurrence in lower Virginia.

Again, from peculiarity of situation or some other cause, the

burthen on individuals is particularly grievous. A stream may run through a farm, requiring a fence on either side, or a water fence, all of which may be suddenly swept away by a fresh, perhaps in mid-summer, in the midst of harvest, when it is impossible for the proprietor to renew the enclosure or to protect his crops against the depredations of the stock of the whole neighborhood—or a violent hurricane may prostrate his fences and in a single night give entrance to enough lean cattle and famished hogs to ruin his prospects of a crop for that year—or some windy day in March, a fire in a few hours may destroy all the fencing that the labor of the last three months has been able to accomplish—or a public road, or worse still, a cross road may double or quadruple the cost of fencing and increase in the same or even a greater ratio the danger of and liability to trespass. Such cases are not uncommon and no doubt have come under the observation of every reader of this report.

Again, if the law would permit it, the same time and labor which mauls and puts up 100 rails to rot and be lost in a few years, would convert the same material into a cord of wood worth, with the same hauling, \$2. And the buyer of 100 acres of land, instead of paying 50 per cent. of its value to enclose it and keep it enclosed, might with the same labor the first year cut and deliver 146 cords of wood at \$2 per cord, deriving therefrom \$292. Or if, instead, the same time and labor were devoted to the improvement of the soil; to draining, liming, manuring, or more thorough tillage, as a certain consequence, the whole country in a few years would assume a different and more improved aspect; the land would increase in product and value; the owner would grow in wealth, and the public treasury would feel the benefit.

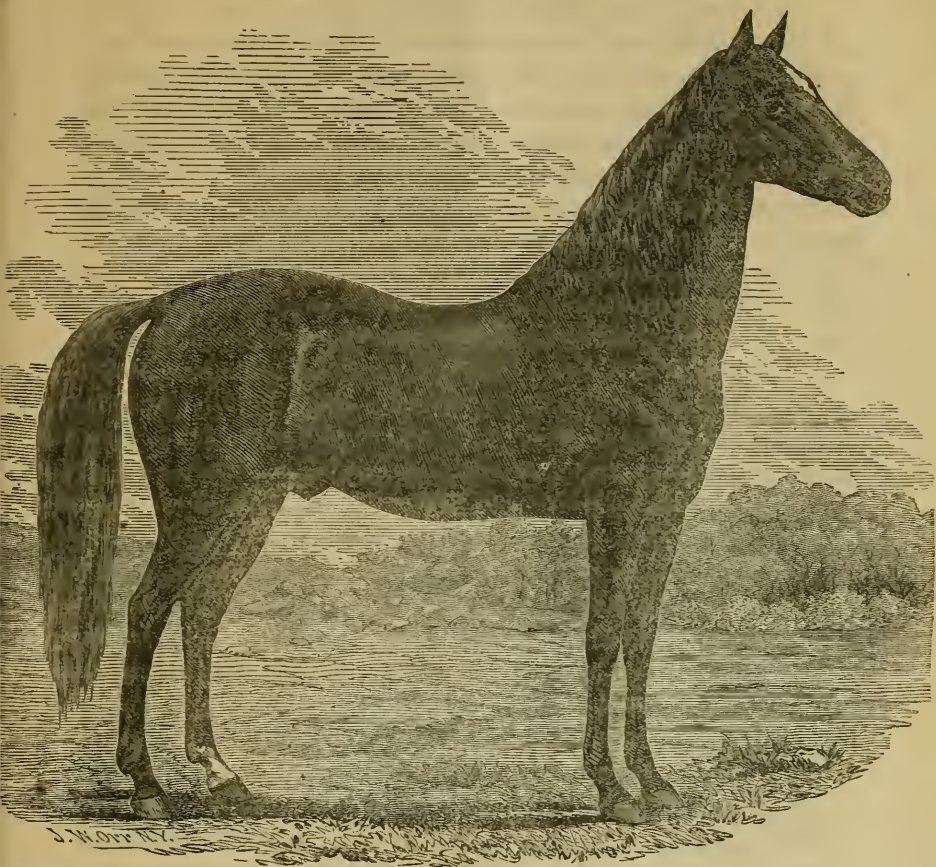
5. Of all the causes of neighborhood bickerings and misunderstandings, this law may confidently be asserted to be the most prolific. A man may have done all that he can do to come up to the requisitions of the law; the time and labor which he ought to have devoted to improving his land and increasing his crops, at great sacrifice, he has devoted to mauling rails and building fences. He may have put up his ten rails and capped them with top log, staked the corners, and on inspection pronounced all good. Trusting to his fence for protection he ploughs and plants. His crops may be almost ready for the sickle. He is just ready to reap the reward of his toil, when some unfortunate night a herd of cattle or swine find their way within his enclosure, and he arises in the morning to look on his loss in dismay. Wherever a night-travelling negro is in the habit of crossing a fence, it is soon to some extent

thrown down, inviting the ingress of jumping cattle. Some thin, half-starved hogs cannot be kept out, (such have ever been known to gnaw rails in two;) and once in they lead on the whole herd that are apt to accumulate in lanes. Or worse still, some unprincipled man, either himself or by a small bribe to a negro, not hesitating to help himself to all that the law permits, aids his famishing stock to find their way in. But it matters little by what agency the thing has been brought about. He sees and feels his loss, and that despite every effort on his part to prevent it. It is more than human nature can stand. Were they his own hogs, could they be got out in no other way, he would destroy them. Even if he could furnish the requisite proof, the redress held up to his view by the law is too remote, too uncertain, too inadequate, and altogether too slow for the present pressing evil. He takes the matter in his own hands, and forthwith a feud arises which may be transmitted to the children of the parties concerned. Some may say the above is an extreme case; it may be so, but who will deny that the like is of frequent occurrence?

In making all unenclosed lands a common, this law serves to render indistinct the line which separates the rights of different individuals,—a line which ought always to stand forth distinctly and boldly. It thus has a demoralizing tendency. It furnishes a plea to one man to make use of that which belongs to another, and it tempts the man, not fortified by principle, to bring about that state of things under which he can enjoy the property of another; without liability for damages for trespass. * * * *

EDMUND RUFFIN, JR. }
 WILLIAM M. TATE } *Sub-Committee.*
 RICHARD IRBY, }

[NOTE.—We reproduce the above report on account of the signal ability with which the argument against “the law of enclosures” is sustained. The remedial suggestions are omitted, because less applicable to our present circumstances, than to the condition of the country when first reported. Indeed, they have been superseded by an act of the Legislature, which has for its object “the protection of crops” and for its local application, the consent of a full bench of magistrates summoned for the purpose wherever the people of any country desire its enforcement.—ED. So. PLANTER.]



Black Hawk

Was sired by Hill's famous Black Hawk, of Vermont, in 1850; he was sired by Sherman in 1833, and Sherman by Justin Morgan in 1808, and he foaled in 1793. Sherman was the most noted of the four best stallions left by Morgan, whilst Hill's Black Hawk was more noted than all before him, leaving a long list of the best trotters of their day. Black Hawk is the property of S. W. Ficklin, of Belmont, near Charlottesville, Va. He is of fine size, weighing 1085 lbs., color black, with a glossy coat; his colts are chiefly bays, (Morgan's color.) some of them brown, and a few black, usually with the white marks of their sire. His oldest colts in Virginia are six years old, with fine action, good riding qualities, and give promise of trotting speed. When six years old, with a few weeks training, he trotted six mile-heats with Sherman Morgan, (his half brother,) in 2.44, and has been kept since as a stock horse.

He was brought from Vermont in 1859, and exhibited at the Central and United States Society's Fair that fall, and the Union Fair of the Virginia State and Central Agricultural Societies, held in 1860, winning at the exhibitions above referred to two second and three first prizes, one awarded by a committee of five judges, giving him the first prize of \$100 unanimously, as the best horse for all work on exhibition.

Peruvian Guano.

SOME OF ITS DEFECTS AND THEIR CAUSES.

We are well aware of the popular favor in which Peruvian Guano is held and hence we think a short article pointing out its defects and their causes, will not only be interesting to our readers of *The Planter*, but profitable also.

Peruvian Guano is a compound substance, composed (average analysis) as follows, viz:

100 parts by weight contain—

55 to 60 parts nitrogenous animal matter, yielding on decomposition 12 to 15 parts ammonia.

25 to 28 parts bone phosphate of lime.

15 to 17 parts incombustible matter and moisture.

A part of its phosphoric acid, put down as phosphate of lime, exists as phosphate of ammonia, which is soluble, but the quantity so existing is small.

Planters who have used it on tobacco and corn have noticed the following results as facts: First, that when drought overtakes the crop, growth is suspended, however well it may have started, and if the drought is prolonged the crop “fires” and proves, to a greater or less extent, a failure, and the money invested and the labor expended, a loss. This is the result of two causes: *First*, the excess of nitrogen, or ammonia, in the guano causes the development of an unnatural quantity of *sap* in the plant, the intervention of drought prevents the decomposition of the guano because of the absence of sufficient moisture, which suddenly cuts off the supply of sap, and the plant *fails rapidly* in consequence, a result analogous to that produced in the human system by the sudden suspension of customary stimulants. The *second* cause is found in the fact that nearly all the phosphate found in Peruvian Guano exists simply as *neutral* or bone phosphate, which is not immediately soluble, but is converted into soluble phosphate during the process of decomposition of the guano; ample moisture is absolutely necessary for this process, and the absence of this necessary moisture, in consequence of drought, suspends decomposition, and as the plant cannot take up the undissolved phosphate, *it fails*.

Secondly. It is a fact well known to all planters that there is a greater variation in the quality and market value of tobacco than of any other product of agriculture. It is a fact not so well known, that the quality and value of tobacco decreases in the same ratio as the quantity of *moisture* and *vegetable albumen* increases. These

two are *nitrogenous* or *ammoniacal* compounds and are largely developed in the plant by the application of Peruvian Guano owing to its excess of nitrogenous matter (ammonia). The same cause also tends to retard the ripening and curing of the crop and thus farther impairs its quality and value. Hence it is, that if the season is favorable, the crop produced by the use of this guano is usually of a *coarse* and *inferior quality*. The finer qualities of tobacco, so highly esteemed in our markets, are rarely, if ever, produced with Peruvian. The commercial value of tobacco, says Baron Liebig, is in *inverse ratio* to the amount of *nicotine* and *albumen* it contains; the *best* qualities, and those which command the highest price, contain the least of these compounds. (See Baron Liebig's works).

Thirdly. It is almost universally conceded by those who have continued its use on the same land for a number of years, that the effect of Peruvian Guano is to diminish the productive power of the soil. This result is more generally noticed by wheat growers. It is observed that while the growth of straw is maintained, the product of grain diminishes. So generally has this result been realized in the Middle and Northern States, that the consumption of Peruvian Guano has diminished to less than one-fifth the quantity formerly used.

The cause of this unfavorable effect of Peruvian is manifest upon the least reflection. It lies in the fact that the only substance in the guano which can permanently improve the soil is *phosphate of lime*; and that the quantity it contains, (25 to 28 per cent.) is not sufficient to make good the loss sustained by the soil in the production of the crop. The quantity removed by the crop is greater than the amount supplied by the guano, the deficiency being made up from the supply in the land, hence *depreciation* is inevitable, and exhaustion must follow sooner or later if the drain is continued. Improvement can only be had by supplying a quantity greater than is removed, and this cannot be done by the use of Peruvian Guano, except at the *extravagant* and *useless* if not *injurious* application of ammonia.

Fourthly. It is a fact very commonly noticed, especially by wheat growers, that the use of Peruvian Guano develops acid in the soil—it makes the land "sour" and induces the growth of sorrel. This arises from a fact which is not generally understood, viz: that the animal matter which it contains, yields, on decomposition in the soil, in addition to ammonia from 8 to 10 per cent. of *oxalic acid*, which is the acid existing in sorrel.

Since these defects exist in Peruvian Guano, notwithstanding its excellencies—and that they do exist and are due to the causes named we think cannot be controverted—a few remarks as to the best substitute for it will not be amiss, and a little thought directed to its component parts as shown by the foregoing analysis, in connection with its defects, will lead very naturally to the composition of the guano or fertilizer we seek.

It will be seen that the defects of Peruvian are to a considerable extent due to the large amount of nitrogenous animal matter (ammonia) it contains, amounting to from 55 to 60 per cent., yielding 12 to 15 per cent. ammonia—this is an excess—consequently the substitute we seek should contain much less. Experience has demonstrated that animal matter capable of yielding from 3 to 4 per cent. of ammonia is sufficient, provided the other elements are in the best condition to nourish the growing plant. It is important, however, that the ammonia should be *the product of the decomposition of nitrogenous animal matter*—it has been found that the commercial salts of ammonia do not have the same effect.

Its other principal defect is its deficiency of phosphate of lime. It contains only from 25 to 28 per cent. The guano which is to be better than Peruvian should contain as much as is practically to be obtained. Theory and practice have shown that an average application of a fertilizer containing from 40 to 50 per cent. of phosphate of lime restores to the soil more phosphate than an average crop removes, leaving a balance for the benefit of the next crop, or the improvement of the land. Experiment has also shown that this is as large a per cent. as can practically be obtained for a commercial article. As it is necessary to have the *ammonia* of the same kind and from the same source as that in Peruvian, it is here necessary that the *phosphate* should be of the same origin and character as that in Peruvian, viz: it must be an *earthy* or *bone* phosphate, and not a *petrified* or *mineral* phosphate.

To obviate to as great an extent as possible the damaging effects of drought, a considerable portion of this phosphate should be, when applied, *immediately soluble in water*. The largest amount of *soluble* phosphate which the published analysis of guano shows, is 15 to 17 per cent., which would be about one-third of the whole amount.

A guano of this composition and with its elements in the above condition, would not only be a perfect substitute for Peruvian, but in many respects superior to it; free from its defects and possessing all of its excellencies. The effect of drought would be less

damaging, because, a large part of the phosphate being soluble on application, it would not be dependent on moisture to so great an extent to prepare it to be taken up by the plants. And the smaller quantity of ammonia would not excite that rapid and coarse growth of leaf and stalk and the elaboration of the *nicotine* and *vegetable albumen* in tobacco, thus the quantity and market value of the crop would be improved and increased, the larger quantity of phosphate giving it body. In the growth of wheat the growth of straw would be somewhat lessened because of the lesser amount of ammonia, while the increased amount of phosphate would give more, plumper and heavier grain.

A knowledge of the defects of Peruvian Guano, and the desirableness of such a substitute for it as is here indicated, caused competent persons engaged in the guano trade to cast about for such an article. No such guano was known to exist, but a compound was sought to be made by the mixture of different guanos, and other articles of known fertilizing value, and hence the various manipulated guanos and super-phosphates of lime now extant. These articles are of varied composition. Phosphatic and Peruvian Guano mixed in fixed quantities—about 1200 lbs. of the Phosphatic and 800 lbs. Peruvian—is an example of one class of manipulations. The Phosphatic guanos generally used, although showing a very large per cent. of phosphate upon analysis, are of a petrified, or mineral nature and, as imported, are almost as hard and heavy as granite, and entirely insoluble in water. They are ground and treated with acid so as to render them partially soluble in water before being incorporated with the Peruvian.

Since the close of the war a guano has been introduced into the South which is identical in character and composition with Peruvian and of the same *ultimate* origin. It is brought from Howland's and other islands containing similar deposits of bird guano. These islands, unlike those from which Peruvian comes, are in a rainy latitude, and the rains of ages have leached out the ammonia from the guano, leaving deposits rich in *earthy*, or *bone* phosphate, identical with that contained in Peruvian. The idea which originated the method adopted to restore this lost ammonia was a happy one, and arose from a consideration of the source of that contained in Peruvian, viz: the excrement of birds feeding solely on *fish*. The nitrogenous animal matter in Peruvian is *fish* digested by the sea fowl. Hence digested fish was looked to for the supply of nitrogenous animal matter necessary to produce the ammonia required to be restored to this guano; and as it was

manifestly impossible to have it digested by *birds*, the same result was effected with acid, and the decomposed mass was incorporated with the guano in sufficient quantities to yield on decomposition the desired quantity of ammonia, thus restoring to this guano the loss sustained by ages of leaching and making it, what it originally was, identical in composition and ultimate origin with Peruvian, differing from it only in the relative proportion of its elements; the use of the acid making it superior to Peruvian in that being incorporated with the guano it renders a large portion (one-third) of its phosphate immediately soluble in water.

The action of any fertilizer exhibiting upon analysis the composition and character previously indicated as desirable in a substitute for Peruvian will be superior to Peruvian just in proportion as the character, condition and proportion of its elements remedy the defects pointed out as existing in the latter; and to enable consumers to form an opinion of the value of guano or other commercial fertilizers, dealers ought to be required to furnish an analysis of the article offered for sale, made by some competent and reliable chemist from samples taken from *actual commercial packages*. When this is done purchasers are enabled to judge of the value of the article they purchase, and are protected against the frauds of unscrupulous dealers who have already fleeced the unsuspecting to such a great extent. It is notorious that much of the Peruvian Guano is fraudulently adulterated, and the bags when emptied, readily sell for one dollar and a half each, to be re-filled with what?

If the inspection of guano, for which the consumer is taxed twenty cents per ton, were not a mere farce, it would be some protection. The inspector should be required by law to make and publish an analysis of each cargo of guano inspected by him. As it is conducted, all fertilizers are branded alike, "No. 1." An instance having occurred in which Peruvian Guano showed on analysis (made by private parties for their own benefit) only 10 per cent. of ammonia instead of 15, the average per cent., which was nevertheless inspected—so called—and branded "No. 1."

A faithful analysis is the best guarantee which can be offered of the value of any commercial fertilizer, and we are glad to see by the advertising pages of *The Planter* that it is offered as an indication of the value of one of the most prominent guanos in our market, and it is to be hoped that the time is not far distant when the same guarantee will be offered with all fertilizers.

The Mineral and Agricultural Wealth of Southwestern Virginia.

There is, perhaps, no portion of our State which contains within itself more of wealth than the section known as "Little Tennessee." The fertility of the soil, the salubrity of the climate, and the varied mineral deposits with which the earth is liberally filled, combine to render it one of the most interesting and attractive regions of the State. With the exception of a few miles immediately contiguous to the line of the Virginia and Tennessee Railroad, the great area of this beautiful country is literally a *terra incognita* to enterprise and capital. The distance from market and the absence of many facilities for developing the agricultural resources of the country, combined with the natural adaptation of the soil to the production of grasses, have conspired to make the inhabitants of this section of Virginia rather a pastoral than agricultural people. Lying in the great limestone region, which stretches from the St. Lawrence to the Gulf, it partakes in a high degree of all the characteristics of this favored formation. Consisting of valleys, and groups of valleys, alternating with mountains rich in minerals and clothed with verdure, this region throughout its whole extent presents remarkable uniformity in its geological conditions.—Throughout its extent we have the same productive soils, everywhere bounded by the same great geological formations.

Through New York and Pennsylvania the whole of this beautiful region is crowded with a dense and prosperous population, with cities and towns springing up like magic; with furnaces and mills, and factories in full blast, teeming with wealth, and glorious in its beauty.

But in Virginia and Tennessee and Georgia, it is comparatively a wilderness. Three-fourths of the country remains in original forest, and in many sections the solitudes are as deep and unbroken as if the foot of man had never intruded upon them. Why should not this section of Virginia rival the prosperity and wealth of corresponding portions of Pennsylvania? She is blessed with a more delightful climate; equally fertile soil, and mineral deposits not inferior in richness and variety to those which have secured to the latter State such a degree of prosperity.

The great need is capital and enterprise. With these properly applied, Southwestern Virginia would, in a few brief years, rival the most favored regions of the Keystone State. We must therefore invite this capital to investments here. We can and must so present the advantages and capacities of our State as to command the attention of capitalists, and court the fullest and most searching investigations into the resources of the country.—*Lynchburg News.*

The Study of Agricultural Facts.

BY DR. DANIEL LEE.

In the December number of the *American Farmer*, Peruvian guano is quoted at \$95* a ton; while such appears to have been the demand for this fertilizer that the market is bare of the article. Common cow manure, formed by the consumption of wheat straw, rye or oat straw, is not worth more than a dollar a ton for agricultural purposes. How many farmers or planters have thoroughly studied the causes of this remarkable difference in the price and value of these substances, both of which are largely used as plant food? Mr. David Dickson, of Hancock county, Georgia, made a fortune by early mastering this problem in agriculture, and largely utilizing the material facts which it discloses.

Why should the dung of sea-birds be worth from fifty to one hundred times more, pound for pound, than that of cattle? Both are animal excrements, both nourish agricultural plants. Why then is the imported manure worth so much more than the home-made? There are good reasons for this difference, and every farmer ought to understand them.

If the constituent elements of both were the same in quantity, condition, and necessity to be applied to tilled land, any essential difference in price would be absurd. On the contrary, if the cow manure is composed mainly of substances which rain water and atmospheric air can supply to growing crops, and has only a trifle of assimilable nitrogen and phosphorus, while Peruvian guano has very little of those elements which air and water furnish, but is rich in available nitrogen and phosphorus, (which are deficient in most soils,) we have only to prove the necessity of the nitrogen and phosphorus to plant growth, to explain in the clearest manner why the one manure is worth so much more than the other. All reading farmers are so well satisfied as to the necessity of assimilable nitrogen and phosphorus in the healthy organization of plants and their seeds, that no space will be occupied in the *Farmer* in discussing that point. It is vastly more important to learn, if we can, how to concentrate home-made manure, and give to a ton of it the same agricultural power and value which exist in the best Peruvian guano. Mr. Dickson purchased annually ten thousand dollars' worth of this and other highly concentrated manures, mainly because twelve hundred acres of land were readily fertilized for cotton

*This was an oversight, and the price should have been quoted \$86 per ton.

or corn before planting. To make good cowpen and stable manure enough for twelve hundred acres, and apply it before planting every year, would be a formidable, not to say, an impracticable undertaking. The latter operation he did not attempt, while the expense of annually manuring twelve hundred acres, so far as the labor of distribution was concerned, was comparatively small, and the profit large.

When a man makes four hundred pounds of clean cotton on an acre, and sells it, something less than one pound and a half of nitrogen (which is so valuable in guano) leaves his plantation. The bale of cotton contains also about four pounds of incombustible salts. For the sake of round numbers, call the loss in both six pounds. Let us assume that to each acre planted in cotton he applies one hundred pounds of Peruvian guano, and thirty-three and a third pounds each of potash, common salt and epsom salts, and that the surface soil gains as much by moving water bringing fertilizers into it, as it loses by washing or leaching. In this case the acre receives two hundred pounds of agricultural salts a year, and parts with six pounds, having a clear gain of one hundred and ninety-four pounds per annum. A thousand acres of Mr. Dickson's piney woods plantation, treated in this way ten years, would lose, on producing a bale to the acre, of four hundred pounds on an average, sixty thousand pounds of agricultural salts, and gain one million pounds of Peruvian guano, and the like weight of potash, common salt and epsom salts. The excess of gain over the loss would be one million nine hundred and forty thousand pounds.

With this enormous balance in favor of fertilizing atoms applied to the soil, should not Mr. Dickson's home plantation grow rich quite as fast as its owner? This plantation contained, when I saw it, some nine thousand acres; and it is pertinent to inquire whether a man, who buys ten thousand dollars' worth of highly concentrated manure a year, may not so use it as to draw fertilizing elements from what were before insoluble silicates, phosphates, sulphates and chlorides in the ground, as well as carbon, nitric acid and ammonia from the atmosphere? Is it not a part of the great and perfect economy of nature that manure, as well as the seeds of plants and all animals, shall be reproductive of more food for plants? If so, is not this reproductive function a matter of the highest importance to all tillers of the earth, who need plant food as much as bread?

A little phosphate of potash, extracted from a granite rock, by a few cells of moss growing on it, enables this plant to produce, for

plants of a higher order, much more assimilable potash and phosphoric acid derived from this adamantine rock. Explain this phenomenon as you please, to my mind it is highly instructive. Can there be a reasonable doubt that a little manure of the right kind often sends the needy roots of corn and cotton into fresh pastures beyond what they would reach without this acid?

If the countless rootlets of plants have any power at all on the earthy matters that surround them whether chemical, vital, electric or any other, the extension and increase of these rootlets must augment their peculiar force. A fertilizer that contains no carbon often develops cotton, corn and wheat plants, that have three or four times more carbon than those growing on the same soil, but not fertilized at all. In the same way a few pounds of gypsum applied to an acre may send clover roots into fresh pasture, and thereby give to this renovating plant twice or three times more sulphur than the gypsum contained. Soluble phosphoric acid and potash have the same recuperative and reproductive power.

Viewed by the light of undeniable facts, good manure has substantially the reproductive function of good seed corn; and the painful fact should not remain hidden under a bushel that, while most farmers save their seed-corn with commendable care, they waste seed-manure as though it had no value whatever. Two hundred pounds of manure will fairly seed an acre, if it is sound, and of the right sort. It was this kind of seed that enabled Mr. Dickson to raise three times more cotton-seed on an acre than would grow without it and this excess of cotton-seed, used as a manure for corn and field peas, more than doubled his crops for feeding hogs and cattle. From these he produced meat to sell on a cotton plantation, and such heaps of hog manure of the richest kind, as might rejoice any owner of piney woods land. Deep ploughing enabled his first seed manure, his cotton seed manure, and that from hogs, cattle and mules, to operate with double effect on both soluble and insoluble salts in the soil.—*American Farmer.*

HIDDEN TREASURES.—In the “green room” in Dresden, where for centuries the Saxon princes have gathered their gems and treasures, until they have become worth millions of dollars, may be seen a silver egg, a present to one of the Saxon queens, which, when you touch a spring, opens, and reveals a golden yolk.

Within this is hid a chicken whose wing being pressed, also flies open, disclosing a splendid golden crown, studded with jewels. Nor is this all: another secret spring being touched, hidden in the centre is found a magnificent diamond ring.

Osage Orange.

MR. EDITOR,—The season being near at hand to prepare for hedges and thinking information would be acceptable, I will give your readers my observation and experience with Osage Orange hedges since 1853, commencing with the growth of one year old.

The seed may be planted and cared for in the garden or nursery, not unlike salsify, carrots, &c., and when taken up to plant out, they should be spaded up sidewise, the tap roots chopped off to about six or eight inches long, and the tops to a half inch above the bleached part, or the part that grew below the ground.

If some plants are stronger than others, it is best to classify them, that they may be attended to to suit their more delicate growth, and the better to guard against a failure of the unpromising it would be advisable to grow two plants near each other, for the first year, when the least promising could be pulled up, or if both do well, one will do to transplant where needed, or in the garden till they may be wanted, it being very important the growth should start alike, as gaps are difficult to fill when the hedge is several years old.

If the row for the hedge admits of it, then plough and coulter in each furrow so as to give the ground thorough tillage and manuring equal to the production of forty or fifty bushels of corn per acre. It should be as well prepared as practicable as if for a corn crop, the width of ground to be from four to five feet, that the roots in two to four years old will not find the ground harder than it should be for their growth. If the locality will admit, it should be cultivated with a plough, not going so deep, as to damage the growth of roots; if this cannot be done, then a liberal amount of hoe work must be done several seasons, till the side growth of branches shall occupy the surface.

If it is necessary to plant too near a fence for ploughing and coultering thoroughly, then spade the earth over to a depth of twelve to fifteen inches, and at *least* three feet wide, more would be better, mixing in what manure may be necessary, or if the fence row be of long standing it may not require manure.

The plants being shortened and the tops cut as mentioned, a line should be drawn, then open with a narrow or grubbing hoe some eight inches deep, and several wide at top, the plants dropped eight inches apart, then holding the top of each plant even with the top of the ground, the earth is crumbled in with the other hand, and filled around and pressed down, leaving the top even with the surface. The ground settling will leave room for the growth of new wood, which will be

slow in starting, and should be tilled to keep clear of weeds and grass.

The following March, cut the plants off two inches from the cut of last year, and when the growth is eight to twelve inches, cut off to two inches above the last, and continue the process *as often* as may be necessary in order that the growth may be forced the more into the side branches with the view that in five or six years the hedge may be wide and close at the bottom and of triangular shape, the top being brought to a ridge, and all the side growth, getting its share of exposure to the sun and air.

The growth of new wood, at the age it should be cut, is quite soft and should be cut with a peice or full sized and sharp old scythe blade, and with a little practice can be uniformly and rapidly done.

The trimming *should not be delayed*, as the growth in the main stem robs the side shoots the more, and if not *perseveringly* kept cut and clear of weeds and grass, the growth will tend upward and not to a strong lateral growth.

Missing plants should be replaced the second year or sooner if discovered, being careful that they get as fair a start as practicable, that gaps may not exist. Should the row be along a fence that stock may have access to, the first four years it should be guarded by obstructions at short distances to prevent the stock making a pathway of the cultivated ground and damaging the plants, till the thorns afford a sufficient guard against all comers. I have planted at several periods, and have in all some two miles of hedge; that planted the first year succeeded without the loss of scarcely a plant, but being directed to cut but once a year, it grew up six or eight feet high, cutting off at eighteen inches the next or third year, twelve inches were added and in four years I had almost a hedge, but too thin. I was advised to cut back to within six inches of the ground; I did so, the growth was very rapid, and though cut twice a year, it was not often enough, and it has grown up with more strength in the main stem and less in the lateral branches than should be.

Hedges that have been neglected, would be improved by *sawing* off at four inches from the ground and filling the gaps by taking others from a given point or end of the hedge row, where newly planted work could be done, and that part cared for to suit its age. I have seen different varieties of hedges in this country and in Europe, and have no hesitation in the opinion that the Osage Orange is the best hedge growth I ever saw. It is hardy, easily raised, formidable even to Yankee raiders, turning them, if without an axe. It is idle to plant unless it will be properly attended to; this is as easily done as to raise a crop of corn of the same size.

The question will arise, where the seed and plants can be found. Of this I am not now informed, but will warn those who are thinking of planting, that there is much uncertainty in the seed, and I have preferred to buy one and two year old plants at from five to ten dollars per thousand up to 1860.* The planting may be done from March to May, or early in June, provided the plants are not allowed to get too dry or too full of sap. For a useful, ornamental and lasting fence, and as a barrier to trespassers, it has no equal within my knowledge.

S. W. FICKLIN.

Belmont, near Charlottesville, February 20, 1867.

The Southern Agriculturist and the Negro Mutually Dependent.

It is manifestly to the Agricultural interest of the South to use every means to render the condition of the black man as comfortable and happy as possible. And it is the resort of folly, if not crime, to represent their interests as conflicting, or that the white man at the South seeks to oppress the negro. What, in the condition of the South, would she do without the native labor of the freedman? How could her land be cultivated without the only class of Agricultural laborers within her borders? The white man, the Southern planter and Agriculturist, needs labor in order to the efficiently productive cultivation of the soil. And the freedman needs employment. Where are interests more mutually dependant than exist under such a condition of things? Is it not to the interest of each to supply the other with the commodity needed by each? The white man needs labor and the black man needs employment. And there is no class in the South, except the class of freedmen who can supply the demand of the agricultural interest—and no other, except the agricultural, which can supply the demand of the freedman, which is employment. Seeing then that it is so manifestly to the interest of each to interchange commodities, how absurd and injurious is it to instil other than the kindest feelings between the two races. The South is sufficiently wise and awake to her own necessities, to be aware that four million of her laboring population are not to be displaced and supplied with a similar class in a day by an equal influx of emigrants. And although the system of labor now prevalent excludes that absolute control which she has heretofore exercised over it, still she is sufficiently convinced that it is her wisest policy to make the best use of it which its condition allows, and to do all she can to encourage and foster it.—*Norfolk Day Book.*

*General Wm. H. Richardson advertises Osage Orange plants.

Horticultural Department.

Grape Culture.

BY A. S. FULLER, RIDGEWOOD, N. J.

Read before the Pennsylvania Horticultural Society, November 6th, 1866.

LOCATION OF VINEYARDS.

That the location of a vineyard is often the cause of success or failure, no one who has investigated the subject will deny; but that every location which is pronounced to be favorable, even by those who are supposed to be good judges, is so, in fact, is not equally true; for there are many things which cannot be learned except from experience:

Elevated positions, with a free circulation of air, for warm climates; elevated, protected ones for cold latitudes, are to be preferred. There is more danger from frosts in the latitude of Philadelphia than Albany. There is also more danger from mildew, sun-scald, and insects in the former than in the latter. But in one the late grapes may be successfully grown, while in the other none but the earliest are valuable.

Therefore, it is apparent to every observer that specific experimental knowledge is required more than that which is speculative or theoretical. I do not wish by these remarks to convey the idea that grape culture must be confined to prescribed limits, nor that particular towns, counties or States, are the only locations where vine culture can be made profitable; but that there are certain locations in every section of the country, which are better adapted to it than others.

To determine these locations requires observation and some little experience.

I now refer only to sections where grape growing is to be made a speciality, and prosecuted on a large scale.

Declivities of hills and mountains have been, in all ages, chosen as the best sites for vineyards; and probably, all things considered, they are better adapted for the purpose than plains.

In such situations, a more perfect circulation of air is secured; besides, in sections where increased temperature is desirable, it can be obtained by planting on hill-sides inclining to the South.

In the Northern States such situations are preferable, but not

always absolutely necessary for success. We suspect that the time is not far distant when every one who owns a rod of ground will grow his own grapes, whether his location is favorable or unfavorable. If the soil is unsuited, he will remedy the defect, and overcome other obstacles by skill and perseverance.

The question of soil is another which is open for debate, and is likely to be for some time to come; for all the theories and speculations of wise-acres are so often set at naught, that one often doubts if there be any practical rules or facts which may be guides to the novice in selecting a soil for a vineyard.

In one section we find vineyards planted in a stiff clay, producing abundant crops; in other sections similar soils are found to be utterly worthless for grape growing. Just so it is with all other kinds of soils—sandy, gravelly, or loamy—in each of which we find vineyards that are successful, and others that are failures. We have, therefore, to judge from the majority, and this, I believe, is on the side of a calcarious, gravelly, or stony soil. The most successful vineyards in our country are in the limestone regions, although there are a few that do finely in soils of an opposite character.

The grape requires a firm soil, not too heavy or too light. Many sandy soils are so light, that too much air penetrates, and not sufficient resistance is offered to the growth of the roots to keep them healthy.

One ancient author says, that the vine-roots require labor to strengthen, and doubtless it is true.

If the soil is not deep, make it so by ploughing or trenching, for there is no operation that will add so much to the healthy growth of the vine as a deep and thoroughly pulverized soil.

There are but few locations where it will be necessary to trench the soil four feet deep, as is sometimes recommended; but there are few soils that do not require deepening to twelve or eighteen inches.

If the soil is not naturally rich, it should be made so before planting; for we cannot expect a growth of wood or fruit, unless the material to produce them is in the soil.

Over-manuring is nearly as great an abomination as the want of a proper amount.

The application of a large amount of fresh manure will often cause disease and feebleness in the vine to as great an extent as a poor and unfertile soil. To produce fine healthy vines and fruit of good quality, a deep but only moderately rich soil is required.

I am quite certain that many vineyards have been ruined by a too liberal application of manure, while many others have failed for want of a proper amount.

When vines grow rapidly, say six to ten feet per year where they are allowed to grow unchecked, it is all that is necessary. I have often seen three year old Delawarees making fifteen to twenty feet of growth in one season; but such wood is seldom, if ever, as well ripened or healthy as when one-half of this amount is produced.

It is, therefore, important that those who are new beginners in vine culture should use largely their own judgment, instead of following implicitly the directions of any one who is not on the ground to examine and ascertain by experience how much or how little manure is required.

One writer will tell you that five hundred or one thousand two-horse wagon-loads of compost are required per acre, and all this may be true with him and on his particular soil (if so, we pity him); but upon your own, one-half this amount might be ruinous.

Again, there must be discrimination made between varieties. One will require (in fact, demand) a very rich soil, while another would be almost uncontrollable under the same conditions. Delaware will starve where a Concord will thrive, and Taylor will take what the Concord rejects and flourish splendidly. Therefore, I have long since come to the conclusion that there was very little positive knowledge connected with grape culture, and what there is, was, and is obtained by local experience.

MANURES.

What kind of manure is best? is the ever-recurring question. The only general answer which I am able to give is, the kind which you can get. I prefer, for general use, barn-yard manure, composted with two parts muck to one of manure. This compost, for sandy soils, is as good a manure as has ever been invented. For a heavy loam or clay soil, the order might be reversed, and two parts of manure to one of muck, always adding one to two quarts of bone-dust to each vine at the time of planting.

There are many kinds of concentrated manures that are good, and I have experimented with many of them, but, so far, with the single exception of bone, I prefer the barn-yard compost, ton for ton.

Others think differently, and practice accordingly, which only proves the truth of my previous remarks, that only local experience can be depended upon.

CULTIVATION OF VINEYARDS.

Clean cultivation, frequent stirring of the surface of the soil, or, in very light, sandy, or gravelly soils, applying a liberal mulch.

My personal experience or knowledge will not warrant me in advising anything additional, except as a warning, or what not to do. Do not grow any vegetables or fruit-bearing plants among your vines, no matter who may advise you to do so. If you cannot afford to give up the soil to the vines, you had better not plant them.—*American Farmer*.

Growing Potatoes Under Straw.

Having frequently seen reports of extraordinary success in raising potatoes by covering them with straw, I was induced to try it upon a small scale.

A plat in my garden, about fifty feet square, of well manured clayey loam, was nicely spaded up and made fine and smooth. It was then marked out in shallow drills, two feet and a half apart, and potatoes (of the pink-eye variety) planted whole, two feet apart in drills, and barely covered with earth. The whole patch was then covered with dry wheat straw spread lightly and evenly with a pitchfork, to the depth of about two feet. Several showers occurred soon after the potatoes were planted, which settled the straw very considerably, and in due time the vines came up through the straw, and soon covered the entire surface with the rankest vegetation.

Nothing more was done to the patch till the vines were killed by frost in autumn. Not a weed appeared among them. At the usual time of digging potatoes the dead vines were all pulled, and removed; then, with a potato fork, the layer of straw—which was pretty well rotted, and not more than four or five inches in thickness—was carefully removed. To my great surprise, there lay the potatoes on the surface, *literally covering the ground*, and almost as clean as if they had been washed. They were picked up and measured, but the quantity I do not remember. This much, however, I well recollect, that I never raised so good a crop by any other mode of culture. They were of very uniform size and of good quality.—S. MOSHER, Latonia Springs, Kentucky, March, 1858.—*Ohio Valley Farmer*.

POTATOES, for summer use, should be planted immediately, and the seed for planting should be kept dry and at a low temperature to prevent sprouting.

Work for the Month in the Kitchen Garden.

ASPARAGUS BEDS should be thoroughly worked with the fork this month as soon as the weather is favorable. The object of the operation is to break the crust, which in a greater or less degree, is liable to form during winter, notwithstanding the attention which may have been given, in mulching the beds with long, fresh farm-pen manure and other appliances for covering. When this crust is broken up and the bed made pervious, then light, air and heat find access to the roots of the plants. After this thorough working of the beds, they should be treated to an application of old well rotted stable manure, to the depth of several inches, as a top dressing.

BEETS should be sown in drills about eighteen inches apart and the seed covered to the depth of two inches. The seed bed ought to be of very rich soil.

CARROTS, PARSNIPS AND SALSIFY may be sown and treated in the same manner as beets; indeed, they may be sown in the same bed, occupying of course, separate drills.

CELERY.—Sow white, solid Celery this month, in very rich land, and in a shady place if practicable, when this is impracticable select a situation the least exposed to the direct rays of the sun. The tobacco plant bed always, carefully prepared, and being especially free from weeds and grass is an excellent place to sow celery seed.

CABBAGE seed may be put on warm borders this month, at least, such as flat dutch, drum-head and savoy. Cabbage plants in hot-beds should be freely exposed to the air when not too cold. After the plants are strengthened in this way they may be set out from the 15th to the last of the month.

CUCUMBERS AND MELONS may be planted the last of this month or early in April.

KIDNEY BEANS may be planted in all this month. In the latter part of the month prepare the ground for planting Lima beans, and set up the poles for supporting them. This should be done before the beans are planted, and continue to replant, until you get a good stand, which is sometimes very difficult.

LETTUCE.—This is the month to sow lettuce for summer use. This vegetable is held in such general estimation that there is no need of urging its cultivation upon our readers.

ONIONS.—Sow immediately for pickling purposes. White Portugal is a valuable variety. This is also the season for planting the onion button or bulb.

PEAS.—Sow early varieties during the month. By sowing once a week in this month and early in April, you will secure a supply for the table during the season.

RADISHES.—Sow turnip root variety at once, and the long root kinds later in the month.

SPINACH.—Sow in drills, fifteen or sixteen inches apart, after covering, trample well to secure germination. Sow early in the month.

Household Department.

Poultry Account.

I commenced in the year 1866 with twenty-nine hens and five cocks. The cocks were one, and two years old, and the hens were one, two and three years old, nearly equal number of each. They were all of the White Leghorn, or as they are also known, White Spanish breed, though not entirely pure. January 8, the thermometer descended to nineteen below zero, and froze the tops of the cocks' combs, and two of them died in consequence. Two hens died of disease in the early spring. About the first of July I began with those hens that had ceased laying, and at the first of October I had killed all the hens but four, also two of the remaining cocks. During the summer I had raised from chickens hatched in April and May thirty-two cocks and pullets. The pullets began to lay the latter part of September. The young cocks were killed as wanted until January 1st, 1867, when the stock on hand was as follows: one cock of 1865, three of 1866, with twenty-two pullets and four hens.

These fowls were all kept together in the lower story of an octagonal concrete building with a ground floor, the building being thirty feet outside diameter, and having one window in each side toward the sun. South of the house was a large orchard kept mellow by the cultivator. On the other side there was grass. They were allowed full range, but were seldom seen more than ten rods from home in any direction. They exhibited no disposition to sit, and did not hatch their successors.

Their food was a constant supply of whole corn, two bushels at a time, emptied into a box to which they had free access. Of this they consumed forty-two bushels, including two bushels, of cracked corn for the chickens; two bushels of barley were also fed during the time. During the first three months of the year they were fed with refuse fish, principally heads which were boiled. Of this they consumed seventy-eight pailfuls, costing eight cents each. In addition, they had all the swill from the house, including the curd from sour skimmed milk, the product of one cow only, which supplied the family with milk, except three or four months of the time, when there were two cows.

The monthly product of eggs was as follows :

January	478	July	539
February	486	August	340
March	602	September	200
April	558	October	125
May	488	November	251
June	447	December	291

Total - - - - - 4,705

In order to arrive at the annual product of one hen from this table, it will be necessary to ascertain the average number laid by the twenty-two pullets after the first of October; that being nearly exactly the line of division between the laying hens and pullets. This multiplied by twenty-nine would give with the hens' eggs, a total product of 4,917 eggs, or an average of 16-29 to each hen.

What was the cost of each one of these 4,705 eggs? This can be easily ascertained as the corn and fish waste were all purchased. I do not grow corn, being convinced that it is an unwise policy for the New England farmer generally to do so, even in view of the extravagant rates of transportation from the West.

44 bushels of corn and barley cost	\$50.53
Fish waste	6.24
	<u>\$56.77</u>

This amount divided by 4,705, gives a trifling fraction less than $1\frac{1}{2}$ cents, as the cost of one egg, or $14\frac{1}{2}$ cents per dozen.

This account has nothing to say of labor, interest, or capital employed or swill fed, but on the other hand, no mention is made of the manure or the value of the property consumed or marketed. One may, perhaps, offset the other.

I am often asked if poultry would not be as profitable on a large scale as a small one, and if not, why? Theoretically it would seem that it might be, but failure, so far as I know, has followed every attempt at keeping large numbers of hens together. I have no doubt, however, that poultry may be kept in unlimited numbers, if the policy of separate houses and enclosures for each family of fifty or less be adopted. I would give to each family of this size at least a fourth of an acre of ground, one-half of which should be in grass, and the remainder under cultivation. It is really astonishing to see how much grass or other green fodder hens will eat. It appears to be fully as important to them as grain. In the winter, cabbage is about the only substitute. The use of a cock except for breeding purposes, I would not encourage; I doubt if they pay for their keeping.—*Working Farmer.*

THE SOUTHERN PLANTER.

RICHMOND, VIRGINIA, MARCH, 1867.

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SUBSCRIPTION One Year,.....\$3.00

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1 square, 10 lines or less, one insertion,.....\$ 1 00	¼ page, one year,.....\$ 35 00
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1 page, single insertion,..... 15 00	1 page six months,..... 60 00
¼ page, six months,..... 20 00	1 page, one year,.....100 00

PAYMENTS.

Subscriptions—in advance. Advertising—annual—quarterly in advance. All others in advance.

Editorial Department.

Spring.

“For lo, the winter is past, the rain is over and gone; the flowers appear on the earth; the time for the singing of birds is come, and the voice of the turtle is heard in the land.”—*Solomon's Song.*

Such are the emblems and heralds of the incoming reign of Spring; such the aspect of beauty which smiling nature wears, when He, who has promised that “while the earth remaineth seed time and harvest, and cold and heat, and summer and winter, and day and night shall not cease,”—When He shall have wrested the sceptre of dominion from the relentless grasp of tyrant Winter, whose iron sway “the ravaged fields, waste, cloudless and bleak,” in icy fetters bound, and in his stead the smiling Spring—the seed time of the year enthrones, whose magic spell dissolves the bonds which nature captive held, awakes her from the indolence of long repose and quickens her with all the energies of a renovated life. Then:

“From the moist meadow of the wither'd hill,
Led by the breeze, the vivid verdure runs,
And swells, and deepens; to the cherish'd eye
The hawthorn whitens; and the juicy groves
Put forth their buds, unfolding by degrees,
Till the whole leafy forest stands display'd
In full luxuriance to the sighing gales!”—*Thomson's Seasons.*

The Situation.

The forecast of every prudent, thoughtful farmer has led him to the adoption of some system compatible with his circumstances for regulating and controlling his industrial operations for the year. As it is the part of wisdom to count the cost before one begins to build, so, doubtless, has he examined critically his ways and means with a view to ascertain what capital in money or its representatives he can make available to the purpose of determining the amount of labor he will be able to procure, and as contingent thereon, what breadth of land he will be able to cultivate. He has also considered the question whether his means will enable him to work under the inspiration of a reasonable hope of profit, or whether they are too limited to promise anything beyond the point of making both ends meet.

In view of the disturbed, disjointed and uncertain condition of the country, there never was a conjuncture so inauspicious for the wise and prudent selection of means, best calculated to promote the agricultural interests of the State, or the comfort and profit of those dependent for support on agricultural pursuits. With a large population to be fed and clothed out of the productions of our desolated fields, very few persons possess the necessary implements to till them, and a large majority are destitute of money to command the necessary labor, the aggregate supply of which is wholly inadequate to meet the needs of the people, even if there was no lack of capital among them. Besides this general absence of individual capital, we are afflicted with an unprecedented deficiency of a circulating medium, so indispensably necessary to facilitate the current exchanges of business, and lubricate the joints of industry.

We are in a condition similar to that of the bondmen of Egypt, whose relentless task-masters required at their hands the full tale of bricks, while they denied them the necessary ingredient of straw. We must delve our subsistence out of the earth with or without the necessary appliances of machinery, labor and capital, or *starve!* We had looked hopefully to our Legislature for such a relaxation of the rigors of the usury law as would remove the principal obstruction to the influx of capital among us—a commodity which, unrestricted, always seeks employment where it is most needed; but this reasonable and fond hope has been indefinitely deferred. The wisdom of the Legislature has proved foolishness, and instead of bread they have given us a stone. Instead of opening to us a way to borrow money, our last hope for relief, they have virtually denied us the privilege of borrowing at all; for it would be about as proposterous to offer six per cent. in the present condition of the money market as it would be to ask for a loan with the interest entirely remitted. Thus have they entailed the imperative necessity for the most damaging sacrifices upon the poor farmer, who, from the wreck of his former fortune, has nothing left him but his land. He must, at any cost, have facilities for carrying on his industrial operations, and there is, therefore, no sacrifice, consistent with honor, which he will not make under the heavy pressure which may be brought to bear upon him, to save himself and to protect those endeared to him by the tenderest relationships of life, and dependent upon him, from suffering and want. We have thus briefly and imperfectly sketched what we fear is the condition of a large number of the farmers of every section of the State, not to speak of those who, while they have been despoiled of all their personal and perishable property, are encumbered with a load of indebtedness, which, had their possessions remained intact, was easily to be borne, has, under their sad reverse of circumstances, become an intolerable burden.

Such are some of the many difficulties which stand in the way of concert among farmers in the adoption of any rules or regulations susceptible of general application. The circumstances of the different sections of the State are so diverse, that a separate policy must be adopted by each, and whatever that policy may be, it must be indued with such elasticity as to accommodate itself to the various phases of individual interest.

Those who possess large landed estates with capital sufficient to work them, constitute but a small, but most important class. They can command labor, the most approved machinery as a substitute for labor, and fertilizers, if need be, for quickening the productiveness of the soil. The true policy for these to pursue, it is universally admitted is, that they should cultivate their own lands,

to the extent of their ability to superintend them, and of their means and resources for working them, with the aid of bailiffs, if justified by the extent of their operations. It is to this class, mainly, we are to look for those surplus productions of the soil which are destined to swell the tide of our commerce and build up the general prosperity of the State. It is to this class we are to look for the introduction into their fields of the steam plough and other costly machinery, which the inventive genius of the country may devise for economising labor in the larger operations of husbandry, and which are excluded from the use of the small farmer by reason of their cost. The advantages accruing to the large farmer by reason of these superior facilities are, that according to high authority, it will require but one-fifth of the laborers which will be necessary to cultivate the lands of the State if divided into very small farms. This is a consideration which ought not to be overlooked and which can scarcely be over-estimated, when we consider the exceeding sparseness of our population and the great difficulty of introducing the system of small holdings without the abandonment of a large portion of our lands to disuse and waste.

There is a second and larger class in every section, proprietors of large landed estates, who unlike the first named, are destitute of the pecuniary means necessary for their effective cultivation. Their entire capital is locked up in their lands. If they could by means of leases, mortgage or sale, liberate so much of their fixed investment as would constitute an adequate floating capital for working the remainder, they might cultivate their lands on nearly equal terms with him who is provided with ready money, in respect to labor, machinery, &c., and contribute equally with him according to the comparative extent of their operations to the general prosperity. But no practical means present themselves of obtaining money through any of the channels above indicated. The time for letting leaseholds has not come, they must await the tardy arrival of the moneyed immigrants and to raise money by mortgage or sale is simply an impossibility where neither money lenders nor purchasers are to be found short of the most extravagant sacrifices. How ruinous it is to the interest of this large and important class, as well as to the welfare of the State, that no means of effectively working their lands comes within their reach, and that they should be compelled to forego the profits which the use of borrowed capital might have afforded them, and which would have enabled them with propitious seasons and good management rapidly to curtail and finally to liquidate their indebtedness.

There is still another class, differing from each of the other two, whose large possessions consist of very poor land. Like the class just mentioned, they too, are destitute of capital, and stripped of their personal property. Their necessities for money exceed the wants of either of the other two classes by so much as their lands require an increase of fertilizing applications to make them produce enough to pay the expense of cultivation, and yield a surplus; for all agree that poor land cannot be cultivated with hired labor at a profit without a liberal application of manure.

What can they do? their situation is the least favorable for obtaining capital, and certainly they have no greater advantages for selling or leasing out their lands.

It appears then, that all classes except a highly favored few, are compelled to resort to temporary expedients which their judgment condemns, to obtain the

means of procuring labor to work their lands at all. Hence while every one condemns the policy of paying for labor by a share of the crop there are comparatively few who are not driven by stress of circumstances to the adoption of this mode of compensation. Those who successfully cultivated tobacco and cotton the last year have been relieved from this alternative, having acquired means of paying the wages of labor in money, but those who are compelled to submit to the evils of a bad system must await the slow accretion of years of toil and self-denial before they reach the point of independence, when they shall be free to adopt that system which their best judgment approves.

Our Exchanges.

"AMERICAN FARMER."—It is a singular and not less gratifying fact, that the first of our exchanges which greeted our entrance, upon our second editorial campaign, was the *American Farmer*, of Baltimore—the PATER FAMILIAS of the whole agricultural press in this country. Though venerable for its age, it shows none of the scars of time upon its visage. It seems to have discovered the secret of rejuvenescence and is as healthful, fresh, and vigorous as ever. Long may it flourish.

The "AMERICAN AGRICULTURIST," which counts its subscribers by the six or seven scores of thousands, is before us. It is replete with valuable instruction in every department of the industrial interests of the country. It is beautifully illustrated with highly finished wood engravings, and is a monument of what enterprise and industry can accomplish where there is a will.

The "WORKING FARMER" is an old and well established journal, which commenced its career, under the editorial conduct of the late Professor Mapes, and is now edited by Wm. L. Allison, 58 Courtlandt street, New York.

The "RURAL AMERICAN," by T. B. Minor, editor and proprietor, Utica, New York, is an old and familiar acquaintance for which we feel a peculiar sympathy and respect. We hope prosperity may attend it.

The "MARYLAND FARMER," a Baltimore agricultural monthly, which has entered upon its fourth volume, is a very neat specimen of the art Typographic, ably edited and published by S. Sands, Mills & Co., No. 24, S. Calvert street, corner of Mercer.

Book Notice.

"THE AMERICAN HORTICULTURAL ANNUAL."—A year Book of Horticultural Progress for the Professional and Amateur Gardener, Fruit Grower and Florist, is a very handsome serial, issued by Orange Judd & Co., 41 Park Row, New York. It is a valuable and timely contribution to our horticultural literature, supplying a need long felt and filling a place hitherto unoccupied. We recommend it to the liberal patronage of our friends, who may feel the need of a valuable calendar of work for every month in the year, in the orchard, the Fruit Garden, the Kitchen Garden, the Flower Garden and House Plants. Sold by Woodhouse & Parham on Governor street, in this city.

Commercial Report.

RICHMOND, VA., February 1st, 1867.

For many months have all classes of our people been looking forward to the coming spring and summer with the hope that they should then be strengthened by large additions to their capital, as the result of actual sales of Tobacco, Wheat &c., and that thus would come relief from the heavy monetary pressure that has so long crushed them in spirit, and crippled their energies. Nor have we reason to complain of our physical or financial condition or prospects, as they are affected by our own actions, for the results achieved in the Southern field of labor within the last twelve months, have been highly satisfactory, and give evidence of so much *native energy* and recuperative power as to *astonish the world*. Indeed, so encouraging were the prospects before us, that the faces of our people were beginning to assume an air of cheerfulness, and it is therefore with great anxiety that we look forward to the effects that may be produced by the recent oppressive legislation of a Radical Congress, upon the spirits of our people, upon the productive interests of our section, and upon the general prosperity of a common country. To venture an opinion now is but to speculate, for revolutionary times bring such sudden and often violent changes as to unsettle in an hour the well founded opinions of many years standing. We would therefore say to our people in this trying hour, be *watchful of every change*, be patient, *do nothing that shall bring dishonor upon ourselves*, and above all *be industrious*.

Do not let our troubles palsy the hands of those among us who are "strong to labor," for our victories must now be won by the plough, the scythe, and the hammer.

Let those who have lands cultivate them with all the appliances at their command, leaving the question of *confiscation* (which, to say the least of it, is in the future) for the *future to decide*; our business is with the *active present*.

Let the merchant aid the producer in every way that he can with safety, but the producer and the merchant should avoid long credits. Debt is dangerous at all times, but particularly so now, and while there are planters who use large borrowed capital successfully, it is oftener the case, that a good credit is the planter's worst enemy.

It is only through the exercise of great prudence and industrial activity that the Southern people can hope to rise above their present difficulties.

TOBACCO.—We are pleased to note more activity in business circles. The offerings of Leaf at the Tobacco Exchange for the month ending February 25th, were

787 Hhds 158 Tierces 343 Boxes Total number pkgs 1288:

The average prices for the month were

Common lugs, light wgt	3.00a 4.00	Medium leaf,	10.25a12.00
" " heavy "	3.50a 4.50	Good stemming,	13.00a15.75
Good lugs,	5.00a 6.50	Good shipping, (no fine)	14.00a16.00
Bright lugs,	8.00a20.00	Good manufacturing,	16.00a24.00
Fancy, "	22.00a40.00	Bright wrappers,	25.00a85.00
Common leaf,	7.25a 9.00		

WHEAT.

The receipts for the month have been very light.

We quote Red 2.25a2.60; White 2.60a2.80 per bushel.

PETERSBURG.

PETERSBURG, VA., February 25th, 1867.

Since our last report of 25th January, business has improved in all branches of trade. Last month our river was blocked up with ice, and some of the railroads were interrupted by snow, so that for some time business was almost suspended—which was partly owing to our merchants being unable to receive any goods and the inability of Planters to forward any produce or to visit our city. The railroads and water communication are now all open and we look forward to a fair spring trade.

The Money Market continues very stringent, and owing to the great want of capital it is impossible for business men to borrow money at anything like a reasonable or living rate of interest. This will doubtless be better for all parties in the end, as it will prohibit anything like large credits, and confine buyers to purchasing only what their necessities compel them to have. To do a healthy business our capital must be made, not borrowed.

There has been a large business done in Fertilizers in the last week or two: Very little Peruvian Guano has been sold, but the various Super Phosphates have been taken to supply its place. There is not much Peruvian Guano in our market—an abundant supply is shortly expected.

COTTON.—At the close of our last report, the Cotton Market was quiet but steady. Since that time prices have gradually declined, which is owing to the increased estimates of the crop, and the continued receipts at all the shipping ports. The market closes dull and heavy and we quote nominally:

Middling,	27@27½
Low Middling,	26@26½
Ordinary,	24@25

Receipts at all the ports since 1st September, 1866	1,256,049 bales.
“ in Petersburg	15,631 bales.

TOBACCO.—There is no change of importance to note since our last report. Loose is coming in very freely, and there are increased receipts in Hogsheads. For good leaf in hogsheads there is an active demand at full prices, we quote Lugs (loose) 1½@3½ for Common—4½@6c for good. New leaf (loose) 5@15 for inferior to good Manufacturing. Fancy \$20 to \$100 according to quality—Lugs in hogsheads, new 2@3 for poor, 4@4½ for common, 5@7½ for good. Leaf 6 to 15 according to quality. No fine leaf offering, and as yet we have very little desirable Tobacco on the market.

CORN.—In fine demand at 90@95c.

OATS.—Held at 70@75c.

ROWLETT & TANNOR.

We would call the attention of our readers to several *enterprising and reliable* Baltimore and Richmond firms who make their first appearance in our advertising sheet this month.

ADVERTISING SHEET.

A PLOUGH FOR THE TIMES. THE WATT PLOUGH.

Warranted to do far better work, and one-fourth more work, with the same power. Is double as strong and durable; not one-tenth as liable to clog or choke.

To pulverise the soil and cover up vegetation, far superior to any cuff-brace plough ever yet made—(all of which have been invented, formed and fashioned by Geo. Watt). If on trial, the Plough does not come up to the warrantee, the price paid for it will be refunded on its return to our store. We append a few from many certificates in our possession, from those who have used them, and refer to hundreds of others:

Messrs. Geo. Watt & Co.:

RICHMOND, Nov 20, 1866.

Gentlemen—I have delayed giving you my opinion of your new plough until I could fully test it. I have for some weeks worked it with three most excellent ploughs,—a cast-steel one made by Curtis, of Ogdensburg, N. Y.; your old two-horse wrought share, and Starke's two-horse cast point,—and have satisfied myself that when the ground is at all foul it will do better and more work, with less labor to the team and teamster, than either of the others, and that it is DECIDEDLY THE BEST TWO-HORSE PLOUGH I HAVE EVER HAD. I have discovered but one objection to it, which will be counterbalanced by the saving of time lost in cleaning the others, and that is that my ploughmen are so much pleased with it that they will take care to wear out the old ones sooner than they should, that they may be replaced by the C. and D. (I hope you will soon get out your three-horse plough on the same principle, as it will be invaluable in heavy fallows. Very truly, your friend,

WMS. C. WICKHAM.

Mr. Booker writes: "The ploughs work admirably; I have tried them on light and heavy lands, upon clean and foul lands, and everywhere they operate beautifully. I have used many ploughs, some very good ones, but these are far superior to any I ever worked. I think I can't be mistaken in giving this opinion. Success to you, sir, for I am sure you deserve the thanks, and will receive the patronage of intelligent agriculturists. Very respectfully, yours,

GEORGE BOOKER.

Geo. Watt, Esq.:

SEPTEMBER 23d, 1866.

Dear Sir—It gives me great pleasure to acknowledge the superior capacity of your new plough. I tried it first on a clover lot, that had been pastured for three seasons, of a very stiff red soil. It was very hard and dry, but I broke it with a strong double team, about eight inches deep, with much greater ease than three horses pulled your old No. 6, and the work was done so much better that it would bear no comparison. Your friend and well wisher,

G. B. STACY.

Mr. Geo. Watt:

SPRING HILL, APPOMATTOX, Jan'y 17th, 1867.

Sir—The Plough you sent me last year is decidedly the best two-horse Plough I ever used; comes up to your card in every respect. Please send me four of the Ploughs like the one you sent me last summer.

W. E. BRADSHAW.

We have sold since the 1st of September last, 400 two and three horse Ploughs, and in most instances not more than one or two Ploughs to any farmer. Not one has been returned; nor have we a complaint from those using them, against them.

Geo. Watt,
Hugh A. Watt. } ly.

Geo. Watt & Co.,
No. 1450 Franklin Street.

S. S. COTTRELL.

W. N. REDFORD.

SAMUEL S. COTTRELL & CO.

Saddle and Harness Manufacturers,

Old No. 129, New No. 1303 Main Street,

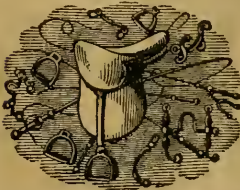
RICHMOND VA.,

A large supply of

SADDLES, HARNESS, HORSE BLANKETS, BUGGY RUGS,
HORSE BRUSHES, CURRY COMBS, TRUNKS, CARPET BAGS, VALISES, etc.
Constantly on hand, at Wholesale and Retail.

Messrs. JOHN OTEY and JOHN N. JENNINGS, so long and favorably known in our business, can be found at this establishment.

REPAIRING OF EVERY DESCRIPTION.



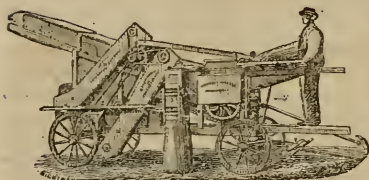
 TO THE OLD AND THE NEW

PATRONS of THE SOUTHERN PLANTER.

It gives us pleasure to inform you that the old and well known House of

H. M. SMITH & CO.

Is still in the field, and is manufacturing more largely than ever


**Agricultural
IMPLEMENTS
AND
MACHINERY.**

The experience of the Senior Partner in this business in this city commenced in 1829, and has known no intermission.

The New Firm pledge themselves to maintain the high reputation of the Machinery bearing the brand of H. M. SMITH.

Catalogues and Price Lists sent by mail on application.

feb—tf

H. M. SMITH.

I. S. TOWER.

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THOS. S. BALDWIN & CO.

Successors to KEEN, BALDWIN & Co.

Established 1838.

Wholesale and Retail, Fashionable and Seasonable

READY-MADE CLOTHING!

FOR MEN AND BOYS' WEAR. Also, GENTS' FURNISHING GOODS, a full line. TRUNKS, VALISES and TRAVELLING BAGS,

AT CORNER OF MAIN AND TENTH STREETS,

feb—ly

RICHMOND, VA.

**VIRGINIA STATE
INSURANCE COMPANY.**

Office No. 917, South Side Main, bet. 9th and 10th Streets,

RICHMOND, VIRGINIA.

Capital, - - - - - \$ 200,000.

Buildings, Merchandise and Furniture, in the City or Country, insured against loss or Damage by fire, on the most liberal terms.

JOHN L. BACON,

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President.

Vice-President.

Secretary

Richmond & Danville Rail Road!

THE SHORTEST AND MOST DIRECT ROUTE

BETWEEN RICHMOND, VA. AND THE

SOUTH and SOUTH-WEST!

THROUGH TICKETS can be procured in New York, Philadelphia, Baltimore and Washington,

To DANVILLE, Va., GREENSBORO' and CHARLOTTE, N. C., COLUMBIA and CHARLESTON, S. C.; AUGUSTA, MACON, SAVANNAH, COLUMBUS, and ATLANTA, GA.; MONTGOMERY, MOBILE, &c., ALA.; NEW ORLEANS, &c., LA.

THROUGH TICKETS CAN BE PROCURED AT RICHMOND TO ALL THE ABOVE NAMED PLACES; also, to LYNCHBURG, VA., KNOXVILLE, CHATTANOOGA, NASHVILLE, MEMPHIS, &c., TENN.; HUNTSVILLE, ALA., CORINTH, MISS., &c., &c.

ly THOS. DODAMEAD, SUPERINTENDENT.

Farming Implements and Labor-Saving Machinery.

We have always on hand and offer for sale at MANUFACTURER'S PRICES

CORN SHELLERS, CORN AND COB MILLS,

Cutting Boxes, Well-Fixtures,

Churns, Washing-Machines, Grindstones, Wheel-Barrows, &c. &c.

Of the Best and Most Approved Patterns.

ALLISON & ADDISON,

Dealers in FIELD, GRASS and GARDEN SEED, GUANO, &c.

feb-ly

Cary Street, bet. 13th and 14th.

JOHN C. MILLER,

(LATE OF KENT, PAINE & CO.)

IMPORTER AND DEALER IN

STAPLE and FANCY DRY-GOODS,

CORNER MAIN & NINTH STREETS,

RICHMOND, VA.

In the Retail Department the stock of Dress Goods will always be found complete.

REPRESENTED BY SAM'L M. PRICE.

feb-ly

ALLAN & JOHNSON,

1506 Main Street, Richmond, Va.

NURSERYMEN, SEEDSMEN AND FLORISTS.

Having been engaged in the NURSERY and SEED business in this State for many years, we claim to have the proper experience of the varieties of Fruits, &c., best suited to the climate and soil of Virginia and adjacent Southern States, and of the best modes of culture, times for planting, &c., &c.

Our NURSERIES near Richmond having been recently established, we can only offer

Shrubbery, Flowers and Small Fruits,

Grown here. Our

FRUIT AND ORNAMENTAL TREES

OF LARGE GROWTH

Will be supplied from our Baltimore and Winchester Nurseries, and are of fine size and condition, and admirably adapted to this climate.

OUR SEEDS ARE FRESH, GENUINE & RELIABLE,

WE HAVE NO OLD STOCK TO GET RID OF. We procure them from the BEST GROWERS IN THIS COUNTRY AND ABROAD, and keep a

Full Assortment of everything needed for Field or Garden.

WE WARRANT ALL WE SELL.

**TOBACCO AND OATS
MANIPULATED GUANO.**

THE JAMES RIVER MANUFACTURING COMP'Y

Is again prepared to supply the Planters and Farmers of Virginia and North Carolina with its well-known

FERTILIZER,

Which will be found equally beneficial to the crops of Tobacco and Oats, as it has proved to be to that of Wheat—the Phosphate it contains, being just as essential in imparting WEIGHT and SUBSTANCE to the Tobacco leaf as in filling up the heads of Wheat or of Oats with GRAIN.

It consists of a combination of Peruvian and Phosphatic (Sombrero) Guano, finely ground and perfectly incorporated; and can be applied either with the drill, or sown broadcast without loss or trouble. The proportions vary to suit the views of the purchaser, and in every case are weighed in with the most scrupulous care and precision.

Regular Preparation contains 1,000 lbs. of Peruvian, and 1,000 lbs. of Sombrero Guano to the ton of 2,000 lbs.

Special Preparation of 1,333 lbs. Peruvian and 667 lbs. of Sombrero to the ton of 2,000 lbs.

Orders can be addressed through the Commission Merchants of Richmond, or directly to the undersigned, who bestows upon this department his constant personal attention.

feb—tf

E. B. BENTLEY, Agent.

CRECORY BROTHERS,

No. 1417 Main Street, between Fourteenth and Fifteenth Streets,

RICHMOND, VA.

DEALERS IN

Ranges, Parlor, Office and Cook Stoves,

SUCH AS THE CELEBRATED

“ARBITER,” “SHEPPARD,” “IDA,” “MONITOR,” “RIP RAP,” “QUICK BAKER,” “MORNING AND EVENING STAR,” “COMMODORE,” “CHARTER OAK,” and many others too numerous to mention. Also, house furnishing articles, HARDWARE, TINWARE, &c. Also, Fairbanks’ celebrated Scales, all sizes.

feb—tf

Seed! Seed!! Seed!!!

ALL KINDS OF GARDEN AND FIELD SEED.

Catalogues giving directions for cultivation, furnished on application.

PLOUGHS! PLOUGHS!! PLOUGHS!!!

ALL KINDS APPROVED PATTERNS MADE & KEPT CONSTANTLY ON HAND.

Castings Smooth and Tough.

PALMER & TURPIN,

No. 1526 Main Street,

feb—ly



JOHN DOOLEY, Hat Manufacturer & Dealer,

1211 Eagle Square, Richmond, Va.

Has just removed to his New Store—or rather his old stand—where he had the good, or bad fortune (it does not matter which now) to be burnt out on the disastrous 3d of April, 1865. He takes pleasure in announcing to his old customers of Virginia, North Carolina and Tennessee, that he is ready to supply them with goods in his line, as he did for twenty-five years before the war. They will find the stock of HATS, CAPS, and LADIES' FURS, and HATTERS' GOODS and MATERIALS for Manufacturing and Trimming Hats, &c., all ready to their hand. The prices shall approximate to those of the good old times. feb—1y

ALLISON & ADDISON,

AGENTS FOR

SOLUBLE PACIFIC GUANO,

AND
FLOUR OF RAW BONE.

DEALERS IN No. 1 PERUVIAN GUANO, (obtained direct from the Agents of the Peruvian Government and warranted fresh and pure.)

LIME, PLASTER & POUDDRETTE,

All of which we offer at the lowest market rates.

No. 1320 Cary street, between Thirteenth and Fourteenth sts.

RICHMOND, VA.

Orders and communications attended to with care and dispatch. feb—1y

Important to Farmers.

DR. VALENTINE'S

Recipe for Making Artificial Guano.

No. 1.	Dry Peat, †	.	.	.	.	.	20 bushels
" 2.	Wood Ashes,	.	.	.	.	.	3 "
" 3.	Fine Bone Dust,	.	.	.	.	.	3 "
" 4.	Calcined Plaster,	.	.	.	.	.	3 "
" 5.	Nitrate of Soda,	.	.	.	.	.	40 lbs.
" 6.	Sal. Ammoniac,	.	.	.	.	.	22 "
" 7.	Carb. Ammonia,	.	.	.	.	.	11 "
" 8.	Sulph. Sodae,	.	.	.	.	.	20 "
" 9.	" Magnesia,	.	.	.	.	.	10 "
" 10.	Common Salt,	.	.	.	.	.	10 "

† If Peat cannot be obtained, use garden mould or clean virgin soil instead.

DIRECTIONS FOR MIXING.

Mix Nos. 1, 2, 3, together; mix 5, 6, 7, 8, 9, 10, in four or five pails of water, or enough to dissolve the ingredients. When dissolved, add the liquid to the mixture, (1, 2, 3,) and mix as in making mortar. When thoroughly mixed, add No. 4, (the calcined plaster,) which will absorb the liquid and bring the whole to a dry state. Mix under cover, in a dry place—pack so as to exclude air—observe the proportions in making small or large quantities. The above recipe will make one ton, which will manure seven and a half acres of land.

Having been applied to by a number of farmers to whom I furnished it before the war, and who tested its qualities—many thinking it equal to natural guano—the subscriber has made arrangements to furnish any quantity this season, and will sell the ingredients, exclusive of Peat, Ashes and Salt, (articles on every farm,) at the low price of \$25 per ton. All orders carefully and promptly executed.

R. R. DUVAL, Druggist,

Under Spotswood Hotel, Richmond, Va.

Richmond Agricultural Works!

IMPROVED

BUCK-EYE SULKY CULTIVATOR.

Manufactured by
J. W. CARDWELL & CO.



RICHMOND, VA.
Gary Street, between 14th and 15th.

Having purchased the Patent Right for the SULKY CULTIVATOR, we will proceed at once to manufacture a sufficient quantity to supply the trade, of the best material and workmanship. We are also the Agents and Manufacturers of the following

Machines & Implements

- Buck-Eye Reaper and Mower,
- Guisar's Improved Thrasher and Cleaner,
- Cardwell's Self-Oiling Thrashing Machine and Horse Power,
- Virginia Corn Sheller,
- Smith's Patent Straw Cutter,
- Cardwell's Corn Planter,
- Box Corn Shellers,
- Ploughs of all Patterns,
- Tobacco Fixtures and Machinery

MADE TO ORDER. ALL WORK MADE BY US WARRANTED to be of the best material and Workmanship. We have made such arrangements as will enable us to furnish the BUCKEYE MOWER AND REAPER

ON A CREDIT OF FOUR AND SEVEN MONTHS,

Thus enabling the farmer to pay for them out of the next crop. We solicit a call.

REPAIRING PROMPTLY ATTENDED TO

RO. A. LANCASTER.

P. J. WRIGHT.

J. L. WILLIAMS.

LANCASTER & CO.

BANKERS

AND

STOCK & EXCHANGE BROKERS,

No. 1113 Main Street, Richmond, Va.

L. W. ROSE, Teller.

feb—1y

NEW MUSIC STORE.

JOHNSON & CHAMBERLAYNE,

MUSIC DEALERS AND PUBLISHERS,

No. 902 MAIN and NINTH STREETS, RICHMOND, VA.

Would respectfully announce to their friends and the public generally, that having perfected arrangements with the largest and best Northern and Southern Musical Establishments, they are now able to present at their New Store an unrivalled stock of SHEET MUSIC, MUSICAL INSTRUMENTS and MERCHANDISE, to which they would invite the attention of the Musical Public.

AGENTS FOR THE SALE OF

WILLIAM KNABE & CO.'S,



MARSCHALL & MITTNER,

and GALE & CO.'S, GOLD MEDAL, Grand and Square

febly

PIANOS!!!

THE CELEBRATED

UNION WASHING MACHINE

AND

CLOTHES WRINGER COMBINED.

The only successful Washing Machine ever introduced. Warranted to wash perfectly WITHOUT SOAKING, HAND RUBBING, OR BOILING, SAVING TIME, LABOR, SOAP, CLOTHES and HEALTH.

With an experience of over twelve months in the sale and use of these Machines, we confidently recommend them to the housekeepers of Virginia and North Carolina, as doing WELL all that is claimed for them.

☞ Circulars descriptive of the Machine forwarded on application and orders promptly filled.

ALLISON & ADDISON, Agents,

feb—1y

1320 Cary Street, between 13th and 14th.

MANHATTAN LIFE INSURANCE COMPANY,

OF NEW YORK.

Annual Income,.....\$2,000,000.
Annual Dividends,.....40 pr. ct.

All kinds of NON-FORFEITING, LIFE and ENDOWMENT POLICIES ISSUED.
LOANS MADE ON POLICIES.

All Policies, after three years, Non-Forfeiting.

LOCAL BOARD OF REFERENCE—Hon. Jos. Mayo, Mayor, Judge Wm. H. Lyons, Judge Wm. W. Crump, Jno. O. Steger, Esq., Harrison, Goddin & Apperson, Bankers, John H. Claiborne, Esq., Chief of Police, Paine & Co., Merchants, Jno. Purcell, Esq., John Dooley, Esq., Wm. H. Haxall, Esq.

P. T. MOORE, Agent, J. ADAIR PLEASANTS, Gen'l Agent, Dr. J. S. D. CULLEN, Med. Examiner, JOHN O. STEGER, Legal Adviser.

feb—1y

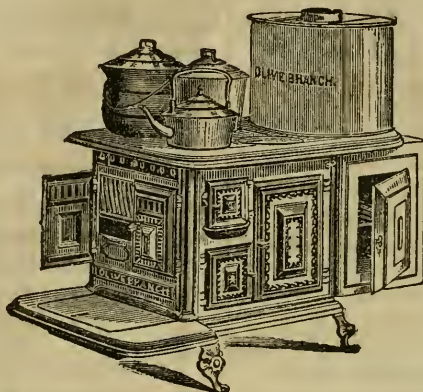
Office 1201 Main Street, corner 12th, over Telegraph Office.

SNYDER, BOWERS & CO.,

OF

THE RICHMOND STOVE AND ARCHITECTURAL IRON WORKS,

No. 1000 CARY STREET,
RICHMOND, Va.



After a test of sixteen years, have the verdict of their customers in Virginia and the South generally, that their manufactures are nowhere excelled for beauty of design, durability or cheapness.

THEY MANUFACTURE

HEATING and COOKING STOVES, STEAM and HOT WATER APARATUS for heating buildings, IRON RAILINGS, VERANDAHS, &c. DOOR FRONTS, complete for Stores and other Public Buildings, WINDOW CAPS, CORNICES, &c.

And sell at MANUFACTURER'S PRICES, FIRE BRICK, FOUNDRY FACINGS, feb—6m LATHES, &c. Also, IMPORT SCOTCH PIG IRON.

Virginia Fire and Marine Insurance Company.

CHARTERED 1832.

OFFICE---Company's Building, 1015 Main St., Richmond.

WILLIAM WILLIS, JR., Sec'y.

W. L. CORWARDIN, President.

AGENTS:

J. C. DENING, Norfolk.
JNO. P. JOHNSTON, Danville.
THOS. A. BLEDSOE, Staunton.
F. M. LATHAM, Culpeper C. H.
Rev. THOS. HUME, Portsmouth.

T. H. IVEY, Lynchburg.
A. B. VENABLE, Farmville.
J. COMPTON, Lexington.
J. W. SHIELDS, Christiansburg.
W. M. TURNER, King William Co.

feb—1y

Field, Grass and Garden Seeds.

ALLISON & ADDISON,

1320 CARY STREET, BETWEEN THIRTEENTH & FOURTEENTH STREETS,
RICHMOND, VA.

Have constantly on hand and offer for sale in large and small quantities

Clover, Timothy, Orchard Grass, Herds Grass and Ky. Blue Grass Seeds.

Also a general Assortment of Fresh and Pure GARDEN SEEDS, (carefully selected by ourselves) direct from the most reliable Growers of this Country and Europe.

Catalogues furnished on application, and seed sent by mail free of postage at our regular retail prices. feb—1y

WOODHOUSE & PARHAM,

Late James Woodhouse & Co.

BOOKSELLERS, STATIONERS

AND DEALERS IN PIANO FORTES,

Governor Street, near Main,

RICHMOND, VA.

feb-1y

JULIUS STEENBOCK, New York.
NICHOLAS STEENBOCK, Richmond, Va.**JUL. STEENBOCK & CO.**

Importers and Dealers in

Foreign and Domestic DRY GOODS,No. 1213 and 1215 Main Street,
EAGLE SQUARE,

RICHMOND, VA.

Office New York, 5 College Street. feb-1y

PALMER, HARTSOOK & CO.

GENERAL

COMMISSION MERCHANTS,105 and 107 Fourteenth Street,
(2d door below Cary,)

RICHMOND, VA.

Geo. S. Palmer, Dan'l J. Hartsook,
Wm. B. Isaacs, feb-6m W. H. Palmer.**S. H. HAWES,**

(Successor to Sam'l P. Hawes & Son,)

DEALER IN

ANTHRACITE COAL,For Foundry, Factory and Family use,
also SMITH'S COAL,

Eighteenth and Cary Streets,

feb-1y RICHMOND, VA.

GEORGE C. GARY,

(Formerly of Petersburg, Va.)

Importer and Wholesale and Retail
Dealer in**CHINA, GLASS, EARTHENWARE,**AND
House Furnishing Goods,

Iron Front Building,

1306 Main, between 13th and 14th Sts.,

feb-6m RICHMOND, VA.

G. GERSDORF,**FILE MANUFACTURER,**

No. 1418 and 1420 Cary Street,

Bet. 14th and 15th,

RICHMOND, VIRGINIA.

Particular attention paid to Re-cutting
Old Files.

feb-1y

W. N. BELL & CO.

Wholesale and Retail Dealers in

Foreign and Domestic DRY GOODS,

No. 907 Broad Street,

Second door below Ninth Street,

RICHMOND, VA.

feb-1y

JOHNSON & HUNTT,

WHOLESALE DEALERS IN

**GROCERIES. PROVISIONS
and LIQUORS,**

"Pearl Block," Fourteenth Street,

BET. MAIN & CARY STS.

feb-1y

RICHMOND, VA.

CHARLES D. HILL & CO.**COMMISSION MERCHANTS,**

No. 18 Pearl (or 14th) Street,

RICHMOND, VA.

Solicit consignments of Tobacco, Grain,
Flour, Cotton, Bacon, &c. Purchase on
order Fertilizers, Groceries and other
supplies.

CHAS. D. HILL. feb-1y JAMES POTEAT.

Tobacco Exchange Restaurant,

AND

BOWLING SALOON,

Shockoe Slip, Thirteenth St., below Cary,

Charles H. Fitzpatrick, Prop'r.**SUPERIOR WINES, LIQUORS, and
CIGARS. OYSTERS, GAME, &c.,**

In Season.

feb-1y

ELLETT & ROYSTER,**General Commission Merchants,**

Corner of 12th and Cary Streets,

RICHMOND, VA.

Offer their services for the sale and pur-
chase of Groceries, Liquors, Provisions,
&c.; also, Tobacco, Cotton, Flour, Wheat,
Corn and Country Produce generally.
Peruvian Guano and other fertilizers.

ANDREW L. ELLETT, WM. S. ROYSTER.

feb-1y

GORDON & CRINGAN,

Successors to John N. Gordon & Son,

Grocers and**COMMISSION MERCHANTS,**

AND DEALERS IN

METALS, LEATHER, &c., &c.

14th Street, near the Exchange Hotel,

feb-1y RICHMOND, VA.

R. W. POWERS,

Wholesale and Retail DRUGGIST,

Corner Main and 15th Streets,

RICHMOND, VA.

Keeps always on hand a Complete Stock of Drugs, Medicines, Paints, Oils and Dye Stuffs; also, a fresh stock of Reliable Garden Seeds. All of which he will sell upon the most Favorable Terms.

feb-6m

GARDEN SEEDS.

J. BOLGIANO & SONS.

GROWERS AND IMPORTERS,

28 Calvert Street, Baltimore, Md.

European and American Seeds

Of unequalled reliability at wholesale and retail. Papers for dealers supplied in quantities to suit. mh-1y

SPOTTS & GIBSON,

Grocers and Commission Merchants

Nos. 117 & 119, Fourteenth Street,

BELOW CARY,

Nearly oppo. old stand of Spotts & Harvey,

RICHMOND, VA.

Jesse T. Hutcheson, for a long time Tobacco Inspector at Mayo's Warehouse, will give his personal attention to sale of Leaf & Manufactured Tobacco. feb-6m

Established in 1856.

B. HEINRICH,

WATCHMAKER and JEWELER,

919 Main Street,

Between Ninth & Tenth, south side,

feb-1y **RICHMOND, VA.**

KELLOGG & GIBSON,

Importers, wholesale and retail dealers in

CHINA, GLASS, QUEENSWARE,

AND

HOUSE FURNISHING GOODS,

No. 115 Main Street,

RICHMOND, VA.

T. H. KELLOGG. feb-1y J. W. GIBSON.

Ed. H. Skinker, Chas. R. Skinker,
S. H. Pendleton.

E. H. SKINKER & CO.

(Late of Richmond, Virginia,)

GENERAL

COMMISSION MERCHANTS

FOR PURCHASE OF

Merchandise and sale of Cotton, Flour, Grain, Tobacco and other Produce.

1y No. 83 Front St. New York.

GRUBBS & WILLIAMS,

Real Estate Agents and Auctioneers,

Under National Bank of Virginia,

North-west Corner of Main and 11th Sts.

Continue to devote themselves exclusively to the transaction of a Real Estate business. They sell Real Estate at Auction or Privately in town or country; Rent Houses and Collect Rents. feb-1y

A. LOWE & BRO.

CARVERS AND GILDERS,

MANUFACTURERS OF

Looking Glass and Picture Frames. Mantle and Pier Mirrors constantly on hand. Also, a fine selection of American and Imported Engravings.

902 Main Street, Richmond, Va.

Agents for Grove's celebrated Show Cases. Particular attention paid to re-gilding feb-1y old frames. P. O. Box 389.

ROWLETT & TANNOR,

GENERAL

COMMISSION MERCHANTS,

No. 94 and 96 Sycamore Street,

PETERSBURG, VA.

Solicit consignments of Cotton, Tobacco, Wheat, Corn and Country Produce, and will fill all orders for Merchandise, Guano and other Fertilizers.

Agents for Rhodes' Super Phosphates, Baugh's Raw Bone Phosphate, Whane's Raw Bone Phosphate, Pacific Guano.

Planters can be supplied with these Fertilizers on most accommodating terms.

JOHN ROWLETT.

N. M. TANNOR.

feb-6m

HARRISON & POWELL,

Nos. 1721 and 1723,

Cor. Franklin & 18th Sts. Richmond, Va.

Grocers,

COMMISSION MERCHANTS,

AND DEALERS IN

Corn, Oats, Bran, Mill Feed, &c. Consignments of all kinds solicited. Special attention given to the sale of all Country Produce, and prompt returns made.

W. L. HARRISON. [feb 1y.] ED. T. POWELL.

JAMES W. PEDIN,

Wholesale and Retail Dealer in

Foreign and Domestic DRY GOODS,

909 Broad Street,

RICHMOND, VA.

A complete Stock of Goods always in store, and sold at lowest market rates.

Salesmen—D. Cogbill, J. R. Haynes.

feb-6m

LOUIS J. BOSSIEUX,
MANUFACTURER OF

Double Refined Steam Candies,
And Wholesale Dealer in

Domestic and Foreign Fruits, French
Candies, Cigars, Tobacco, &c.,

No 1412 Main St.,

feb-1y

RICHMOND, VA.

JOHN C. PAGE, Jr.,

DEALER IN

BOOTS, SHOES, TRUNKS, &c., &c.

Keeps constantly on hand

A full supply of the Best Goods in his
line. Store

Corner Ninth and Main Streets,

feb-1y

RICHMOND, VA.

JOHN H. MONTAGUE,

Corner Main and Twelfth Streets,

RICHMOND, VA.

Fire, Marine, Life and Accident

INSURANCE AGENT.

feb-3t

WM. HOLT RICHARDSON & CO.

MERCHANT TAILORS,

14th Street, opposite Exchange Hotel,

RICHMOND, VA.

WM. HOLT RICHARDSON.

W. FLETCHER RICHARDSON.

feb-1y

GEO. B. STACY.

GEO. P. STACY.

G. B. STACY & SON,

1310 MAIN STREET, RICHMOND, VA.

GENERAL UPHOLSTERERS,

AND DEALERS IN

Cabinet Furniture, Bedding, &c.

Carpets, Paper Hangings. Window Shades and Oil Cloths,

Special attention given to the Manufacture of Mattresses, of every description,
and all other articles of Bedding. Goods carefully Packed for Shipping.

PAPER AND TWINE WAREHOUSE.

BAUGHMAN BROTHERS,

1319 Main Street, Richmond,

Keep always on hand a large stock of MANILLA, STRAW, BOOK, NEWS, TEA,
TISSUE, and COLORED PAPERS. WRITING PAPERS of all sizes and qualities.
BLANK BOOKS, and a general stock of STATIONERY.

Prices as low as in any cities North. Orders filled promptly.

TWINES, TWINES, TWINES.

FLAX, LINEN, HEMP, ITALIAN, ZEBRA, TOBACCO, BAILING, COTTON,
JUTE, and PAPER TWINES

used by all classes of Merchants Manufacturers and Consumers. We have
constantly on hand a large stock in great variety, which we will sell by the barrel,
bale, or pound, at lowest market price. Also, SEINE TWINE, soft and hard, GAR-
DEN, PLOUGH and CLOTHES LINES.

feb-6m

C. H. WYNNE,

STEAM BOOK AND JOB PRINTER,

CORNER FOURTEENTH AND MAIN STREETS,

RICHMOND, VA.

GUANO AND FERTILIZERS.

The undersigned having revived the manufacture and sale of Fertilizers the past year, as conducted with John Kettlewell, now deceased, for several years before the war, with entire confidence commends them to the favor of Agriculturists. No Compound had gained so wide a reputation as the

“Kettlewell Manipulated Guano”

A compound of the best Peruvian and Phosphatic Guano, with the addition now of Absorbent Elements, reduced to impalpable powder, and thoroughly integrated.

This Guano, re-introduced the past year, greatly improved in material and manufacture, has increased in reputation and challenges Peruvian Guano or any compound, pound for pound, in the production of any crop, and claims vast superiority as a permanent improver of land, and in quality of product. For Tobacco, Corn, Cotton and all crops it stands unrivalled. *Not a failure* reported the past year. Mode of application and quantity per acre the same as Peruvian Guano.

AMMONIATED ALKALINE PHOSPHATE,

A GENERAL MANURE.

This Great Manure resists drought.

This preparation, introduced last year, has produced effects quite *unprecedented*. Composed of Ammonia, Phosphates, Alkalies, &c.—the analysis shows it to be the most general Manure in use. The Alkalies absorb largely of moisture, causing this manure to make crop the past season amid the most severe drought. For all spring crops it is especially recommended, producing Tobacco of superior quality. Planters are earnestly invited to try this compound. Apply from 200 to 400 lbs. per acre. Opposed to hill—we always prefer broadcast.

ALKALINE PHOSPHATE,

STRICTLY A PHOSPHATIC AND ALKALINE COMPOUND.

Very rich in Potash, Soda, &c. A great manure for Corn, Tobacco, Oats, and for Grass, cannot be surpassed; it has been used with eminent success, and all are invited to give trial. Any farmer appreciating wood-ashes, cannot fail to see the value of this; the analysis calls for nearly 140 lbs. Dry Potash to the ton. No such manure in use.

Apply 300 to 400 lbs. to acre—broadcast preferred. Or if in hill mix with some compost to prevent seed from coming in contact.

POTASH AND PLASTER--IN BBLs.

An admirable Tobacco and Grass Fertilizer. Sold very largely in Richmond and Petersburg before the war.

PURE AGRICULTURAL LAND PLASTER—In bbls.

And ground by myself. Warranted pure.

PRICES IN BALTIMORE, NETT CASH—Or by Agents with cost of Transportation added:

Manipulated Guano, AA, equal parts,	\$70	per ton of 2,000 lbs.
“ “ A, $\frac{1}{3}$ and $\frac{2}{3}$,	\$60	“ “
Ammonia Alkaline Phosphate,	\$55	“ “
Alkaline Phosphate, in bbls,	\$45	“ “

The Guanos are in strong sacks, 11 to the ton.

The Ammonia Alkaline Phosphate in sacks or bbls.

I have nothing to conceal, and would be glad to exhibit my works and plan of operation to any Agriculturist interested. Reference is made to the following agencies, who endorse my compounds, and will exhibit testimonials, analysis, &c.:

Deane & Somerville, Richmond; Mallett & Hoffman, Wilmington, N. C.; B. S. Rhett & Son, Ravenel & Co., Charleston; N. A. Hardee & Co., Duncan & Johnston, Savannah; W. H. Warren & Co., Augusta; Jewett & Snider, Macon; Gray & Bedell, Columbus; J. B. Edwards, Sparta, Ga.: Editors American Farmer, Baltimore, &c.

G. OBER,

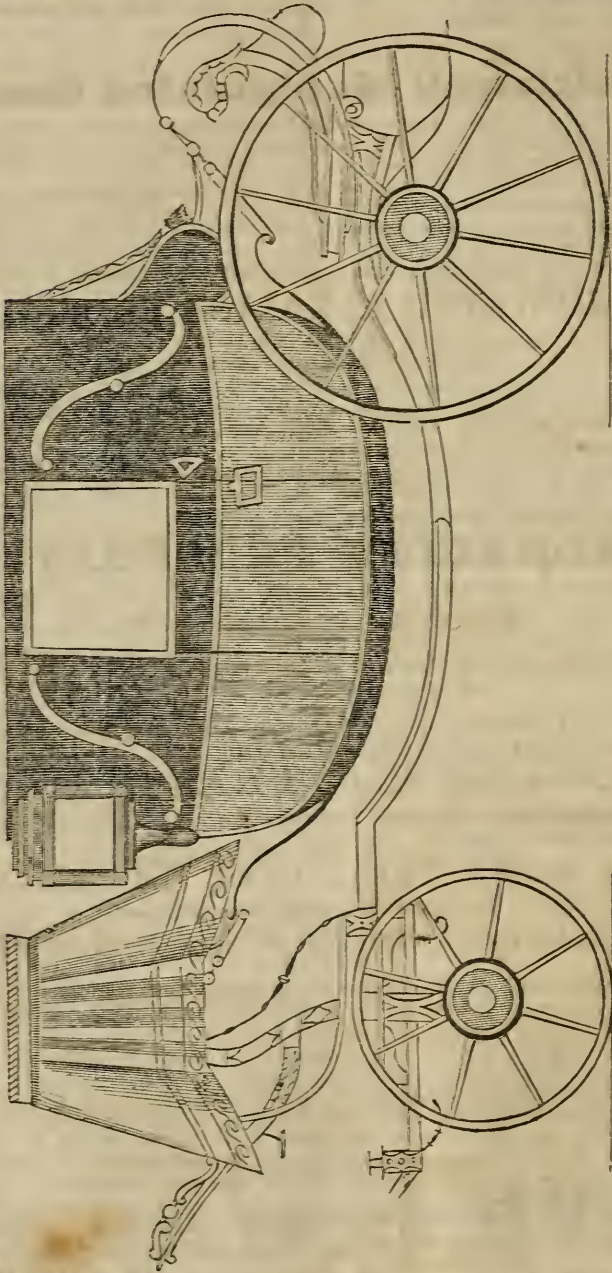
Factory Locust Point.

68 South Street, Baltimore,

COACH REPOSITORY.

J. J. OSBORNE & CO.,

1314 Main Street,



Have on hand a large stock of PLEASURE CARRIAGE of every description. Our CARRIAGES being of own Manufacture, we are enabled to sell at the lowest prices, and give the fullest guarantee of quality and durability.

ESTABLISHED IN THE CITY OF RICHMOND 1840.

TO FARMERS AND PLANTERS!

GUANO, GRAIN & SEED.

The undersigned have constantly on hand

Peruvian Guano, Bone Dust, Plaster, Coe's & Wilson's Super-Phosphates, Tobacco Ashes and all Fertilizers

Of known value, in quantities to suit purchasers.

We will pay particular attention to the purchase and shipment of Grain, and will endeavor to satisfy all who may favor us with orders.

mh-ly

ROBT. TURNER & SON,
43 South Frederick St., Baltimore.

SOLUBLE PACIFIC GUANO.

SOLD BY AGENTS IN ALL THE PRINCIPAL MARKETS OF THE SOUTH.

None genuine unless branded with the name of

JOHN S. REESE & CO.,

BALTIMORE, MD.

mh-ly

GENERAL AGENTS FOR THE COMPANY.

LEE A. BECKHAM.

H. B. LONG.

J. F. BECKHAM.

BECKHAM & CO.

Nos. 1104 and 1106 CARY STREET, RICHMOND, Va.

Wholesale and Retail Dealers in

Agricultural and Farming Implements,



mh-

Landreth's Garden Seeds,

FRUIT TREES,

Mowers, Reapers,

CIDER MILLS, &c.

Agents for

Russell's Mower & Reaper,

ÆTNA MOWER & REAPER,

Russell's Thresher and Separator,

BUCKEYE SULKY CORN PLOUGH

Southern Fertilizing Company.

RICHMOND, Va.

Col. WM. GILHAM, CHEMIST, (late Professor at the Va. Military Institute,)

This Company, now in active operation, is prepared to furnish the following articles at the lowest cash prices:

FINE CRUSHED PERUVIAN GUANO.

Warranted Pure and Genuine.

The Guano from which this article is prepared, is purchased direct from the Agent of the Peruvian Government, in New York. Care is taken to secure an article of recent importation, and each cargo is subjected to careful chemical analysis by Col. W. Gilham, Chemist of the Company. Farmers may therefore rely with certainty upon its being *Fresh and Unadulterated*. The Guano is passed through a series of crushing rollers, by which it is all brought to a fine state of division, ready for the drill, or for sowing broad-cast. Each bag is weighed after it is filled, and is sold by this weight, not the weight by which it was purchased.

“Old Dominion” Fertilizer---\$70 per ton.

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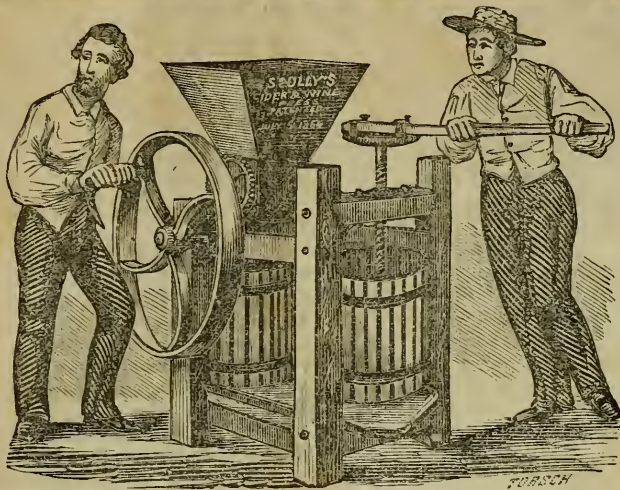
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RICHMOND, VA., JULY, 1867.

Vol. I.—No. 6.

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New Series.

RICHMOND, VA., JULY, 1867.

Vol. 1---No. 6.

Agricultural Department.

From the Southern Review.

Agricultural Chemistry.

[NO. III.]

THE COMPARATIVE VALUE AND ACTION OF MANURES.

[Concluded from page 262.]

Having thus glanced at the principles of the chemistry of soils, we are able to form some idea of the comparative value and action of manures. The employment of these substances for a long time was, and still is, in many instances, purely empirical. Their mode of action being imperfectly understood, they have been applied without any clear understanding of their value. At one time, it was thought sufficient to ascertain the chemical constitution of a soil and of a crop, and then add what appeared to be deficient; a process involving about as much scientific ingenuity as the mixing of a toddy. We have seen, however, that soil and plant are both actively engaged in carrying on delicate and intricate chemical operations. The factors of the problem are perpetually varying, and no rigid simple formula can meet the ever-changing conditions. Hence we need not wonder at the great diversity of opinions on all these subjects.

Prominent among the disputes on the action of manures is that which has arisen about the true influence of nitrogen. After Bous-singault's admirable researches on vegetation were published, and especially after his discussion with Ville, concerning the source of

nitrogen in plants, a most exaggerated idea of the value of this element in soils and manures was almost universally entertained. Both were valued in proportion to their relative contents of nitrogen. The natural reaction against this extreme opinion was the mineral theory of Baron Liebig. That eminent chemist attacked the nitrogen theory with his customary impetuosity, and brought his great learning and remarkable ability to bear upon the controversy. A brief outline of the present state of opinion on this question appears to be necessary in an article like the present.

We have already seen that nitrogen evidently develops plant-tissue, or at least, aids largely in its development. It has been called a stimulant, but this term has been objected to as inapplicable to the vegetable kingdom. If clearly defined, however, there can be no difficulty in its use. Certain it is, that the salts of ammonia promote a vigorous growth, and that in a very short time after their application, the deep dark green of the growing crop bears witness to their powerful action. If they are really tissue-formers, as we have already seen good reason to believe, we need not wonder at this result. The plant, under their influence, rapidly increases in size, sending more leaves into the air and more roots into the ground; thus gaining more points for the absorption of its proper nutrition. Necessarily vegetation is more active. But this brisker growth only gives the plant a greater bulk of soil and air from which to draw its necessary supplies, and if these occur not in sufficient quantities, all this energy is expended in vain. A general may send out foraging parties without end, but if no provisions are in the country, his commissariat is not improved. Hence, the early experiments of Schattenmann on wheat showed that, in spite of this manifest increase of vegetative power, the amount of grain was not greater than that obtained without manure. Indeed, there was in all his experiments, a marked diminution of grain and a very decided increase of straw over the crops of the unmanured land. The ammonia had forced the plant, but the soil did not contain the necessary inorganic constituents of grain, and so the increased activity had no other result than to bring forth a large crop of straw.

More careful experiments were tried in 1857 and 1858 at Bogenhausen. Some curious results were obtained. All the manures applied were so graduated that each application to equal surfaces of ground contained exactly equal quantities of nitrogen. The manures employed were the carbonate, nitrate, phosphate, and sulphate of ammonia, and Peruvian guano averaging about 15 per cent. The nitrates of the fixed alkalies were not applied. The

results will be seen in the following table. The comparisons are made with unmanured land :

	BARLEY.		WHEAT.	
	Per cent.		Per cent.	
	Grain	Straw.	Grain.	Straw.
Carbonate of Ammonia	7.2 <i>less</i>	1.3 <i>less</i>	38.39 <i>more</i>	75.16 <i>more</i>
Nitrate of Ammonia	9.45 <i>more</i>	8.95 "	44.70 "	97.35 "
Phosphate of Ammonia	6.60 "	2.47 "	18.89 "	18.05 "
Sulphate of Ammonia	1.13 "	0.05 "	8.29 "	25.72 "
Peruvian Guano	153.48 "	81.32 <i>more</i>	82.24 "	136.95 "
The relation of grain to straw in the unmanured land was :				
	1	2.69	1	1.82

It will be seen that in every case the proportion of barley grain to straw was increased, while that of wheat was diminished, save in the single instance of phosphate of ammonia, which gave a scarcely perceptible increase of grain.

It is worthy of remark, that phosphoric acid in combination with ammonia does not appear to accomplish much. Its influence on the growth of seed is less than might have been expected. The carbonate proved much more valuable for wheat. When, however, phosphate of lime was added, as in the case of guano, the improvement was very striking, and the increase far overleaped whatever gain had been obtained from ammoniacal salts alone. It is manifest, therefore, that nitrogen cannot by itself supply the demands of vegetation. The rapid growth it promotes at first, unless strengthened by a copious application of inorganic matters, only results in a loose watery stalk, such as is often found in Indian corn during a rainy summer; a stalk which cannot endure the August drought and is sure to produce a diminished yield of grain.

These statements are corroborated by all experimentalists, whatever may have been the views they entertained. Thus Lawes and Gilbert, the active opponents of Liebig's mineral theory, found that nitrogen alone did not accomplish all they expected of it. For a field which, unmanured, gave 15 bushels of wheat to the acre, gave them, after the application of salts of ammonia alone, 22 bushels, and after the use of these salts mixed with mineral manure, 38 bushels. The recent experiments of Ville, in France, establish the same truth. Thus, he found that a piece of land which, when unmanured, produced 990 parts of grain and 1625 of straw and chaff, furnished, when treated with ammoniacal salts, 1471 of grain and 2536 of straw and chaff; and with these salts and mixed mineral manure, 2407 of grain and 4176 of straw and chaff.

Liebig, in attacking the nitrogen theory, goes to the other extreme. He denies the necessity of nitrogen in manures. He insists that the soil loses none, because it receives more from rain and dew than is removed by the crops. It is well known that various chemical

compounds of nitrogen are always present in the air; that nitrate of ammonia is a constant product of the combustion of hydrogen and hydrocarbons in atmospheric air, and that not only do the rain and dew wash down these salts into the soil, but that the porous earth also absorbs them directly from the air. By an actual calculation of the products of two fields, he finds that not only had they lost no nitrogen, but that in four years of cultivation, they had gained respectively 40.5 and 35.9 pounds of ammonia. He further shows that the most barren earths contain large quantities of nitrogen, and that, in cultivated soils, it exists in great excess above the quantities required by the crops. From these facts he concludes that the farmer has no occasion to trouble himself about this element in his manures, but that all he has to do is to furnish the mineral ingredients to his crops, and that the rain, the air, and the dew will take care of the nitrogen.

In this, however, he contradicts himself. He has taken great pains to show that chemical analysis cannot be relied upon for distinguishing between active and inert constituents of the soil, and hence that no deduction can be made as to the actual productive value of a given field from the statements of its composition. Yet here we find him relying on the most searching and exhaustive of all methods of analysis, viz: the determination of nitrogen by combustion. There is no reason to suppose that nitrogen is any exception to the general law of possible inertness. It is quite likely that it too is locked up in the soil like any other element of fertility. Furthermore, he has insisted upon the necessity of large stores of food in the soil greatly in excess of the demands of the growing crop, and the mere demonstration of excess of nitrogen therefore proves nothing.

The truth, as usual, appears to lie between the two extremes. Liebig does not deny that nitrogen promotes a vigorous growth at first. Hence, if the due balance of the mineral manures be kept up, a large crop, in a favorable season, is certain. If these are deficient, the yield must be small, or else the crop must get them from the soil which is thus impoverished, and if such a system be continued it must eventually lead to barrenness. As for the assertion that mineral manures alone will answer all the purposes of the agriculturist, it does not appear to bear scrutiny. It is doubtless true of many soils which are rich in decaying organic matter. They abound in assimilable nitrogen. But there are many not so happily constituted, and experiment appears to show that these make up the great majority of all the land the farmer has to deal with.

Not to multiply citations, Ville found that mineral manure alone increased the yield of grain only 20 per cent., and of straw and chaff 11 per cent., while, when mixed with salts of ammonia, the two together raised the product of grain 143 per cent. and of straw and chaff 154 per cent.

If we now turn our attention to the inorganic constituents of manures, we shall find that much which seems proper to be said in this place has already been anticipated in the remarks upon soils. There is one very simple law for manuring, which, if strictly followed, will certainly keep up or increase fertility. This golden rule is, to put on the soil in manure all that is taken from it in crops. In every bushel of wheat, in every bale of hay, in every quart of milk the farmer is selling his land. It passes away from him imperceptibly, but just as certainly as if a flood were washing it off before his eyes. There is but one way to stop the drain. It is clear that if he puts back as much as he takes away, the condition of his soil will be stationary, or perhaps somewhat improved by the operations of tillage which mix it up and bring the inert substances into more direct contact with the vivifying atmosphere. If he returns more than he removes, he is unquestionably enriching his acres.

There is, of course, some discretion to be used in this matter of manuring. In a soil, the basis of which is limestone, it would plainly be absurd to be anxious about the lime which is removed. Nevertheless, the agriculturist ought not to suffer himself to be deceived by any statements respecting the abundant supplies of certain materials in his land. They may be there, but not available. The man who tills a soil formed by the disintegration of granite, has of course, tons of fragments of granite on his farm, and these all contain abundance of potash. This element of fertility, however, is effectually locked up in the granite, and years must pass over before it is brought to a condition in which it can be appropriated by the crops. Meanwhile, the cultivated plants are continually drawing it off, and preparing the soil for that melancholy array of old field pines which overshadow so many acres once laden with abundant harvests. There is no wisdom in rejecting any element of fertility.

As however the different inorganic constituents act differently upon soils, and as the mere supplying the materials necessary for the crop is but a portion of their function, it appears proper to pass some of the more prominent of these in rapid review.

Chief in the estimation of all agriculturists is phosphoric acid. It

is usually applied in combination with lime, and the bone phosphate of lime is generally adopted as the standard by which the commercial value of this acid is determined. Of its indispensableness as a fertilizer there is no question, since it is a most important constituent of the ash of all cultivated plants. There is so much the more urgent necessity also to add it, because all recent researches on soils show that it is always found in very small quantities. It appears to originate from the primitive rocks, in which it probably existed as apatite, though wavellite and other minerals might possibly furnish it.

Besides the manifest benefit of this acid in supplying the actual deficiencies of the soil, it has been thought to exert a physiological action, which is highly important. Thus, Ville has shown that the addition of phosphates to the soil increases the quantity of nitrogen which is fixed by the growing crop. In this it simply partakes of the character of all fertilizers, as it supplies the necessary elements of the plant, thus encouraging its growth and enlarging its capacity for absorbing all kinds of food, nitrogen included.

It is applied to the soil in various methods. The popular form is super-phosphate of lime. This is specially useful upon light soils deficient in lime. Upon them it acts with great energy and promptness. It is rapidly diffused and readily appropriated by the crop. On a clayey or calcareous soil, it is almost immediately reduced to the condition of the neutral phosphate, which is not so active. In the form of bone dust made from steamed bones, it is united with gelatin to form a compound, slightly soluble in water alone, which is not absorbed by the arable earth, and consequently passes into the deeper layers and may even reach the subsoil. It soon, however, decomposes, and the phosphate then dissolved is absorbed as usual. The phosphatic guanos are mixtures of various phosphates with small quantities of organic matter. These are all, of necessity, slow in their action, and the denser and more compact they are, the more tardy are they.

Peruvian guano has been generally considered a mere mixture of ammonia and phosphates, but it is much more. The salts of ammonia are peculiar, and exert a remarkable action upon the phosphate of lime. There is much oxalate of ammonia in this fertilizer, which, with the last named salt, undergoes double decomposition, forming oxalate of lime and phosphate of ammonia. Peruvian guano thus exerts the ordinary action of an ammoniacal manure, and at the same time that of a super-phosphate. It has this advantage over the ordinary super-phosphates, that its rapid solubility is not

affected to any considerable extent by the presence of carbonate of lime in the soil.

Common salt and nitrate of soda appear to possess the property of diffusing nutritive matter through the soil. In this manner they increase the action of other fertilizers with which they are mixed. The soda salts seem to act with peculiar energy upon barley, turnips and kitchen vegetables.

Gypsum has long been known as an admirable manure for clover, but its action is not yet distinctly understood. It retards the period of flowering, and greatly increases the crop of stems, while it correspondingly diminishes that of flowers and leaves. In contact with arable soils it disengages a portion of its sulphuric acid which combines with magnesia and potash, so that one of its chemical effects is to distribute these two last named substances through the soil, and bring them within the reach of the clover roots.

The action of lime is altogether too complex a problem to be discussed in a paragraph at the close of a brief review. We are, therefore, reluctantly compelled to pass it over.

Of the various compound manures, whether natural or artificial, we have nothing to say. It has been our aim to give the general reader an outline of the relations of the plant to the soil, and of both to the elements supplied by manures. These fully understood, will enable any one to reason for himself upon the properties of their combinations. In all cases, however, care may be taken to avoid hasty conclusions. A consideration of the extreme intricacy of the changes of the plant, the soil and the fertilizers, should lead to modesty in the expression of opinions, which the experience of one season may prove erroneous. Ville's careful method of feeling his way may be commended to all practical as well as scientific men. He divided the land to be manured into sections, from which four experimental strips are selected. On one of these he puts super-phosphate of lime; on another quick-lime; on a third carbonate of potash, and on the fourth nitrate of soda. These represent to him the four classes of manures. The results of this manuring show him what class his soil requires. Now, it is very easy to criticise these details. Nitrate of soda, for example, is not a complete representative of all the azotized manures, nor does super-phosphate stand for the whole class of phosphates. Still, while admitting defects in these respects, we can heartily commend his method, as a vast improvement over the old system of soil analysis and quack prescriptions.

[From the Transactions of the Highland and Agricultural Society.]

On Breeding and Rearing Cattle.

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[PREMIUM—THE GOLD MEDAL.]

THE MANAGEMENT OF BREEDING STOCK.

[No. 5.]

(Continued from page 267.)

Breeding for Dairy Stock—This requires a modified course of management. It happens, very unfortunately, that our best milkers are not generally our best fattening animals. It does happen sometimes that both points of excellence are combined in the same individual; but these are generally speaking, cross-bred animals: for instance, the half-bred Guernsey or Alderney heifers are often remarkable for this, especially when crossed with a good Devon or short-horn bull. It would seem as if in such cases the dam gave the milking disposition, and when this is stopped, the aptitude of the sire for fattening made itself manifest. This is just what our knowledge of the principles of hereditary transmission would lead one to expect. In the heifer the tendency to give milk is strong, and has been a characteristic feature for many generations; it has therefore become powerful; whereas the influence conveyed by the bull is exceedingly weak, for his predecessors have been distinguished by little disposition for milk: hence, the power of communicating milking tendency being stronger on the side of the dam than the bull, she imparts her character to the offspring. The opposite is the case with the tendency to produce fat: here the bull is strong and the cow weak, consequently he is able to impart to the offspring an aptitude for producing fat similar to that which he possesses himself.

There is no necessity why these valuable tendencies should not be combined in the same animal much more frequently than at present; and I deem it so important a point, that I shall draw attention to the principles involved in the production of milk. From the analysis already given (page 70,) the reader will see that milk contains the nutritious and heat-giving elements of the animal's food. It is interesting to observe the changes which the food undergoes in its transition to the body of the young animal, for the *same* elements pass through a series of transformations. We find them

IN FOOD—As Gluten, Sugar and Oil, Mineral Matter.

IN MILK—As Cheese, Cream, Saline Matter.

IN BLOOD—As Fibrine and Albumen, Fatty matter, Mineral matter.

IN THE BODY—As Muscle, Fat, Bone.

The blood is derived from the food, and then transformed, either directly into the body of the animal, or indirectly through the intermediate stage of milk. Thus the same materials are needed in either case.

It might be presumed that as we know the elements required for milk, it is only to increase the food of the cow in either particular, and the effect will be evident in the production of milk. This, however, is not strictly true; for, although we may carry into the system an increased quantity of those matters which yield cheese or butter, yet it still depends upon the animal economy either to mould these elements into the cheese and butter we wish, or else into flesh and fat. This is quite dependent upon the natural disposition of the animal, and this is the keystone on which all depends. Thus, although *the same food* will in one case produce flesh and fat, whilst in another it will yield butter and cheese; still, when the tendency of the animal's system is thus marked, we can increase the product by presenting in the food an additional quantity of the elements required. It is clear, therefore, that the first point to be secured is this tendency in the system to co-operate with us. In this respect cows differ; but it is worthy of remark that these peculiarities are hereditary. If, therefore, we have a well-bred cow, with a tendency to produce an abundance of good milk, such a cow would, in all probability, impart to her produce a similarity of character.

The points which especially indicate good milking character must be noticed. The most prominent of these are the vessels which co-operate in the production of milk. These consist of the vessels which bring the blood, the glands which separate the milk, and the veins which carry away the blood when thus acted on. Of the former, I may name those veins which show themselves between the bearing (*vulva*) and the udder. These are often buried so that they cannot be seen; and although on pressure immediately above the udder they frequently appear, yet we must not immediately condemn the animal as a bad milker when they cannot be observed. Generally, if the skin is mellow, and not much fat present, these veins show themselves readily. Their presence is very desirable, and when combined with a full development upon the surface of the udder, they indicate a free supply of blood to the milk glands. It is also considered a good point when these veins present a knotty appearance.

The milk glands are situated in the upper portion of the udder, and are generally four in number, each gland being in connection with its own quarter of the udder. The udder should be capacious,

extending well behind the legs, and also forwards under the belly; the coat should be thin, with a soft skin, and show considerable decrease in size after the animal is milked. The teats, which are the channels from the four reservoirs in the udder, should be placed well apart from each other, and not cramped together, for this generally indicates a want of capacity in the udder. The udder may appear large, and yet be found fleshy rather than capacious. After the blood has been acted on by the glands, it is conveyed away by the veins; but none of these can be seen externally. The milk vein, which runs along the side of the belly, has been so called from its supposed connection with the udder; but such is not the case. Especial attention is desirable to the mellowness of the skin, and more particularly if the animal is poor. This vein is a sure indication of the quantity of blood supplied, and for all practical purposes may be taken as a guide.

Some attention has also been given within a few years to a discovery made by Mons. Guenon respecting "*the escutcheon*," as it is termed. Like many other persons, he was carried beyond the boundary of discretion in his speculations, and thus his valuable observations were for a time lost in the mist with which he enveloped them. Sufficient is already known of its value, at least, to lead us to the conclusion that it is worthy of more general knowledge. It can scarcely have escaped the reader's notice that the hair on the buttocks of cattle grows in two different directions—one portion pointing upwards another part downwards, and thus producing a sort of fringe at the point of juncture. This hair, which has an upward tendency, has been termed "*the escutcheon*." A very extended observation has proved that, *other condition being equal*, the modification of form presented by the escutcheon will lead to an estimation, not only of *the quantity* of milk which the animal will produce, but also of *the time* during which the cow *will keep up the supply* of milk. Without going much into detail upon this point I may briefly state,* that the larger the extent of the escutcheon the greater is the promise of milk, and also of its continuance, even after the cow is again in calf. A cow may have a small escutcheon and yet be a good milker; but observation leads to the conclusion, that if she possessed a more fully developed escutcheon she would have been a better milker. It may be con-

* Those who wish to examine this more deeply, may advantageously consult, "*Traité des Vaches Laitières*," par T. GUENON; or also, "How to Choose a Good Milk Cow," by J. H. MAYNE and JOHN HAXTON.

sidered a point of merit, not as *deciding* whether or not the cow is a good milker, but rather as an additional indication, which may be taken into consideration in conjunction with other characteristic points. It is also desirable, in estimating the extent of the escutcheon, to make full allowance for the folds in the skin, otherwise a large escutcheon may be taken for a small one. Besides the escutcheon, there are tufts of hair (*epis*) which have a certain degree of value, when seen upon the udder of the cow.

With this safeguard, we might anticipate no difficulty in transmitting a disposition for producing milk, especially as we know these characteristic features are hereditary. But we must remember there are hereditary influences conveyed from the bull as well as the cow, and hence an opposite character is often given to the produce by virtue of the bull's character. It may cause a degree of surprise to some that the bull should have any influence on the *milking* properties of his produce; but there is not the slightest doubt of such being the case. A bull, the produce of a good dairy cow, would favor this character being shown in his offspring; and should he be bred with another good milker, *he would confirm this tendency* in the young calf; whereas, if he was descended from a family of bad milkers, *he would lessen the dam's influence* in this respect. It is here that Monsieur Guenon's discovery promises to be of great service, because we find the escutcheons seen upon the bull indicate a tendency to convey to his offspring the same peculiarities which they represent when seen upon the cow.

I have before casually remarked that our improvements in the breed of cattle have been accompanied with a decreased capability for breeding; and the same remark holds good as regards the milking tendency; and therefore it is a greater stimulus for the exercise of care, and such attention will be ultimately rewarded. There is nothing essentially contradictory in the endeavor to combine, in the same animal, milking as well as fattening properties. Many of our dairy cows are distinguished by *both* these conditions. In our high-bred animals we find a small liver and a small lung, accompanied with a gentle and peaceful disposition. Now, these conditions, which are so desirable for producing fat, are equally favorable for yielding butter and cream. These diminished organs economise the consumption of the carbonaceous matter in the blood, hence more remains ready for conversion into fat, but equally prepared for yielding cream if the tendency of the animal is favorable to the same. Having therefore, by these means got the blood well charged with the materials from which milk and cream may be pre-

pared, it only remains for the animal to secrete the milk freely, and the most economical results are realized. It is true, we may store the blood with materials ready for yielding a rich milk, but if the milk glands are *inactive or defective*, then the stream of blood passes over them, and yields but little of the very secretion we want. In many of our high-bred cows, not only are the breeding powers weak, but the milk glands sympathize with the general torpidity of this part of the system; and hence, although the blood may be charged with milk-forming matter, yet in consequence of the *inactivity* of the milk glands, these fail fully to separate it; and the result is, that materials which might have been separated as milk and cream, pass on unappropriated, and probably become formed into fat and muscle.

The Breeding of Beef-producing Stock.—Practically this will be carried out with the local breed of cows; and if these are selected with judgment, and judiciously crossed, useful stock may generally be raised. Well-selected dairy cows will generally, *for this purpose*, be found equal, if not superior, to cows of the highest breed, by giving more weight, a larger frame, and hardier constitution; and being good milkers, will rear their calves better. It is also very important, for producing well-developed stock, to breed from cattle capable of yielding to their calves the full nourishment required. In every case the bull should be of *very superior* character, and cannot be of too good quality. The objection which I have named as regards the cows does not apply here. On the side of the sire, we should endeavor to secure *the very best qualities*, whilst the dam should be adapted *for bringing them to perfection*. It is a serious error to select an inferior bull for such a purpose, and only a matter of surprise that any of our class—who are generally such shrewd calculators of profit—should ever be found to adopt a practice so manifestly indiscreet.

The destination of such stock should be for beef, because it is in the *first* produce you secure the advantage of both parents, but you cannot, with safety, use them for breeding purposes, as the *second* cross is generally an animal of very inferior quality. In the first produce we secure the advantages without the disadvantages, but the second cross is very inferior.

Throughout the entire period of growth the course of feeding should be liberal and generous, calculated to promote a progressive development of the body from the time of birth until consigned to the care of the butcher.

Ancient and Modern Agriculture.

It is curious to note the progress of Scientific Agriculture for the last two hundred years—to mark the points of difference between ancient and modern practice—to see where we have improved on our predecessors, and where their knowledge was equal, if not superior, to ours. In mechanical contrivances for facilitating the labors of the farm, we are unquestionably far in advance of every former generation; the work which we perform in a day by the use of machinery, would have exacted from our grandfathers weeks of arduous toil. But our understanding of the principles and practice of Agriculture is not so superior to that of one or two hundred years ago, as many are apt to imagine. In perusing some old works on Agriculture, lately, we found that on the important point of TILLAGE of the soil, although terribly deficient in implements adapted to the purpose, the leading farmers of those days were even more thorough than modern agriculturists. Thus, John Mills, the author of a work on “Husbandry,” quotes the opinions of Jethro Tull, Duhamel, and several other old writers to illustrate the importance which they attached to tillage. He says:

“The more the particles of the earth are divided, the more its internal pores are multiplied: the more the surface of those particles is increased, the more the earth is enabled to furnish the food of plants; and consequently the more fruitful it is rendered.”

“This division may be effected two ways: by fermentation, that is, by mixing dung with the earth; or by breaking its parts mechanically, by tillage, whether it be with the spade, plough, or hoe, or any of the different instruments that have been invented to stir the earth.”

In regard to the use of manures, however, they made as great a mistake sometimes as our western farmers do at the present time. The above author, for example, following the lead of Duhamel and Tull, reasons thus:

“It is much more profitable to increase the fruitfulness of land by tillage, than by dung—1. Because only a certain quantity of dung can oftentimes be had, the produce of twenty acres being scarcely sufficient to dung one: whereas the particles of the earth may be divided and subdivided *ad infinitum*. The benefit that can be procured from dung, is therefore limited; whereas no bounds can be set to the advantages which arise from tillage.”

“2. Most plants that are reared in dung, have not the fine flavor of those that grow in a good soil which has not been dunged.—

Greens and fruits are seldom so good in the neighborhood of great cities, where dung abounds, as in country gardens where it cannot be so lavishly bestowed. But nothing is more striking than the difference between wine produced by a vine that has not been dunged at all, and that which is made from a vine that has been greatly dunged."

These notions will hardly be endorsed now by scientific agriculturists; but few would object to the following, on the advantages of tillage:

"The food of plants, of whatsoever nature it be, is dispersed throughout every part of the earth: but it would lie useless there, if plants could not get at it. They must be able to extend their roots between the particles of the earth. Too stiff a soil, that is to say, a soil of which the particles lie too close together, hinders their extension. It is therefore necessary that there should be spaces between those particles, through which the roots may be extended.

"Most soils have, by nature internal pores: but they are, in general, either too few in number; or not properly fitted to the roots."

"If they are too few, there will often be a want of communication betwixt one pore and another; and the roots thereby impeded in their progress, will not be able to find the food necessary for the plant. This is the defect of too strong lands."

"If the interstices are too great, the roots, passing through them without scarcely touching the earth, will draw little or no assistance from it: this is the defect of light lands.

"Both these defects may be remedied by proper culture: for the earth contains so great a quantity of nutritive juices, that there is no danger of exhausting them. The only point is, to enable the roots to reap the benefit of them. It is still less to be feared, that this nourishing juice may dissipate or waste itself. Experience demonstrates that it cannot: for let earth be dried to ever so great a degree, let it be pulverised, and exposed to the sun, rain, and frost, it will only become the more fertile for it."

"It is certain, that water should dissolve the particles destined for the food of plants; and that this vehicle is almost entirely dissipated by transpiration, after it has deposited in plants, what is to be converted into their substances.

"But when water evaporates from the earth, without passing through plants, it does not carry the nutritive parts off with it; as we before said earth that is left to rest, instead of being exhausted, becomes more fruitful thereby."

"To increase the fertility of land, there is not so much occasion

to provide it with the substance which is to nourish plants, as to dispose it in such manner that the plants may, by their roots, collect and draw in those juices which almost all soils are abundantly stored with. To this end, the particles of the earth must be so divided as to leave an infinite number of small chasms between them, into which the roots may glide; so that, touching immediately the particles of the earth, they may draw the nutritive juices from them. This division of the earth may be effected by manures, and by tillage, as we shall show in the following chapter."

Fortunately for the farmers of England, the opinions of this old writer have not governed their system of husbandry. Instead of discountenancing the use of manure, they never try to raise a crop without it. So convinced are they that it is indispensable, that after using all that can be had at home, they send across the ocean for more, and have exported from this country, an untold amount of Peruvian guano, Bone, Linseed, etc., which we ought to have consumed on our own soil.

But while manures cannot be dispensed with, except for a few years, on new and deep soils—the advantages of tillage are not less than those stated by this writer. As we remarked in our March number, the PREPARATION OF THE SOIL is the chief *desideratum* in all good farming, and must be followed by a bountiful application of manures and a continuous cultivation of the growing crops. Let it be impressed upon the mind of every farmer, that the united experience and testimony of all men, in every age and country, who have devoted their lives to agriculture—point to these three principles as lying at the foundation of Agricultural Science:—1st. Thorough preparation of the soil, in which we would include several ploughings, underdraining, subsoiling and harrowing. 2nd, Heavy Manuring. 3d, Cultivation of crops. The farmer who enlists this triumvirate of forces in his service, scarcely ever suffers from drought, wet, frost, or any of the casualties of the seasons, and as seldom fails of an abundant harvest.—*Working Farmer*.

SALT AND ASHES FOR HORSES.—Those keeping horses, should, twice a week, throw in a handful to each of salt and ashes. Mix them by putting in three parts of salt to one of ashes. Horses relish this, and it will keep their hair soft and fine. It will prevent bots, colic, &c. A little ground sulphur mixed with salt and ashes, and given once in two or three weeks, is also beneficial. All domestic animals will be thus benefited.—*American Farmer*.

Science of Farming.

Agriculture is one of the experimental sciences. The principles involved are demonstrable by the test of well conducted experiments. But few farmers, speaking comparatively, have ever attempted to deduce scientific principles from practices which coincide with agricultural science. Most farmers consider practice the main and almost *only* consideration in agriculture. The greatest obstacle to the advancement of agricultural science is the want of familiarity on the part of scientific agriculturists with the practical operations of the farm. Science should take the precedence; but practice should not be so far behind the development of science.

We do *know* only a few things—only a few. Almost everything in agricultural science is the result of shrewd guessing. Judging by what they have witnessed while in the field conducting the operations of the farm, illiterate men sometimes acquire a certain degree of knowledge which confounds the man of science who has never made himself familiar with practical agriculture. Viewing each other's position from his own stand-point of observation, both the scientific and the illiterate laborer perceive a want of harmony. Theory and practice do not coincide. The question then recurs, what can be done toward overcoming the difficulties that are encountered when effort is made to cause the theory of the laboratory and the practice of the field laborer to harmonize? Bring the two men together. Let the man of science not despise the observations and knowledge of him who simply knows that such a thing exists, but cannot tell *how* or why it came to pass. Facts are always the same. Material substances assume numerous forms. Atoms of matter, which would doubtless escape the notice of the field laborer might be detected by the man of science. Therefore, let the agricultural chemist leave his laboratory and go out into the cultivated field, and make himself familiar with the phenomena which the common laborer is unable to understand or explain; and let him there study the intimate relations existing between the atmosphere, the soil and the growth of the crops. By bringing the intelligent tiller of the soil into familiar intimacy with the man of scientific attainments, where both can understand each other, one of the greatest obstacles to agricultural improvement will be effectually removed, and the agriculture of our country will be placed on a basis which scientific men have long sought but never found.—*National Agriculturist.*

The fool foldeth his hands together, and eateth his own flesh.

On the Use of Bones for Cultivated Plants.

The use of bones as a manure for our cultivated plants, is not as strongly advocated in the columns of your highly useful paper as their merits demand. Bones are a highly concentrated manure, and in their natural state insoluble. The elements of bones are obtained from animals, being part of the structure of organized beings which they obtain through or by the food they consume. This food must contain those elements; if it does not, it will not be relished by the animal. This food, therefore, must obtain it from the earth; if it is not in the earth, the plant will not thrive and grow—will not come to perfection; and as phosphate of lime and phosphoric acid, of which bones are largely composed, are in the soil in comparatively small quantities, they are soon exhausted, and the land fails to produce remunerative crops. Now, bones applied to those lands in some form, either ground, decomposed with alkalis, or made into superphosphate by the use of sulphuric acid, will bring them to produce such crops as will pay the farmer for supplying his crops with this manure. I have been in the practice of using bones for several years in some form, either put on in their raw state, finely ground, or manufactured into superphosphate, or a fertilizer of which superphosphate is the largest ingredient.

MIXTURE OF BONES, SULPHURIC ACID AND GUANO.

Before the war I made my fertilizer of finely ground bones, sulphuric acid and guano, in the following manner: Take 100 pounds bones, damp them with water, and pour on them 30 pounds of acid—a small portion at a time; too much at a time is apt to burn them—stirring them well together—leave them to stand a week or ten days. Then I mixed 75 pounds Peruvian guano with the mass, completely incorporating it together, when it is fit for use. This fertilizer would make its mark on any crop I put it on, and I have put it on all crops. After the war came on, guano being so expensive, I mixed with the dissolved bones as many dry ground bones, and found this mixture to act admirably. There is no danger from the handling of the vitriol, if there is only reasonable care used.

I consider this fertilizer, or phosphate, if you choose to call it so, cheaper, and more to be relied on, than any of those that are made and sold in the market under the name of superphosphates. There is no advantage in mixing plaster. I have mixed ashes with the dissolved bones, and raised most excellent wheat, followed by a very luxuriant growth of timothy; but I never let lime come in contact with it.

There is a vast amount of bones in some form used in this section of the country, They are brought here all the way from Chicago. One of my neighbors told me he put on his farm (it was very poor when he bought it) 500 pounds of ground bones to the acre for each of his crops—corn, oats and wheat; the consequence was, a very marked improvement in his farm—his land was poor and he was poor, but now he has a good farm, and is comparatively well off. Several years ago an acquaintance bought a poor piece of land for \$10 per acre, and went to putting on ground bones, which improved the farm so that the first three crops paid for the land and bones, too. The land became very productive, and is now what might be called a first rate farm—so that where grain or forage crops fail, no man need be afraid to apply bones, even if he has to borrow the money to pay for them. G. S., in *Cult. & Co. Gent.*

Cotton Seed as a Source of Fertility.

In the April number of the *Cultivator*, an enquirer asks the questions: "Suppose a man has 1000 bushels of cotton seed, in what way would they most benefit his crop, put out as cotton seed, or fed to hogs put up in a covered pen and kept supplied with straw and leaves? Would he not get the full benefit of his seed and manure, and several thousand pounds of pork besides, to pay for the trouble of cooking the seed, hauling in the trash, and hauling out the more bulky manure?"

There can be no question that cotton seed is more valuable as food for hogs, cattle and sheep, saving their droppings properly, than for manure applied directly to the field. At the same time, the best way to prepare and feed cotton seed, with a view to utilize all of its nutritive and fattening properties, is a matter that deserves discussion. This seed contains an excess of oil as compared with its flesh-forming principles. Oil is nearly valueless as a fertilizer, but very valuable, rightly used, for making fat bacon, beef and mutton. It is, however, not unlikely, that expressed and sold for other purposes, it may be worth more than for feeding farm stock. By hulling seed and expressing the oil, a more concentrated article of food, or fertilizer that may be drilled in with a machine, can be obtained. The hull has little value, either as food or manure. Every planter has not a hulling machine, nor is there an oil press near by to prepare cotton seed in the best manner. Until these advantages are within his reach, he must study and practice the art of producing something like a pound of fat bacon for every pound

of cotton seed oil at his command. This result can only be achieved by giving to the business of producing meat and fertility on the plantation far more attention than is now generally done. Hoping to do good, and wishing not to give offence, I remark, that the capital, industry and talent of the South, has been too much devoted to the work of wearing out the primitive fruitfulness of the soil, steadily enlarging the area in fenceless old fields, and constantly turning a cold shoulder to every science, art and practice that aims to increase the elements of crops in all lands under fence or cultivation. Twenty years ago this pen urged the readers of the *Southern Cultivator*, through its editorial columns, to unite sound stock-husbandry with legitimate planting, as the best way to accumulate the essential constituents of cotton, grain and grass, in the most needy soils. The careful study and observation of two decades, aided by some practice, have confirmed the opinion that it is alike practical and profitable to cover the present general nakedness of the land with nutritious recuperative herbage, and soon obliterate all gullies and galled places. How grass and a thick, unctuous greensward rapidly and certainly impart fruitfulness to ground that was once poor and naked, I will not stop to point out. If grass did not, in the perfect economy of Infinite Wisdom, draw the elements of rich manure from water, earth and air, it would be impossible for farm stock to form their bones, flesh and nerves from grass; for these are fertilizers of known power and value. If we can make grass grow on our old and new fields, we have at once the raw material for an almost unlimited supply of grain, provisions, wool and cotton, simply because, from grass we can easily extract the most concentrated and effective manures, and with these raise cotton seed so plentifully that every farmer may have a "thousand bushels." It is assuming a good deal to assume that quantity as common at this time on plantations. By raising cotton seed with reference in part to its value for feeding purposes and as a fertilizer, there will be more clear profit on the lint, and a benefit done to the farm in place of an injury. Such planting will pay as a permanent operation.

Oats and peas abound in flesh-forming substances, in which cotton seed is deficient. Hence, if a farmer were to boil 50 pounds of cotton seed, 50 pounds of peas, and 50 pounds of oats together for hogs, the compound, well mixed, would be more economical and profitable food than 150 pounds of either boiled and fed alone; while the manure would be improved in quality by the combination. Compared with cotton, oats and peas are easily raised, and their straw,

properly cured and housed, are valuable in raising farm stock. Suppose a farmer has a piece of low ground where water accumulates more or less from higher lands and evaporates. By this evaporation, it unavoidably leaves agricultural salts behind, which it held in solution. This surface, planted partly in cotton and partly in corn, peas and oats, would yield up its agricultural salts to these growing crops. Their seeds, in the mass, would contain not a little of the most fertilizing atoms known to science and farm practice. They will, therefore, make, if duly husbanded and applied, any common poor upland yield remunerating crops of wheat, clover, cotton, timothy or corn. Now, it would be bad economy to apply grain and cotton seed directly to this poor upland as manure, but let the farmer cook these seeds properly and extract what meat he can, and carefully apply the large residue as rich, unwashed food of plants. There are many conditions of poor soils in which the fertilizers, from the seeds named, will produce more corn, cotton, oats and peas than grew on the first named field. This would be impossible, did not the same Allwise and Almighty power that gives to one seed the functions and properties that develop a thousand seeds, make mineral manure equally reproductive for the sustenance of corn and other plants. As the vegetable and animal kingdoms are wholly dependent on the mineral kingdom for support, it is obvious that nature's base in this grand affair is equal, in all respects, to the whole vitalized superstructure. No man can properly claim to be a good practical planter or farmer at this day, who has not carefully studied the reproductive force which exists in the mineral elements of plants and animals. Agricultural force is accumulated on a farm by wisely bringing together the things in which it is most active and efficient. A slight variation in the condition of a cotton seed (and of many others) prevents the force of germination ever acting. Precisely in the same way, a slight variation in the condition of a particle of granite, felspar, hornblende, or other mineral, will prevent its disintegration, and the subsequent activity of potash, soda, lime, iron and magnesia, developed from the parent rock. Hence, the study of *conditions* is no less important than that of *things* to the farmer. As conditions are infinitely diversified, it is silly to attempt to write, or to ask for any receipt for things that will never misinform or mislead. A knowledge of elementary laws and bodies is more instructive and reliable; as from these one may safely deduce general rules and principles. Thus, the principle of diversified tillage, grass culture and stock husbandry rests, not on any abstract theory, but on the diversity of wants,

soils, rocks, plants and animals, which constitute the body and life of agriculture. In this way, one may safely set in motion and command the maximum of agricultural force, and substantially because he acts in harmony with the laws of his Maker. In an agricultural point of view, the best expression of these laws may be seen in the common and united activity of domesticated animals, cultivated plants and fertilizing minerals. It is an unjustifiable mutilation of this natural system to cut off that large and indispensable class of plants denominated grass, and the invaluable animals adapted to grazing, blindly and insanelly assuming that the "sunny South" can maintain its natural fruitfulness in perpetuity, as well without these great physical and vital advantages, as with them. This sad mistake in a matter of public policy, first impoverishes the soil, then the people, and then inflicts on them the suffering, necessity and humiliation of sending abroad for corn, received as a charity, to avoid starvation at home. It is not less than forty years since the writer first labored, through the press, warning the sovereigns of this grasping Republic of the suicidal folly of slowly destroying at its fountain head, the source of their daily bread. Everywhere, land is becoming less and less productive, while old fields multiply, except near cities; and everywhere population augments the number of mouths to be fed and backs to be clothed, from decreasing fruitfulness. A continent of rare capabilities for supporting mankind will, for a time, and to a degree, conceal this great wrong; yet, the poor already begin to suffer and murmur in many places, while oppressive taxation is planting discontent in the hearts and heads of millions. Such as have yet to learn the variety of riches, are not likely to wait many years for another conflict of ideas in the excitable American brain—burning property like chaff in the war of "vaulting ambition," and of that "love of money" which is "the root of all evil."

Capital in land, that will support a family independently, is so much safer than property in any other form, that a few words, in that behalf, will not be out of place in an agricultural journal. Farm stock, provisions, grain and cotton, may be stolen like other movable property. But it would be rather difficult to rob a farmer of 100 acres of well set Bermuda, or of the fatness of the soil, developed by this almost universal restorer of impoverished ground. If war should not come, nor hostile armies molest, 100 acres of Bermuda would support sheep enough to yield a fair income from wool and mutton; and the sheep, properly yarded and sheltered, would supply manure enough to manure handsomely ten acres of

cotton a year. This annual gain of manure would re-appear in cotton seed, and then in wheat and corn, in hay and root crops, for the support of the farm.

“Enquirer’s” questions relating to the management of stable manure, will be answered in another letter. D. LEE, in *Southern Cultivator*.

Gap Creek, Tenn.

Planta Ramis.

[A new Textile Fibre said to be equal to Cotton, Flax or Hemp.]

A correspondent of the *Galveston News* writes as follows :

As one item, hardly discovered in that vast, rich and fertile country, until it was absorbed with thousands of others and carried off to Europe right from under the nose of the enterprising American, I will now mention the new Southern staple, the *Planta Ramis*, destined as it is to work a revolution in commerce. This is an indigenous plant of the State of Vera Cruz, notwithstanding M. Roezl introduced it into Mexico precisely in the manner he stated ; nevertheless the plant pre-existed in that country and unknown to him. Neither M. Roezl nor A. B. Bacon, of the New Orleans Academy of Science, was the first to introduce said plant to the notice of the people of the United States ; nevertheless all that is claimed as extraordinary properties of this plant is not only true, but much more than either of them has claimed, or yet know.

It is stronger and better than the best European hemp.

It is fully fifty per cent. stronger and better than the best Belgium flaxen or linen fibre, or even Irish linen.

It can be spun as fine as flax, is doubly durable and partakes of the property of leather, inasmuch as it will not cut or break like linen by constant use or washing.

It is a wild indigenous growth of the State of Vera Cruz, very little cultivated since the days of the Aztec, and fallen into decay, but produces a far greater amount of textile fibre than any other plant known.

It will produce in its most favorable climate in that country, at least three annual crops, and each crop equal to the best gathered from hemp.

It will eventually greatly diminish, if not altogether supersede the use of cotton and Irish linen fabrics, when cultivated by an enterprising people as a speciality.

It does not, in point of material value, far exceed the thousand other rare and valuable vegetable products of that country, totally

unknown to the American for want of study, thinking, as he too often does when there, that they are not worth his while, and won't pay. They are only partially known to scientific foreigners, old residents of that mysterious country, who devote much time and study to these hidden treasures.

Virginia--Her Internal Improvements and Industrial Development.

[We find in the March number of *De Bow's Review* an able article on the subject above indicated. It was written at the request of the late editor, by Robert W. Hughes, Esq. In the first division of the general subject "*The Traditional Policy of Virginia with respect to Public Works; The Continental Relations of the Virginia and Kentucky Railroad; The Transcendent Excellence of [certain] Eastern Virginia Harbors,*" &c., are elaborately discussed. It would doubtless prove highly interesting to our readers did our space permit us to copy the discussion; but we are compelled to omit it, that we may reserve sufficient room for the reproduction of the whole of the second division of this article, which falls more appropriately within the scope of our specialty.—Ed.]

THE RELATIONS OF THE VIRGINIA AND KENTUCKY RAILROAD TO THE INDUSTRIAL DEVELOPMENT OF VIRGINIA.

As introductory to the subject of the industrial development of a leading Southern State, I must be permitted to offer some general remarks of much general significance in the industrial crisis through which the South is now passing.

ASCENDANCY OF MACHINERY OVER THE POWER OF SINEW AND MUSCLE.

Our age is characterized by the grandest development of mechanical power ever known in the history of the human race. The machine-power of England and Wales is competent to perform the labor of nearly six hundred millions of men, and is probably greater in productive capacity than the labor-power of all the world besides. The machine power of the United States, though growing with rapidity, does not exceed, I am led to believe, the labor-power of two hundred millions of men. It is owned, of course, almost entirely by the North.

This mechanical power, wherever developed and wherever possessed, is placing the communities employing it, far in advance of others in wealth, population and political and financial power. This form of industrial energy began to take growth in England about one century ago; when that country was yet almost exclusively agricultural; when it exported largely of grain and imported largely

of manufactures; when all its industrial interests were in a languishing condition; and when, consequently, it was too feeble to suppress a "rebellion" represented by fifteen or twenty thousand soldiers under the command of George Washington. Abundant statistics are available to show that the agricultural communities of England have advanced since that time very slowly and inconsiderably, except, so far as they have been stimulated by the presence of manufactures; and that the wonderful development of the island, in the intervening period, has occurred exclusively in its mining and manufacturing populations. So vast is the present capacity of Great Britain for production and for the execution of labor, that it can underbid the whole world besides in the sale of staple merchandise; and even the enterprising Northern States of America, notwithstanding the aid derived from the highest American tariff ever enforced, are in serious danger of experiencing a financial collapse, in consequence of an excess of imports over exports in their foreign trade; an excess amounting to several hundred millions of dollars per annum. So completely does this tremendous machine-power secure to Great Britain the command of trade and the tribute of the world, that other countries will have to reverse their previously received axioms of political economy, in order to protect their industrial interests from the crushing competition of so colossal a power.

The South has recently sustained the loss of the labor of four millions of slaves, equal to the labor-power of perhaps a million and a half of men. How inconsiderable is this loss compared with the power of hundreds of millions of men possessed by Great Britain and the North! And how suggestive are these facts of the means whereby we may repair the loss, and of the proper line of development and industry now to be pursued!

Agriculture need no longer be an exclusive pursuit at the South.

In contemplating the miraculous advancement of England and the North, we are almost tempted to rejoice at the loss of a species of labor which compelled us in the South to adhere to agriculture as an exclusive occupation. The possession of millions of slaves, unskilled, and unteachable in the departments of skilled labor, inexorably fixed upon us the yoke of agriculture. This department of industry was, indeed, more productive with us than it was in any other country in the world; but its very profitableness was a heavy misfortune. It led us to cultivate our soils too severely; and fixed us in the habits of investing the profits which we made in the pur-

chase of fresh lands and more slaves. There was thus a continual drain of slaves to the new cotton and sugar States from the older ones east and north; and this very withdrawal of population from a comfortable, happy and therefore prolific race of people, rendered it more prolific still. The owners of negroes in the Carolinas and Virginia could not repress this reproductive tendency in a population so well conditioned, by the process employed with the brutes; and the very fact that the comfortable and contented condition of the slave race, resulted in a rapid increase of its numbers, entailed upon the older Southern States the reproach of slave-breeding communities. The population of the negroes increased accordingly as their condition was comfortable; and this very increase compelled us to increase the area of the lands cultivated, and to unduly extend our agricultural operations, at the same time that it prevented our embarking in those mechanical enterprises and avocations which would have placed us abreast of other communities in the development of power and wealth.

We are now able to multiply our Productive Power.

The case, however, is now changed. Hereafter, when a Southern man makes profits of a few thousand dollars, he will be unable to invest them in negroes; but may purchase a steam engine and erect a factory. The same capital which would have purchased five negro men, will build a mill of seventy-five horse-power, equivalent to the power of five hundred men; and thus, instead of having the labor of five men, he will command the productive energy of five hundred. We have, at last, therefore, the prospect and possibility of a great, rapid and most enriching industrial development. We are released from our bondage to agriculture. We are emancipated from our servitude to the slave. We are at liberty to choose from *all* the avocations of life, and *all* the pursuits of industry, those most inviting to our various predilections and most promising of individual and public advancement.

No longer bound to agriculture as an exclusive pursuit, having now the free choice of industries, and full liberty to diversify our employments, it would be strange if we did not turn our thoughts to those advanced methods of industrial production which have rendered other communities so wealthy, so prosperous and so powerful; it would be strange if we did not call into our service the agency of steam and water, and those wonderful mechanical instrumentalities which multiply the power of production and of labor ten, twenty and a hundred fold beyond the capacity of sinew and muscle.

The case of the Spanish American Republics.

If we fail to retrieve our misfortunes by efforts in this direction, we are in danger of suffering a serious political, industrial and social relapse, from the paralyzing shock which Southern society has lately sustained. Examples are not wanting on this continent of the fate which threatens communities that have rashly struck down their labor-systems, emancipated their slaves, and reduced all colors of men to the same social and political level. On the achievement of their independence, the Spanish American Republics, in a blind enthusiasm for liberty, destroyed their labor-power, and converted a million of prosperous, happy and profitable slaves, into a vast horde of squalid vagabonds. These States have never been able to recover from the enormous folly. The climate interdicts the labor of whites, and voluntary black labor has proved less productive in practice than in theory. For the want of labor, the very garden spots of the earth have been converted into a dreary and hopeless waste. Let us be warned by their fate, and employ timely measures to escape it. Let the people of Virginia rejoice that their commonwealth possesses all the means, resources and conditions of industrial development which are necessary, not only to compensate her recent losses and misfortunes, but in time to place her among the foremost modern States in wealth, prosperity and progress. But what are the conditions and resources necessary to the success of a State in the highest forms of industrial development?

The Mechanical Power of England is due to superior and abundant Coal and Iron.

The machine-power of England and Wales is represented by statistical writers to amount in the aggregate to a horse-power of 83,000,000. As every horse-power of steam machinery gives a labor-power equivalent to that of seven men, the machine-power of these countries equals the labor-power of 581,000,000 of men. All the other countries of the world together, scarcely possess a power for labor exceeding this; and it is a most interesting and important enquiry to learn what the agencies are which have produced so great a power. I will quote from the late English writers some extracts which abundantly account for this extraordinary growth of machinery in England and Wales.

One of the ablest of these writers (Jevons) ascribes the prosperity and material power of England to two causes, viz:

“1. The cheapness and excellence of her coals; and 2. The proximity of her coals, iron ores, and fluxes (limestones) to each other.

“As the source of steam and iron, coal is all-powerful. This age has been called the Iron Age, and it is true that iron is the material of our great mechanical novelties. It is the fulcrum and lever of our great works, while steam is the motive power. But coal alone can command in sufficient abundance either the iron or the steam; and coal, therefore, commands this age. It stands above all commodities. It is the material energy of the country—the universal aid—the factor in everything. With coal, almost any feat is possible or easy; without it, we are thrown back into the laborious poverty of early times.”

Another English writer (Scrivenor) says:

“The great superiority of the English iron manufacture has generally been considered to consist in having all the materials necessary to the manufacture, found on, or immediately in the neighborhood of, the very spot where the furnaces are erected.”

And still another English writer (Blackwell) whilst asserting that “in no other countries does this proximity of iron ore and coal exist to the same extent as in England,” goes on to describe how the *railroad*, which is itself the creation of iron and coal, fosters these two mighty interests, by bringing the two minerals together.

Professor Page, the learned English geologist, enforces these truths in more elevated and eloquent language:

“So long as man depends upon the forests for his fuel, his mastery over the metals is limited, and his mechanical appliances restricted. But when he has once learned the uses of coal, and can obtain it in fair supplies, his metal-working powers expand; and his forges, factories, steam-engines, steamships, gas-works, railroads, and electric telegraphs, become the necessary developments of this new acquirement. Once acquainted with these and similar appliances, man takes a stand on a higher platform, gains new ascendancy over the powers of nature, and overcomes, in a great measure, the obstacles which time and nature opposed to his operations.

. . . As a nation, we cannot too highly exalt the importance of our coal-fields; our mechanical, manufacturing and commercial greatness, is intimately bound up with their existence. . . . A high degree of civilization, as the histories of ancient nationalities demonstrate, may be attained without the possession of coal-fields; but the peculiar phases of civilization, in all that relates to mechanical appliances, manufactures, locomotion and inter-communication, are the direct results of coal and iron. The fine arts, literature, philosophy, social refinement, and political institutions have existed, and may yet exist where coal-fields are unknown; but that machine-power which coal and iron have put into the hand of man to subdue the forces of nature, and thereby promote the wider advancement of his race, intellectually as well as materially, is a thing dependent alone upon the existence of a coal formation. There is no artificial

source of heat so compact, so portable, so safe, and so readily available as coal; no substance so adaptive, so strong, and so enduring as iron. These two substances, coal and iron, have been the main factors in all recent progress; and that which most broadly distinguishes the Britain of the present, from the Britain of the preceding centuries, is the extended and extending use of these substances through the instrumentality of the steam-engine."

I need add nothing to the utterances of these eminent British authorities, in enforcement of the proposition that modern States cannot keep abreast of the times in these wonderful movements, without possessing abundant stores of the finer qualities of iron and coal, lying in accessible and favorable positions for their employment. I will simply cite a few facts in corroboration of the declarations of these writers. Before the successful use of pit-coal in smelting iron, the production of pig-iron in England was (in 1788) only 68,000 tons in the year. Since then the production has grown, in 1806, to 258,206 tons; in 1854, to 3,069,838 tons; and in 1865, to 5,000,000 tons. Before the impetus was given to manufactures by this important discovery, England was agricultural, and exported grain; since then she has been a yearly increasing importer of grain. Her average annual *exportation* of wheat in the decade closing with 1750 was 3,027,616 bushels. In the decade which ended with 1860, her average annual *importation* of wheat was 40,250,128 bushels; the miraculous growth of her manufacturing populations far outstripping her agricultural capacity of production. The prosperity and wealth of England are now a proverb. But before she successfully applied pit-coal to the production of iron and to the development of manufactures, the languishing condition of all branches of British industry was the source of constant complaint. When Andrew Yarrington went to Holland towards the close of the seventeenth century, to make discoveries of useful manufactures, he said it was because, in England,

"People confess they are sick, that trade is in a consumption, and the whole nation languishes."

His biographer adds:

"The Dutch were then the hardest working and the most thriving people in Europe. They were manufacturers and carriers for the world. Their fleets floated on every known sea; and their herring-busses swarmed along our coasts as far north as the Hebrides. They supplied our markets with fish caught in sight of our shores, while our own coasting population stood idly looking on."

In short, England, before learning to apply her coal to the pro-

duction of iron, was in a condition of industrial paralysis similar to that now afflicting the South; though her misfortunes could not be ascribed to the convenient and stereotyped scape-grace of slavery.

Iron and Coal in Southwestern Virginia.

I come now to speak of the supplies of iron and coal in Southwestern Virginia. The whole of that region, from the county of Rockbridge to the Tennessee line, and from the Blue Ridge to West Virginia, abounds in iron ores, or what the geologists call iron-stones, which produce metals proved by the severest test to be of the finest qualities. There are other regions of country which contain larger deposits of the coarser ores in masses; but no country in the world exceeds Southwestern Virginia in the quantity it possesses of the better iron ores. Of the many mountain ranges which distinguish the topography of that country, there is not one which does not embosom large deposits of the most valuable iron ores. They are found in all the usual forms of deposit throughout that region. The qualities and quantities of these ores are attracting much attention, and are rapidly becoming the subject of heavy investments from Pennsylvania and the North. A full description of the character and extent of these ores would unduly extend this paper.

Turning to coal, it is unfortunate that its deposits are not distributed so generally as iron over that much favored portion of Virginia. Although iron exists throughout the carboniferous portion of that country, it is not true, conversely, that coal exists throughout the iron territory. Along the whole eastern valley, from Rockbridge to Bristol, in every part of the country traversed by the Virginia and Tennessee Railroad, the iron-makers are now obliged to depend upon wood for fuel. In all that stretch of country there is no true coal; there is nothing but here and there thin veins of accidental coal, lying outside of the true coal formations, serving only the vicious purpose of exciting expectations that can never be realized. The great coal measures of the trans-Alleghany slope do not extend as far eastward, but are geologically bounded by the Cumberland Mountain running up from Cumberland Gap, and by the Stone Mountain and Sandy Ridge, which branch off into the counties of Lee, Wise, Scott, Buchanan, Russell and Tazewell.—These ridges form the eastern rim of a high plateau or table-land in the true carboniferous formation, filled with coal. It is only in that coal basin which embraces so large a portion of the State lying between the Mississippi River and the Alleghany Mountains

that true coals are found, in quantities and qualities the same as are met with on the Kanawha River near Charleston, and in the vicinity of Pittsburg.

West Virginia took with her 15,900 square miles of Virginia's coal measures.

The fact has not yet attracted much public notice in Virginia, that the new State of West Virginia came near depriving Virginia of all her coal measures. She took with her 15,900 square miles of the finest coal measures in the world, embracing an average thickness of coal not less than twenty-five feet in the aggregate; leaving to Virginia no portion of her magnificent carboniferous domain except the triangle of territory embracing parts of the six extreme southwestern counties above mentioned, not more than 2,000 square miles in extent. It is needless for me to describe the quality and quantity of coal found in this important triangle of territory, its carboniferous characteristics being precisely the same as those of the portions of this same great coal basin that have been more minutely explored and reported upon by geologists. It is enough to say that its coals are the true bituminous and cannel coals; that the qualities are superlatively excellent, and that the quantity may be set down as inexhaustible.

This triangle of carboniferous territory is penetrated by the Virginia and Kentucky Railroad.

This triangular territory, which is iron-bearing as well as coal-bearing, is cut off from the great iron region of the eastern valley before described by a high ridge of mountains, known for most of its course as the Church Mountain. Through this barrier there are but two low gaps affording easy passages for the coal, viz., the Big Moccasin Gap, 23 miles due west of Bristol, through which the main stem of the Virginia and Kentucky Railroad passes, reaching coal at a distance of 40 miles from Bristol; and the Rocky Gap in Giles county, through which a branch of the main road traversing the counties of Wise, Russell and Tazewell will pass to the Central Depot, an important iron centre, on New River, reaching the true coals seventy-five miles from the Central Depot.

The Virginia and Kentucky Railroad will thus be of incalculable value to Virginia in developing the coal measures through and along which it will pass, and bringing into juxtaposition with the iron ores on the line of the Virginia and Tennessee Railroad, coal of the best quality known to commerce and the arts.

Virginia's iron resources cannot be rendered available without the western coal nor without this railroad.

At present, the valuable iron ores lying in the eastern valley which extends from Bristol to the James River, are dependent upon wood alone as fuel. So long as this dependence exists, Virginia can never expect to manufacture more than a few thousand tons of iron per annum. But when she shall bring the coal to the iron, or the iron to the coal, or bring a railroad to both where they lie contiguously (as they do on the Virginia and Kentucky Railroad,) capital and enterprise will embark extensively in the manufacture, and instead of producing thousands of tons, she will produce hundreds of thousands of tons in the year.

Although England now produces 5,000,000 of tons of iron per annum, there are but two inconsiderable furnaces that use wood as fuel. In Pennsylvania, where the production of iron is a little short of 1,000,000 tons in the year, the disproportion between furnaces using wood and those using coal is almost as great. They have more extensive deposits of iron ore in Southwestern Virginia than they have in Pennsylvania; and if we were asked why, notwithstanding, they have so feeble an iron interest and so few furnaces there, the true answer would be that they have not brought their excellent coals into requisition.

The office of the Virginia and Kentucky Railroad will be to perform this function. It will give a value to the iron ores of the eastern valley that they have never had and can never have without true coal. It will also develop the valuable iron ores of the Clinch and Powell Valleys—a country fulfilling all the conditions which have been described as essential to profitable manufactures, in possessing coal, ironstone and limestone everywhere in close proximity.

Virginia, by recent events, has sustained two great losses. She has lost her system of agricultural labor, and she has lost 15,900 square miles of the most valuable coal measures in the world—coal measures which, in years past, she has expended many millions of dollars in misdirected efforts to reach. The development of these coal supplies, in connection with iron, would have soon compensated the loss of slaves and placed her again in the foremost rank of wealthy, prosperous and powerful States. But let her sons rejoice that all is not lost. Let them felicitate themselves that she still possesses boundless supplies of the two master minerals of modern

civilization, and that no further effort is required of their still vigorous commonwealth than the making, at an expense infinitely less than the advantages it will bestow, of a single additional railroad."

Farming not Planting.

EDITORS SOUTHERN CULTIVATOR:—It has been a long while since I have written an article for an agricultural journal. But having now, (after having made a large fortune by planting, and lost it by the war,) to go to work again from the stump, I shall endeavor to do my best on the farm, and at what leisure I may have, use my pen for the great work which has fallen to the Southern people in repairing their fortunes, by a new system of agriculture, which at once must be adopted, to suit our circumstances. I was, before the war, a large cotton planter, but since the emancipation of our negroes, and one year's trial with the freedmen, I am fully convinced that cotton planting on a large scale, (unless it is done as a speculation—the present system is nothing more or less,) is too precarious to attempt as a permanent pursuit. All who are acquainted with cotton planting, know it is a long and laborious crop to make, tedious and monotonous to the laborer—one in which only the highest wages, and the most flattering persuasions can induce them to engage in cultivating. Hence, I have abandoned its culture, sold my plantation and purchased a valley farm in the mountain regions of Georgia, where I shall turn my whole attention to farming. What I mean by farming is, to cultivate on a small scale, a variety of crops—attend also to fruit culture, raising of stock, and even try the dairy. By this system, but a few dollars are necessary, and by rotating, manuring and seeding down land to grass, a farm may easily be enriched, increased in its productiveness and made more valuable yearly. I am fully convinced of this fact, that sooner or later, large plantations under the old system of culture must be abandoned, and farming adopted in its stead. Why? Because with hired labor, poor lands cannot be afforded to be cultivated. The lands we tend must be enriched, and labor must be economized, and it is impossible to keep up and enrich a large plantation, so as to make it remunerative, with our present laborers. The policy is to make one acre produce what three do now, and by labor-saving machines, to make two hands do what five are now doing. This must be the system adopted to make Southern farming pro-

fitable, and if not adopted, we will become bankrupt. In upper Georgia, there is a soil unsurpassed in productiveness, and adapted to corn, wheat, rye, oats, barley, cotton, clover, the grasses and tobacco, and every variety of fruit—the climate is fine, and its water-power unsurpassed for any kind of machinery. This section of country, in the hands of enterprising and practical farmers, may be made the garden spot of the South. Living is cheap and abundant, and a ready market can be had for any surplus, Railroad facilities being at hand. Let us, for example, quote merely the fruits that have been sent to market from this section of country the past season: “By the following statement, by the President, of the exports over the Rome Rail Road, it will be seen that there have been shipped from here this season, 15,602 bushels of fruit. Now, allowing two-thirds of this to be peaches, at \$3 per bushel, and the balance apples, at \$1.25, it would amount to \$37,922.—Just suppose that ten times that amount of fruit had been dried, which could have been, if proper attention had been given it, and an income from fruit alone, would have been realized, amounting to \$379,220.” In addition to this, the demand for wheat, corn and meats are enormous. Large amounts of hay can also be made here, as a market crop. We have no reason to despond, and nothing to fear, if we will only set to work right, and develop the vast resources of our country. Again, in these fertile valleys of North Georgia, we are not dependent on free laborers, for the climate is so fine the white man can labor with vigor and health, and there is a population of hardy mountaineers at hand, ready and willing to take hold and make the soil produce abundantly. My remarks are in relation to Vann’s Valley, in Floyd county, Georgia, which, for agricultural purposes, as well as manufacturing, is unsurpassed anywhere. True, its former and present population are rough farmers, so far as their management of the soil is concerned; but so soon as the work of improvement has commenced, their energies are not wanting to do as others will do. The beginning of improvement is what is needed. Scientific farming must be adopted, and when undertaken, the fruits of our labors will be abundant, and prosperity visible on every hand. Very respectfully yours, JOHN H. DENT.—

In Southern Cultivator.

Cave Spring, Ga.

The wise in heart shall be called prudent; and the sweetness of the lips increaseth learning.

Climate, Soil, Mineral and Agricultural Resources, Systems of Farming, Labor, &c., of Western North Carolina.

We find in the *Cultivator & Country Gentleman* of the 2nd of May, the following interesting letter, from Dr. LION S. SANSEBAUGH, of Waynesville, N. C., embracing the subjects referred to in the above title. We have divided it for greater convenience, publishing so much as relates more immediately to Agriculture in that department of the PLANTER, and transferring the remainder to the department of Horticulture, where we think it will be more likely to arrest the attention of our readers, to whom we commend the whole letter, as worthy of attentive perusal.

MESSRS. EDITORS—Down here in *Dixie* we cannot otherwise than feel a sense of delicacy in asking the indulgence of Northern publishers, in allowing us to appeal to their magnanimity in vindication of our resources—agricultural, mineral, &c. But we cannot but indulge the anxious hope that past political differences will only be remembered as things of the eternal past, and that we may all work together to develop the true source of national wealth—our agricultural resources. To secure a result so desirable, it seems to me, we should not only have the experience of intelligent practical farmers of the same neighborhood, but from every section of this great Republic.

It is thus that each farmer, in widely different sections of the country, may have the advantage of the experience of all the rest. Nor are experiments of extraordinary success in farming alone advantageous in a practical point of view. We should have details of the unsuccessful as well as the more successful systems of farming. It is in this way we may expect to avoid “breakers,” and consequent loss from uncertain experiment.

It is with this view I have thought to beg you to allow me to trouble your readers with a hasty statement of some things connected with the agricultural interest of my own section of North Carolina. While I do not present a detail of our system of farming, claiming it as worthy of adoption or imitation, I have thought it might not be entirely uninteresting to your readers to learn *how* we farm. I might answer this in a few words by saying we farm to-day just as did our fathers fifty years ago, at which time this county was first settled.

OUR CLIMATE.

The portion of North Carolina between 4° 20' and 7° 40', longitude west from Washington, and 35° and 36° 40' north latitude, extending from east to west, near 200 miles, and from north to

south, more than 70 miles, being surrounded by and intersected with the highest mountains east of the Mississippi, is often not inappropriately called "*the Switzerland of America*," and possesses a climate much resembling that of New England, though much cooler in summer and warmer in winter.

Elevated from 2,000 to 7,000 feet above the ocean, it will be understood why we have a climate cool, bracing and salubrious, and probably less subject to sudden variations than any climate north of this latitude.

Anything that will grow in any section north of this, will grow here, while malarious diseases are almost unknown. Our oldest physicians are scarcely able to report a case of fever and ague that originated in Western North Carolina.

The highest point of land east of the Mississippi, is Black Dome, which is 6,701 feet high. Our highest peaks are densely covered with the Canada Balsam, (*Abies nigra* and *Abies Fraseri*.)

MINERAL PRODUCTS.

Mining is as yet in its infancy, and it is consequently impossible to predict what may be the result of future developments. Probably a dozen or more copper mines have recently been opened, that bid fair to rival the Lake Superior mines in interest. Gold, iron and zinc, are found in considerable abundance.

Limestone is scarce, though one narrow belt extends across the country from east to west, a distance of 70 or 80 miles. Feldspathic, gneissoid, granitic and quartzose rocks are abundant. We have marble of every hue and color, equalling in texture the finest Italian. The only difficulty in the way of our marble quarries being extensively worked, is the want of transportation.

There are no railroads in Western North Carolina, which will account for this section of the State being so little known to the "outside world."

WATERS.

Pure soft water is abundant everywhere, flowing from thousands of springs. Rivers, creeks and brooks intersect the county in every direction. Sulphur and chalybeate springs are abundant. The hot springs in Madison county afford one of the finest watering places in the United States.

OUR LABOR SYSTEM.

The abolition of slavery, and the advent of freedmen among us, has not so materially affected our labor system in Western North Carolina as in cotton-growing sections of the South.

There having been but few slaves in this section before the war, we consequently have not a great many freedmen now. We have tried them the two years just past; and, while we do not find them willing, as a body, to perform more than 60 or 70 per cent. of labor they did before the war, yet the result is tolerably satisfactory.

As day laborers, they will perform about 75 per cent. of the amount performed by white laborers. We consequently give them about 25 per cent. less than white laborers. Our farmers find it the best policy to furnish them land, seed, horse-power, forage and implements, and, reserving to themselves the right of general superintendence, to allow the freedmen a certain portion of the product—usually half.

It is now, as I think, apparent that this system will become the prevailing one. While it is confidently hoped that education will do something toward ameliorating the condition and changing the habits of the freedmen, it is a notorious fact that he is wantonly disinclined to work. They are peculiarly fond of congregating in and about our villages and towns, where they remain in idleness till driven away by want, or swept off by disease. If something is not speedily done to elevate their condition, and stay the hand of disease, by affording proper and successful *stimuli* to labor, so averse to vice and essential to health, both mental and physical, it is easy to foresee the result must inevitably be the total extinction of the race. I should remark, in this connection, as a matter of justice to the negro, that they are beginning to exhibit some show of mental culture, which, it is hoped, will be attended with a stronger disposition to perform manual labor.

OUR SOIL.

Almost every known variety of soil is found in Western North Carolina, though *clay loam* is probably by far the most abundant. There is very little *calcareous marl*, while the amount of calcareous matter in our soils is decidedly small. There is a respectable proportion of *sandy soil* and *sandy loam*, while *vegetable mould* is rather abundant.

THE WAY WE FARM.

I blush to acknowledge it, but it is an undeniable fact, that we are far behind the age in which we live, in the industrial pursuits of our citizens. I must confess I scarcely know how to account for this. It is true the ravages of the war were severely felt among us; but the grand reason is the great difficulty we experience in

finding a market for the native products of our soil. It requires but little effort to produce enough for home consumption, and at present there is but little to stimulate us to the production of more. When we get our system of railroads completed, we may expect this state of things to change.

We cultivate our crops with a one-horse plough and hand hoe, and harvest our wheat, rye, oats &c., and mow our meadows just as our fathers did 30 or 40 years ago.

WHAT WE RAISE.

Indian corn is our most important crop. We plant in April and harvest in October. We pass through it three or four times with a one-horse plough, and once or twice with a hand hoe. The product is from 20 to 50 bushels per acre, worth from 40 to 60 cents per bushel.

We sow wheat in the fall, ploughing it under with a one-horse plough. This is all the attention we give this crop till it is ready to harvest, about July 1st. It is worth now \$1.75 per bushel. The product is from 10 to 20 bushels per acre.

Rye, oats and buckwheat grow here about as well as in Pennsylvania and New York. [*Concluded page 365.*]

The Crop Prospects.

Never before in the history of the country have the crops given such promise of plenty. The hay crop, one of the most valuable, is now beyond the reach of any ordinary calamity, and the yield will be unprecedented. Our city readers can hardly understand what an immense gain this is to the country. During the last season the farmers in many rural districts saw the bottom of their hay-mows for the first time in a score of years, and \$40 to \$50 per ton were often paid in the very heart of agricultural districts largely devoted to grass culture. The crop of 1860 was put down in the census at a little over 19,000,000: that of 1866, by the Agricultural Bureau, 21,773,627 tons, valued at \$317,561,837; but the yield of 1867 is likely to be over 30,000,000 tons, a gain whose importance can hardly be over estimated.

The wheat crop of the United States for 1866 is given by the Bureau at 151,999,906 bushels, valued at \$333,773,646. The yield this season is still subject to more contingencies than the hay crop; but the testimony from all sections is more universally cheering and favorable to the largest estimates than ever before in our

experience. The same is true of the corn crop. The yield of Indian corn for last year was given at 867,946,295 bushels, valued at \$591,666,295. *For this year the promise now exceeds twelve hundred million bushels.* Other grains, and most of the fruits, are equally promising.

The effect of such a supply upon the finances of the country will be almost magical, unless counterbalanced by the grossest mismanagement of national affairs. We have seen a statement in print, intended to show that it made little difference to the country whether the yield of any specified crop was large or small, since the price was enhanced by scarcity, and as much was obtained for a small return as a large one. This sophistry is too transparent to need refutation. The relief to all classes of laborers and producers to be found in the overflowing abundance now promised never came at a time when it was more sorely needed. It should be accepted with devout gratitude, and due acknowledgment of its Divine origin. No heart should be untouched by the teeming bounty which breaks in so signally upon the general despondency.—*Journal of Commerce.*

Agricultural Labor-Savers in the South.

The ingenuity of man has been beneficially engaged in devising those mechanical aids to the physical powers of his fellows by which those powers may be economized. Agriculture has opened a wide field for the exertion of the inventive powers of the human intellect, which has produced some of the most astonishing results and of a most beneficial character to the husbandman. Such labor-savers are now particularly needed by Southern planters and agriculturists, who have been deprived to a great extent of the field-labor power that they formerly possessed. There is, however, no real cause of complaint on this score, when it is taken into consideration that the possession of a field machine now enables the farmer to perform the work of many hands, and at a far less cost than before such labor-saving improvements were invented. A corn-field may now be ploughed, planted, and cultivated while the farmer is comfortably seated. He may now do the work of ploughing by riding over his field on what is called a rotary spader; then plant it seated on a box; and in due season he may cultivate it in the same easy and comfortable mode. When the crop is ready for cutting, a machine does the work and lays it in rows. It is thus, by the aid of machinery that a larger area can be cultivated and a wider field opened to labor, making it at the same time more remunerative by decreasing the expense of cultivation.—*Norfolk (Va.) Journal.*

Horticultural Department.

Celery.

Owing to the amount of labor it requires, and the inconvenience and expense attending its transportation any great distance, this vegetable cannot be classed among the profitable market crops; still it is one of the most desirable for domestic use, and every one who has a garden should grow at least enough for his own family. Writers and some professional men have said a great deal about the trouble, cost and uncertainty of this crop; but we think that there is far more of imagination than reality in these statements. Any one who has good soil and a moist location may readily succeed in raising good celery, and that with quite a moderate expenditure of time and labor. 'Tis true, that if the old method of "handing up," as it is technically termed, that is, pressing the earth to the plants with the hand, and then "earthing up," or filling in earth against the plants with a shovel is followed, it requires a great deal of both time and labor to grow a crop, but if the simpler method of planting in rows and laying up earth to the plants with a plough is observed, this crop becomes but little more difficult to cultivate than cabbage or potatoes.

We will give a description of the three modes of planting and working most generally in use, and our readers can determine for themselves which will best suit them.

The first plan is to dig out a trench six or eight inches deep, five feet wide and as long as desirable, then to put a heavy coat of manure in the bottom of the trench and spade it in; the plants are then placed in rows across the bed, the rows being from twelve to fifteen inches and the plants three or four inches in the row. The objections to this plan are, first, the heavy labor required to dig the trench and spade in the manure, and second, that it necessitates working the crop altogether by hand.

The second plan is to plough out a deep furrow in well manured soil, and to plant a single row in the furrow. By this mode it is easy to earth up with a plough at least until the celery becomes very high, when a shovel or spade may be necessary.

The third and latest method is the one adopted by the market gardeners around New York, and consists in planting upon a level surface, putting the plants twelve inches apart one way and six the other; as soon as the leaves spread and cover the surface, they begin to grow

upright from the natural attraction of the sun, and are thereafter a support for each other. This plan has only been adopted for the dwarfed varieties of celery; but we think there are no varieties which may not be planted in this way in this latitude. Our summers are too warm to permit celery to grow much before October, and after that time it seldom reaches the great length attained farther north. This plan necessitates, of course, bleaching and preserving in pits during winter.

If either of the first two methods is adopted, the celery will require handing up and earthing up at intervals as it grows, until frost stops its growth. It will by either of these plans bleach as it grows, and may be kept with a slight covering of straw, leaves or pinetags all winter in the trench where it grew, and be dug as needed. If the third method is used, it will be necessary to dig the celery when winter sets in, and put it in the ground to bleach and keep. The best way of doing this is to dig a trench and put the celery in with alternate layers of earth, then cover with straw or leaves, and use as required.

The proper time for planting is the latter part of July in this latitude. The soil should be low, moist and rich.

Experiments with Several Varieties of Strawberries.

The result of some experiments made this season with several varieties of strawberries may not be uninteresting to your readers, the more especially as this crop is fast growing in importance. I think that 100,000 quarts, or 3,000 bushels would be a moderate estimate of the quantity sold in the Richmond market this year, while a much larger quantity has been shipped from counties along James river to the Northern cities, and still, the supply has never exceeded the demand. Small berries of inferior quality have sometimes been a drug, (as they ought always to be,) but *good* berries have found ready sale at remunerative prices.

As an evidence of the great profit to be realized from this crop, we instance the case of one gentleman residing near Richmond who sold \$2,000 worth of berries from a little over four acres of ground. These profits are inducing many of our farmers to plant strawberries extensively, and it is very important that they should know what varieties have succeeded best in the past, and what new kinds give promise of being useful and profitable.

I have made partial experiments with six of the most prominent

of the newer kinds, and although these results cannot be relied upon as entirely conclusive, because four of the varieties were only planted last fall, and of course could not be expected to develop themselves fully the first season, still, they will enable us to form some fair estimate of the comparative merits of each.

The varieties under experiment were as follows: Agriculturist—planted March, 1866; Peabody—planted March, 1866; Russell's Prolific—planted March, 1866; Triomphe de Gand—planted Nov., 1866; Hovey's Seedling—planted Nov., 1866; Wilson's Albany—planted Nov., 1866.

The last two are well known and widely cultivated throughout our State, and may on that account be taken as the standard by which to compare the others.

Wilson's Albany began to ripen about May 20th, and was in its prime about May 30th. The Hovey ripened about five days later. Both yielded well,—Wilson's being the most prolific, but not averaging so well in size.

The Peabody ripened with the Hovey, bearing as well as the Wilson, but not averaging so well in size, though a few berries were very large. Its flavor is good, but 'tis almost useless as a market berry, being too soft to bear handling or transportation.

Russell's Prolific ripened with the Hovey, perhaps a day later, yielded enormously, being far more prolific than either of the preceding, as in size it excelled them, and fully equalled the Agriculturist. It is firm and solid, and ripened well. Its flavor is very good, though not the best.

The Agriculturist ripened about three days later than the Russell; yielded moderately—about as well as the Hovey; averaged well in size, being as large as the Russell, though not so firm; flavor rather better.

Triomphe de Gand ripened with Hovey; fair size, rich color, moderate yield, very soft and unfit for market, flavor excellent.

I did not keep an accurate account of the quantity gathered of either kind, not thinking it of importance this season; another year I propose to make careful statistics.

Wilson's Albany is, so far as we now know, the best *early* market berry; but from this year's observation I am decidedly inclined to prefer the Russell to all other varieties for the main crop. For a late berry I think the Agriculturist will probably succeed well.

Triomphe de Gand and Peabody are perhaps better for domestic purposes on account of their superior flavor, and they should always have a place in the garden.

Scuppernong Grape.

MY DEAR SIR,—In accordance with my promise I herewith inclose the article on Scuppernong grape, and as there are some errors I will enumerate them. After our conversation, I had an interview with a gentleman who resided several years in the immediate vicinity of the vineyards at the mouth of the Cape Fear, a devotee of the enterprise. The Scuppernong is only propagated by layers—cuttings rarely succeed. The seedlings are as unreliable as seedling apples, frequently producing an acid fruit and wine. He prefers 60 feet space between the vines: it may vary from 30 to 60 feet. It is a late bloomer, being to-day in full flower bud in my grounds. An annual bearer, said only to fail with the persimmon crop, which you know rarely occurs from frost.

The fruit ripens during the month of September. On the Cape Fear they have another variety of Scuppernong; the common variety being white, furnishes a light and clear wine. The second ripens as the first is being exhausted, is darker in color, and produces a stronger wine; a third ripening still later, being matured in the house, frequently lasting until Christmas, furnishing an exceedingly strong wine, readily causing intoxication. The vine thrives best in a sandy loam, but prospers well on every variety of soil that is sufficiently dry to yield any of the ordinary hoed crops of the county. I think it will endure the climate any where south of the James. It is not practical to prune it, except with great care and at certain periods—never in the spring—nor without dressing the wound with great care, the bleeding being so profuse as to soften and force away any other than a very tenacious dressing.

I remain yours, &c.,

THAXTON.

Berry Hill, Person Co., N. C., June 17th, 1867.

[EXTRACT FROM AMERICAN FARMER.]

MY DEAR SIR,—I have not time now to give you as full an account of the Scuppernong grape as I intended when I promised it to you some time ago, as it would be necessary to consult the files of the *Star*. Should what my recollection is able to furnish be insufficient to answer the purpose of your friends, I will take another opportunity of supplying what may be deficient.

The vine, the leaf and the grape resemble very exactly what is usually called here the Fox, Bullet or Muscadine grape, except that it is of a white color, but I suspect this difference, as well as the

peculiar flavor of the juice, is owing more to soil, climate and cultivation than to any peculiarity of species. Indeed, the seeds of this grape produce indifferent vines, affording grapes of different colors; but the dark colored grape, yielding an acid and astringent wine, resembling port somewhat, but hock more, is not thought worth preserving. The cuttings of the vines always produce grapes of the color of the parent stock; but if the seeds are employed to produce a vineyard, the first year of their growth shows the variety, the tendrils which shoot out from the joints being the same color with the grape that it is to produce, and those which are red or black may be destroyed as worthless. I am told that Governor Lane's and Captain Phipp's report to Sir Walter Raleigh, published in Haklyt's Collection, speaks of this grape as growing on Roanoke Island when the colony first landed there.

I am disposed to think the grape indigenous, and I suspect, too, that when cultivated in the interior of the country in elevated situations and in rich clay soils, the wine will be greatly inferior to that which we obtain from Roanoke Island and Scuppernong.

In the wine countries of France, (as Arthur Young and others tell us,) the quality of the wine depends much more on the soil and situation than on the species of grapes. Cultivation will improve the quality of any grape, and I suppose it is owing to this that Teneriffe (once a very indifferent wine) has now become "very little inferior to that of Madeira."

This grape and wine had the name of Scuppernong given to them by Henderson and myself, in compliment to James Blount, of Scuppernong, who first diffused a general knowledge of it in several well written communications in our paper, and it is cultivated with more success on that river, than in any other part of the State perhaps, except on the Island of Roanoke.

The seeds should be planted about three inches in the earth at any time during the Autumn or Winter. I think Mr. Blount gave February the preference as to time. The cuttings should have three joints, two buried in the ground and one left out. I was at Roanoke Island in March or April, saw many vines, but never the grapes. There was great uniformity in the manner of raising them there. Their buildings also had considerable uniformity. Usually, the dwelling-house was two rooms in length, and only one story high. The kitchen was usually about fifty or sixty feet in the rear of this. About midway between the two houses the vine was planted; this rose and spread upon a scaffold that extended from the eaves of one house to the other, and of the width of the buildings, affording at

the same time a very agreeable shade, and an annual product of a hundred gallons of wine. I was told that a vine in eight years after it was planted would cover a scaffold of these dimensions, and yield eighty gallons of juice. The vines are never trimmed, and it is not known whether the grape would be improved by such a process. Mr. Garnier, near Wilmington, whom I visited three years ago, and who had then just planted a great many vines, told me that in France vines were always trimmed every year, leaving only two, or at most three, and sometimes only one new joint; that if suffered to extend themselves, the grape would degenerate in size and flavor; but he doubted whether, under our warm sun, this pruning was necessary. At Roanoke when the grapes became ripe, a sail was spread upon the ground under the vines, which were shaken by applying a forked stick to them—of course the ripe grapes only fell. This was repeated as often as the grapes became sufficiently ripe. The green and diseased grapes were gleaned out, and the remainder mashed by some operation that bruised the skin much without breaking the seeds. Treading with the bare feet was considered the best mode. The juice was pressed out and then completely filtered, and one-sixth, and sometimes one-fifth of its quantity of proof spirit added. Sometimes the spirit was added after the fermentation had made some progress.

The addition of any quantity of water or sugar but served to spoil it.

Where there were cellars, (which was seldom the case,) less spirit was necessary, and the deeper the cellar the better. I suppose that depth where the temperature would be the same always would be the best; and I have no doubt Wier's cave would make an admirable wine cellar. A few persons, who have the advantage of both bottles and cellar, bottle it as soon as the fermentation commences and add no spirit. I drank some made in this way lately at Judge Taylor's, which was bright, clear and very pleasant. It was three years old and was made by Mr. Pettigrew, at Lake Phelps. I understand this wine resembles very exactly the Constantia wine, made at the Cape of Good Hope, and is said to be not at all inferior to it; though we have had a good deal of Scuppernong wine, *so called*, in Raleigh, we have had but few fair samples. The reputation which it obtained suddenly here by our newspaper publications, occasioned a great deal to be manufactured of honey and other ingredients, that has injured the character of Scuppernong wines. But some that I have drank here, and all that I ever drank at Roanoke Island, was not inferior to London Particular Teneriffe.

That which has brandy in it I should have compared to Sicily wine, which it now resembles very much. Cape wine I never tasted. The soil of Roanoke Island is sand and loam, a kind of warm soil, which we should call good cotton land. The natural growth of wood of the Island is pine and chinquepin, (dwarf chestnut,) and there is much myrtle and jessamine. There are many of the Scuppernong vines growing in and about Raleigh; but I have no idea even if the grape flourish that the wine will bear a comparison with that made at Roanoke Island and Scuppernong. It is a misfortune attending the character of this wine that age has never yet done it justice. It is generally drunk new, and yet no wine improves more by keeping.

I am, dear sir, yours, &c.,

CALVIN JONES.

To Col. H. G. BURTON, Halifax, N. C.

Western North Carolina--Adaptation to Vegetable, Fruit and Vine Culture.

The following is the concluding portion of the letter of Dr. L. F. SANSEBAUGH, of Waynesville, N. C., to the *Cultivator & Country Gentleman*, the commencement of which may be found in the Agricultural Department of this number of the SOUTHERN PLANTER, (page 354.)

POTATOES, ONIONS, CARROTS, BEETS, TURNIPS, &c.

Potatoes do well—the product from 15 to 35 fold. Onions, carrots, beets, turnips—in a word, all roots—grow here about as well as in Western New York, though our system of cultivation is not so good. Cabbages, tomatoes, peas, beans, &c., &c., produce satisfactorily. Small fruits grow here about as in latitudes north of this, owing to our elevation above the ocean.

THE APPLE.

I think I have had an opportunity of knowing, and must express it as my honest conviction, that Western North Carolina can beat any other section of the Union in the production of apples of first quality. I have seen apples grow in the North and Northwest equal in size, but not in quality, to those we produce. Our apple crop is seldom affected by disease, though Jack Frost sometimes *disgruntles* us. I do not know what an acre of orchard would yield. My nearest neighbor measured 75 bushels of marketable fruit, picked from a single tree, last season. I suppose the whole product of the tree was about 100 bushels—some 20 or 25 bushels having been lost. But this is rather an extraordinary yield.

Our list of apples is very large, but the varieties we esteem most are the following; *Spring*—May, Red and White June, Red Astrachan. *Summer*—Summer Sweeting, (two varieties, very delicious,) Summer Pearmain, Lady Skin, &c. *Fall*—Fall Pippin, Lyman, Fameuse, Spice, &c. Our winter varieties are very numerous. The Buff is most highly esteemed by all. I regard it as having more good qualities than any other winter apple. I am not aware that it is known in our northern markets—at least I do not recollect noticing it in any northern market. I never saw it growing outside of Western North Carolina. I do not know whence its origin, but it has been in existence more than 30 years, as I know of Buff apple trees that must be at least that old.

Besides the Buff, we have the Rhode Island Greening, Styne, Newtown Pippin, Golden Pippin, Pie, Bellflower, Roxbury Russet, Neverfail, Red Limbertwig, Pearmain, &c., &c.

I should remark, in reference to the Buff, that it, with us, is hardy, a good bearer, beautiful, and as large as the largest. The meat is delicious, possessing a taste somewhat aromatic and peculiar. I do not know why it is not more generally cultivated to the exclusion of less valuable varieties, as it always brings 10 to 15 per cent. more than any other known variety presented in our Southern markets. It is, however, not so good a keeper as some other varieties, though it will keep well in this climate till the first of April. A friend of mine sent me some last summer, about the middle of July, that had kept in good condition till then.

THE GRAPE.

It is impossible at this time, when so little attention has been given to the cultivation of the grape, to say what rank should be given to Western North Carolina as a grape-growing and wine-producing district. I have frequently seen it stated in the newspapers that Western North Carolina, having a location between the cotton-growing belt in the South, and the non cotton-growing section in the north, and possessing a climate much resembling the grape-growing districts of France and Italy, ought to rank high as a grape-growing district.

How well such an opinion can be sustained by actual experiment, it is impossible at present to presage. For a number of years a respectable proportion of our farmers have been in the habit of raising a sufficient supply of grapes for the table, besides making a small quantity of wine.

The Catawba is a native of Western North Carolina. It never rots or mildews, and I have known a single vine to bear three bushels the third year. The Isabella does pretty well, but is occasionally injured by the rot. I once saw a vine $4\frac{1}{2}$ inches in diameter 8 feet from the ground. The Rebecca and other varieties give satisfaction. The Concord, Delaware and Iona have not been sufficiently tested.

The Culohee is a native variety, much esteemed by some, but I think inferior to the Catawba. It might do well in the North, as it seems to delight in elevated localities, as high up on the north side of our mountains. The Leona is a native; taste precisely that of Isabella, but only about half so large. For more than fifteen years I have not known it fail to bear a full crop, or to be affected by disease. But its small size will ever be an objection to its general cultivation, especially as a wine crop.

Proceedings of an Adjourned Meeting of the Virginia Horticultural and Pomological Society.

At a meeting of the Virginia Horticultural and Pomological Society held at the Ballard House in the city of Richmond on the 12th day of June, 1867,

The proceedings of the last meeting being read and approved, were ordered to be signed.

The subject of an exhibition by this Society being called up,

Mr. Allan enquired of Mr. Charles B. Williams whether there would this year be an exhibition of the Virginia Agricultural Society, as in that event it was desirable that the two should be held at the same time, and being informed that there would not be, offered the following resolution which, after full discussion, was adopted:

Resolved, That the Annual Exhibition of the Society take place on Tuesday the 15th day of October next, at such place as the Executive Committee may select, and be continued for such time as said Committee may hereafter determine.

On motion of Col. Shields it was

Resolved, That the President be requested to correspond with the Virginia State Agricultural Society, the Central Agricultural Society, and the County Agricultural Societies of the State, with the view of extending the general usefulness of this Society, and ensuring their active co-operation in such exhibition as it may hold.

On motion of Mr. Charles B. Williams it was

Resolved, That this Society will be pleased to have ladies as its members, and that the ladies of the State are respectfully requested to join it, and give their valuable aid in extending its usefulness.

On motion of Mr. Hill it was

Resolved, That a committee of five members be appointed to present the claims of this Society to the community, and take such steps as may be found desirable to increase its membership.

Whereupon the Chair appointed Messrs. Wm. L. Hill, John J. Werth, W. G. Taylor, William Gilham and J. C. Shields.

On motion of Col. Shields it was

Resolved. That the meeting go into the election of two more members of the Executive Committee.

Col. Wm. Gilham was then nominated and unanimously elected.

Major W. T. Sutherlin of Danville was then nominated and unanimously elected.

Various matters connected with the objects and purposes of the Society were then brought up and discussed by the members present, rather with a view of exchanging opinions upon them than for any present definite action.

On motion the meeting then adjourned until again convened upon the call of the Executive Committee.

Odors of Flowers.

The peculiar odors of plants depend on various secreted volatile matters, which are often so subtle as to be incapable of detection by ordinary chemical means. Nothing is known of the causes which render one flower odoriferous and another scentless. In some cases the odors of plants remain after being dried, but in general they disappear. Some leaves, as of the Woodruff, become scented only after drying; and certain woods, as Teneriffe rosewood, give out their odor only when heated by friction. Meteorological causes have a great influence on the odors of living plants. Dew, or gentle rain with intervals of sunshine, seems to be the circumstances best fitted for eliciting vegetable perfumes. Light has a powerful effect on the odor as well as the color of flowers. Plants when etiolated (whitened or blanched) by being kept in darkness generally lose their odor. In certain cases, the perfumes of flowers are developed in the evening. Some of these plants are called *tristes* by Linnæus, as *Hesperis tristis*, or night-scented stock. Many orchidaceous plants are fragrant at night only, as some *Catasetums* and *Cymbipiums*. *Cestrum Nocturnum* and the white flowers of *Lychnis Vespertina*, are also night-scented. The odors of some plants are peculiarly offensive. This is the case with *Phallus Impudicus*, and with the flowers of many stapelias.--*Belfour*.

Household Department.

The Honey Bee.

In the new order of things inaugurated in Virginia, the old system of large plantations, slovenly cultivation, and inattention to anything but a few staple crops, is rapidly giving way to smaller farms, higher tillage, and attention to those secondary products, which, both producing revenue and increasing home comfort, furnish pleasant and profitable occupation to those portions of the farmer's household which are incapable of hard labor. It is this class of products almost as much as the staple crops, upon which the Northern farmer has long depended, and upon which our farmers must now depend for the profitable pursuit of their vocation, and our farmers and their families already perceiving this, are enquiring with much interest what those secondary products are, and the course of management necessary to render them profitable. Some of these—vine and fruit culture—we have already called the attention of our readers to. From time to time we propose to present others.

In our estimation one of not the least important of this class is Bee culture. When rightly pursued it pays large profits upon the time and money expended in the business. It adds vastly to the comfort of home, and as almost all the attention required can be rendered by the non-laboring members of the family, the cost of that attention is almost nothing. Any tolerably healthy woman or intelligent boy of twelve or fifteen years can attend properly to an apiary of twenty or thirty stock hives and their yearly swarms, without materially interfering with other duties; and if the bees are rightly managed and the surplus or sale honey properly stored, this number of hives will pay a handsome annual income. In the Northern and Northwestern States where this plan is pursued it is found a most profitable pursuit, and many ladies and disabled men are engaged in it. In the far more genial climate of Virginia, where the pollen and honey-yielding flora is more abundant and varied, and of much increased duration, and the collections consequently far greater, while shorter and less severe winters require the reservation of considerably less stores for maintenance of the bees, it follows that the same amount and character of attention would result in larger profits. We have also in our limits a great

number of ladies without remunerative occupations, and many disabled soldiers, most of whom may here find what they most need—some business which will enable them to live.

But a different kind of management must be adopted from that hitherto pursued in Virginia, or it will seldom prove profitable. Under the old system in the majority of cases the bees are put into the old fashioned high box-hives, and in some few cases what are known as Patent Hives, and being placed almost as close as they will stand upon a plank or bench in some distant corner of the yard or garden, generally remain wholly unattended to until the fall. Then the good mistress, wishing a supply of honey for the winter, the heaviest hives are selected, the bees destroyed with brimstone, and she obtains a mass of combs, a little white, but most of it dark and filled with honey-bee bread and brood intermixed, which is scarcely available for home use and utterly unsaleable in the market. The old boxes give the bee owner no opportunity of knowing what goes on in his hives except by looking under the bottom, and still less of remedying any supposed evil, while almost all the patent hives now in use are, in the hands of the ignorant and careless, and often even the skilful and attentive, only contrivances for rearing a crop of moth-worms sufficient to ensure the destruction of the colony. The result of this system is that most of our oldest bee-keepers know almost nothing of the history and character of their bees, of what goes on in their hives, or what evils they may be suffering from, and as a necessary consequence the apiary increases slowly, and the yield of honey is both small and of bad quality.

To abolish this old and erroneous system of management, and substitute a better, more reasonable and profitable one, to give our people the information that every bee-keeper should have with regard to the habits, requirements, and domestic economy of the bee, and to mark out those great general principles upon which alone it can be easily and rightly managed, is the object we have now in view, and in connection with this object to let our disabled men, ladies and boys know that here is a remunerative employment for them, to relieve the bee from its banishment to some out-of-the-way corner, where its wild nature is made more wild by neglect, to the flower borders, the porches and the windows of our dwellings, where it can be tended carefully as it should be, and become familiar with the household, which thus constantly around its dwelling, need have no fear of suffering from its sting; to teach to our boys and girls the exquisite system of industry, economy and wisdom, by which its

beautiful work is ever going on, and to familiarize them with one of the most interesting and wonderful exemplifications of the wisdom of the Creator, and the perfections of his handiwork.

The first great essential in successful bee culture is a hive of suitable size and shape. It should be large enough to contain so much comb as will afford room for the storage of honey enough to carry a strong colony through the winter and until the swarming season and give the Queen ample breeding room. In this climate, a hive which will hold from three to four pecks is about the right size. Less will not give the storage room for the honey required in unfavorable springs, and more will lead to the storage of honey in the hive, which should be stored in surplus boxes. It should be without the numerous springs, pegs, drawers, slides, &c., which form the apparent attractions, but real dangers, of most of what are called patent hives. The nearer it approaches to the plain square box the better, provided it has such an arrangement as enables the bee-master to readily inspect the interior of his hives, keep himself well informed of their condition, to know and remedy any evil under which the colony is suffering, and at any time easily increase or diminish his surplus honey room. All the hives in an apiary should be as nearly of the same shape and size as possible, so that any part of any one will suit for any other and every hive, and its appendages should be weighed and the weight marked on it distinctly, before it is used. We have recently seen a hive arranged by a gentleman of this city which we think answers the ends desired more fully, and is better suited to the wants of bee-keepers in this section than any other we have met with, and have no doubt that bee culture in Virginia would be much advanced by its general use.

The next great essential is a regular systematic attention in a calm quiet manner to your bees. To hive your swarms, set them somewhere out of the way, and permit them to remain unattended from year to year, will no more entitle you to expect a profitable result than to plant your corn and let it stand uncultivated will entitle you to a crop. Like everything else which brings benefit to man, success is the fruit only of attention. They do not require a great deal, but what is required must be given, and at the proper time. You should be frequently among your bees so that they will know you, and in all your motions among, and operations with them, you must be quiet, steady and calm, being careful not to hurt or irritate them, and above all, manifesting no fear of them. Doing this, it is astonishing what wonderful control you can exercise over them, and the many liberties you may take with impunity; but

if you are timid, restless, fidgetty, or rough, hurting or provoking them, they will resent it in a manner more pointed than agreeable.

S. E. P.

Blackberry Wine.

The season is now approaching for the ripening first of the Dewberry and then of the Blackberry. It is well known to most of our people that from these two berries may be made a wine both excellent for the table and the kitchen, and highly valuable for the sick room—in some classes of diseases, especially affections of the bowels, more valuable than the costliest foreign wines, even when pure. But while it is generally known that such is the case few even of our good housekeepers know how to make the wine properly, and the miserable stuff usually exhibited as Blackberry wine has led many to think that its process is very difficult and the result very uncertain, and consequently most of our ladies are deterred from making the attempt.

On the contrary, the process is very simple and the result almost certain if ordinary care is taken. A good wine for ordinary purposes, where the berries are gathered at home, may be made for forty cents a gallon, and a capital wine for sixty to seventy cents a gallon. The writer has made it for several years past sufficient for his family uses and friends, and has not failed in any instance—either of the following methods may be pursued advantageously.

Gather the berries when perfectly ripe and avoid bruising—as gathered, empty them into a tub until you have enough to produce wine in sufficient quantity to fill one of your kegs or casks. Each bushel of ripe berries, if good, will produce from seven to nine gallons of wine. Have ready the kegs or barrels in which your wine is to be put, a beater made of seasoned hickory, cedar or ash—a pail, large bowl or tureen covered with several folds of flannel or blanket as a strainer, a spare tub or two, a couple of yards of oznaburgs, and a tub of soft spring water, and be careful to have everything, especially the kegs or casks, as clean and free from odor of any kind as is possible.

Crush the berries thoroughly with the beater, and then after straining the liquor, which runs freely from the pulp through the folded flannel, empty it into the cask, measuring it as you put it in. When the juice has been all drained from the pulp, you proceed to

press the pulp dry. If the quantity is large, this had best be done by a regular press, but if only twenty or thirty gallons are wanted, the oznaburgs answers very well. Stretch out the oznaburgs, put a gallon or a gallon and a half of the pulp into the centre, fold the cloth over it on each side, and let a strong hand at either end twist the cloth with all their strength; when the juice is well pressed out, remove and lay aside the cake of pomace, and put in more pulp. This process is apparently rough, but is both rapid and effectual. The juice so extracted is strained and measured into the cask as before mentioned. The flannel strainer and the oznaburgs may need rinsing occasionally during the work.

When all the pulp is pressed, put the hard cakes of pomace taken from the cloth into a tub, and pour upon them a little more soft spring water than you have clear juice, break up the balls and wash them thoroughly in the water, so as to obtain all the juice left in the mass, and then strain it clear; measure out as many gallons of this water as you have clear juice, say ten gallons of water to ten gallons of juice, dissolve in each gallon of water six pounds of sugar, (brown or white as you want a common or first rate wine,) and when thoroughly dissolved, add the juice, (first passing it again through the strainer,) and mix them. Then rinse out your cask, put it where it can stand undisturbed in a cellar, fill it perfectly full of the mixture, and lay a cloth loosely over the bung hole. In two or three days fermentation will commence, and the impurities run over at the bung; look at it every day, and if it does not run over, with some of the mixture which you have reserved in another vessel, fill it up to the bung. In about three weeks fermentation will have ceased, and the wine be still; fill it again, drive in the bung tight, nail a tin over it, and let it remain undisturbed until the following November, or what is better March. Then draw it off, without shaking the cask, put it into bottles or demijohns, cork tightly and seal over.

For a thirty gallon cask, you will need about thirteen gallons of juice, thirteen gallons of water and seventy eight pounds of sugar, and in the same proportion, for larger or smaller quantities. Some persons add spirit to the wine, but instead of doing good, it is only an injury.

Another process is, after pouring in the mixture for a thirty gallon cask, to beat up the whites of six or eight eggs into a froth, put them into the cask, and with a long stick mix them thoroughly with the wine. In five or six days, draw the now clarified wine off by a spigot and without shaking the cask at all, into a clean cask,

bung up and tin, to be drawn off into glass in November or March.

The more carefully your juice is strained, the better the quality of your sugar and the more scrupulously clean your utensils, particularly your kegs are, the purer and better will be your wine.

The best quality when you gather your own fruit, and make it yourself, costs you only the price of the white sugar, and when bottled has cost you in money only twelve and a half-cents a bottle.—S. O. N., in *The Farmer*.

Domestic Receipts.

SPICE CAKE.—One cup of butter, two cups of brown sugar, one cup of molasses, half teaspoonful of saleratus, yolks of eight eggs, and one whole egg, four cups of flour, and spice of all kinds to taste.

WHITE CAKE.—One cup of butter, three of white sugar, one of sweet milk, half a teaspoonful of saleratus, whites of eight eggs, four cups of flour with lemon. When putting the mixture into the pans, have the first and last laying of Spice Cake. This quantity makes two loaves.

CRANDELL PUDDING.—One half box of Cox's gelatine dissolved in a tea cup of cold water, add three pints of milk, a little salt, sweeten to taste, set in a kettle of water, and stir till it boils. Beat the yolks of six eggs and stir in; strain it through a cloth, then set it in till the whole boils. Take it off and stir in rapidly the whites of the eggs beaten to a froth. Flavor with lemon or vanilla, and set it away to cool. This makes sufficient for a family of eight persons.

PARSNIP CAKES. Grate two parsnips, beat two eggs and stir in, add a tea cup of milk, a table spoonful of butter, salt, and sufficient flour to make a batter.

AN intelligent and useful citizen sends us the following recipes which he thinks should be published "for the general good:"

CHOLERA IN FOWLS.—As soon as the fowl shows any symptom of it, give one teaspoonful of paregoric; if not improved in 8 or 12 hours, repeat the dose: one dose is generally sufficient to effect a cure. In small fowls give a less quantity according to size.

TO STOP CHILLS.—Dissolve 10 grains of saltpetre in a half or whole wine-glass of water, as soon as the symptoms appear, swallow it; then take means to cause the liver to perform its functions properly, and chills will disappear.

G. W.

THE SOUTHERN PLANTER.

RICHMOND, VIRGINIA, JULY, 1867.

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Editorial Department.

Our Young Men—The Chief Resource for Supplying the Deficiency of Agricultural Labor.

In our June number we presented a series of calculations, based upon the census of 1860, with the view of demonstrating the degree of availability of the colored population of Virginia and North Carolina for the agricultural purposes of these States, respectively. With regard to Virginia, in the apportionment of male laborers to each farm, we proceeded—in the absence of definite information—upon the supposition that, by a deduction of one-third for West Virginia, from the aggregate number of farms in the whole State exhibited by the census of 1850, we should very nearly approximate the actual number in Virginia in 1860. Upon the data thus assumed we ascertained the number of male laborers apportionable to each farm of 340 acres—the size then assumed as the average of farms, consisting of improved and unimproved land—to be two males within the limits of twelve and sixty years of age, or one laborer of the same class to each 170 acres of improved and unimproved land. We have since procured accurate statistics of the number of acres of improved and unimproved land in the State of Virginia, as now constituted, which enables us correct so much of our calculations as relate to the number of laborers we apportioned to a given number of acres. With respect to North Carolina we have nothing to modify, as we have not had the advantage of referring to any thing more authentic than the preliminary census report on which our calculations were originally founded. According to the full report of the census of 1860, which comes to us at second hand, but is believed to be reliable:

The <i>improved</i> lands of Virginia were, - - -	9,091,694 acres.
The <i>unimproved</i> , - - - - -	11,128,958

Aggregate of <i>improved and unimproved</i> lands, - -	20,220,652
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An apportionment of 103,069 male laborers—the number found to be available for the agricultural purposes of Virginia—as shown in our last issue, would give of *improved* or arable land, to each laborer 88 21-100 acres, or one such laborer to each 196 19 100 acres of improved and unimproved land, taken collectively. The apportionment we then made was upon this latter basis, by which it appears that our estimate was more favorable than the facts which have since come to our knowledge justified. Instead of one laborer to each

170 acres, there is but one assignable to each 196 acres of improved and unimproved land. Nevertheless, as it is the *improved land* about which Virginia is mainly concerned at this time, the correction is highly important and favorable, too, especially in this, that it reveals the interesting fact that the proportion of laborers of the class under consideration is as one to every 88 acres of arable land, or 103,069 male laborers (between 12 and 60 years of age) to 9,091,694 acres of cultivable surface. But after all these modifications and corrections are made, it remains an undeniable fact, which ought to arrest public attention, that the deficiency of labor as compared with the needs of the agriculturist is enormous! Where shall we find the remedy?

It is plainly the duty of our young men to meet this pressing exigency. They constitute the only remaining resource for the *immediate* supply of any considerable amount of labor. Let them strip themselves for the conflict; let them "roll up their sleeves," and "gird up their loins," for the noble work of resuscitating Virginia from her present paralyzed and prostrate condition; let them labor with the same self-denial and indomitable courage and perseverance with which they went forth to meet her assailants in the stern conflicts of the battle-field, and the work will soon be accomplished. The openings for the employment of our young men in their accustomed occupations are all filled to repletion and there yet remains a large number without employment. To continue in idleness—demoralizing and enervating idleness—is a thing to be abhorred by every ingenuous, high-minded, honorable young man, and to eat the bread of dependence ought to be more galling to his pride than the performance of comparatively menial duties, if such were necessarily to be encountered, in pursuing the very laudable object of obtaining for himself an honest livelihood and in promoting with patriotic ardor and disinterestedness the honor and prosperity of the State. But no such humiliation awaits our young men. They will rather add dignity to their calling and bring to their aid an array of educated intelligence which will greatly accelerate the march of improvement. They will soon acquire a degree of practical skill, which, aided by their superior knowledge, will guide them in the introduction and management of such mechanical helps as their own enlightened experience may suggest or the inventive genius of the country may supply, and thus contribute to lighten the burden or human toil, remit the mind from the drudgery of debasing labor, and elevate it into the more ennobling spheres of activity, where accretion of strength is gained by the exercise of its powers, and where it successfully conserves the progress of society in civilization, wealth and social happiness. We reserve for a future number what we have to say on the subjects of immigration and the sub-division of our lands.

Correspondence of the Southern Planter.

STATE AND PROSPECTS OF THE GROWING CROPS.

An esteemed correspondent in Lunenburg county, who has been a subscriber to the *PLANTER* from its first issue to the present time, under date of the 25th of June, in addressing us a private note of a business character, appends the following gloomy account of the crop prospects in his neighborhood. We take the liberty of publishing it—corroborated as it is from different parts of the "South Side"—as an offset to the very flattering account given in another part of this paper of the prospects of crops generally, as represented in an extract from the *New York Journal of Commerce*.—Ed.

"As I am writing I will give a short account of crop prospects in this section at present. They are gloomy in the extreme. We have been literally rained to death. Crops of every description are almost entirely lost. It has rained almost incessantly here since the first of March, and especially for the last two weeks, so that no work could be done, and the consequence is, the corn crop is nearly lost; much of the corn on flat land (which is our best corn land) is actually dying from excessive wet, and all of it, as well as the tobacco and cotton, is completely enveloped in grass, owing to the fact that it has been impossible to work, in consequence of constant and incessant rains. The forward wheat that is now being harvested is sprouting and rotting; the late wheat and oats are rusting badly, so that between the wet weather and rust we shall not be able, in my humble opinion, to save seed wheat. The vegetable crops are totally ruined. I have been farming for thirty years and have kept a regular diary of my business and of the weather during that period, and certainly no such season has occurred during that time. The present prospect for crops of all kinds is the most gloomy that I ever saw—in fact, it is simply impossible, in the very nature of the case, that half crops of corn can be made under any circumstances, however favorable they may be from this time forward.

HOW TO ERADICATE WILD ONIONS.

We had the enquiry made of us by a correspondent, "How shall we get rid of the wild onion?"

ANSWER: We understand it was the practice of the late Richard Sampson—than whom no higher authority can be cited—to cultivate the land successively in oats for as many years as were necessary to rid it of this formidable pest, and that it was generally accomplished within three years. This may be considered, by some of our readers, as rather an exhausting process to the land. Not so, however. There is abundant testimony to the fact that poor land cultivated continuously in oats from year to year has been known to improve progressively until the crop became so exuberant as to fall and lodge, so that it became quite difficult to harvest and save it.

EXPERIMENTS IN PLASTER.

From another correspondent we have received the following communication:

"RICHMOND, June 28, 1867.

"Herewith you will receive a bundle of wheat which grew upon the farm of Mr. Roper, near the city, and which was made on poor land with the use of plaster alone, at the rate of 2000 lbs. to the acre. The quality and quantity of the wheat made by him in this way surpasses that which was made on rather better land with the use of guano. Mr. Roper's land is of light soil with a clay subsoil. Thinking that this experiment may be of some value to the farming community, I suggest that you mention it in your paper. This experiment, together with your own use of plaster mixed with guano, is pretty conclusive proof that plaster used along with guano will decidedly increase the yield of wheat."

The reference to our own use of plaster, made above by our correspondent, is in allusion to a particular occurrence in the course of our agricultural practice. Some years ago when we had purchased of a house in this city our supply of guano for the wheat crop of that season, and left it in store to await our convenience for its removal, it was suddenly submerged by an unprecedented rise in the Shockoe creek, which passes through the lower part of the city, and perfectly saturated with water. In this trying emergence we had recourse to the following expedient:

We took home the lank and flabby bags with what remained of their original contents, as soon as the water had subsided with which it had been overflowed, emptied them on a plank floor, and stirred in ground plaster of Paris, until the mass was reduced to the consistence of moist sand, and its adhesiveness so far

overcome as to admit of its being sown broadcast by hand. It was then closely packed in hogsheads and securely covered and laid by until the time arrived for its application. At that time it was again emptied on the floor, the lumps reduced, and the mass prepared for sowing on the fallow. It was sown at the rate of about four hundred pounds to the acre, before ploughing, on a piece of land of ordinary fertility, (being new land unimproved,) and the wheat nicely put in upon the fallow with a heavy harrow. The yield was over 20 bushels to the acre of merchantable wheat of fine quality.

Book Notices.

AMERICAN POMOLOGY—APPLES.—By Dr. John A. Warder. Published by Orange Judd & Co., New York. 744 pages. Price \$3.00.

Dr. Warder is so widely and favorably known as one of our first Pomologists, that we were prepared to expect a book of no ordinary character from his hands, and we have not been disappointed. This work gives evidence of thorough knowledge of the subjects treated, combined with most patient labor and research, and will, we think, at once take rank among the standard authorities on Pomology.

The first half of the book, which is devoted to a discussion of the general subjects of preparation of the soil, planting, culture of young orchards, &c., &c., abounds in most practical and useful information. If our farmers could only be induced to adopt the Doctor's views with regard to preparing the soil and digging the holes for young orchards, we would hear no more complaints of stunted and dying trees. In reply to the question "How wide should the holes for young trees be dug?" he says "As wide as the field is wide and long." In other words the whole ground should be prepared by ploughing and subsoiling; and when our farmers adopt this mode instead of the present one of digging *fence post* holes at intervals of thirty feet in hard, baked lands, and cramming the roots of their trees into these, we may expect to hear some good results from fruit growing in this State.

The latter half of this work is devoted to a botanical arrangement of apples, by classes, divisions and sub-divisions, upon which the author has evidently bestowed great care; and while we are not prepared to say that it is the best classification that can be attained, we think it far excels any that have preceded it, both in simplicity and accuracy.

This book is the more readable because it is free from egotism,—a quality not so rare among writers on this and kindred subjects. What the author knows, he tells us; upon subjects concerning which as yet little or nothing is known, such as the origin of the pear blight, the remedy for curculio, &c., &c., he gives us the leading opinion of others, but with rare modesty does not even venture one of his own.

This volume is devoted to apples, but succeeding books are promised to cover the other fruits, and the series when completed will no doubt be a most valuable acquisition to Pomological literature.

Great credit is due the publishers for the mechanical execution of the book, and the low price at which it is offered.

TRANSACTIONS OF THE NEW YORK STATE AGRICULTURAL SOCIETY, FOR 1865.

We have received from the veteran and able Secretary of this Society the

volume above indicated. To say that it is gotten up in first rate style, is elegantly illustrated, and replete with valuable articles of the most instructive and useful character, is to tell those who have been accustomed to read his former reports, simply that the prestige of Mr. Secretary Johnson is fully maintained, and we may truthfully add that nothing less can be expected from him so long as he continues so worthily to fill his present position. We have also received the January, February, March and April numbers of the Journal of the New York State Agricultural Society. A highly valued accession to the list of our exchanges.

WOODWARD'S RECORD OF HORTICULTURE, for 1866. Edited by Andrew S. Fuller, author of "The Forest Tree and Grape Culturist." New York: Geo. E. & F. W. Woodward, 37 Park Row. 125 pages.

This is the first volume of an Annual, to be published in January in each year. Its purpose will be "to show the actual state of Horticulture at that time, the principal Horticultural events of the preceding year, and any new developments that may have been discovered in regard to the more common fruits and flowers in cultivation." The first part is devoted to short reviews of the latest publications falling within the scope of a Horticultural Record,—a delicate office if conducted without fear or favor, and characterized by a just and proper discrimination of merit in the various authors noticed. Part II. Review of Horticulture. III. Women in Horticulture. IV. Men in Horticulture. V. Grape Culture. VI. Small Fruits—Blackberries, Raspberries, Currants, Strawberries, Gooseberries and Cranberries. VII. Ornamental Plants—Roses, the Lilly in its varieties, Herbaceous Perennial Plants, the Dahlia, the Clematis, &c., &c. VIII. Ornamental Gardening. IX. Hardy Shrubs and Trees. We think this Annual will prove a valuable contribution to Horticultural literature.

WOODWARD'S ARCHITECTURE, LANDSCAPE GARDENING AND RURAL ART. No. 1. 1867. By Geo. E. & F. W. Woodward, Editors of the Horticulturist, Woodward's Country Home, Woodward's Graperies, &c. No. 37 Park Row, New York. 120 pages.

This is the first number of a permanent annual publication, to be issued from the office of the Horticulturist and intended to supply a demand for plans and information in all departments of Rural Art. Each number will be thoroughly illustrated with original and practical designs, adapted to the requirements of model means." The volume before us is a full realization of the prospectus of the Editors.

GRAPES AND WINE, or the Cultivation of the Native Grape and Manufacture of American Wines. By George Husmann, of Hermann, Mo. Geo. E. & F. W. Woodward, 37 Park Row, New York. 192 pages.

This volume—designed especially for the assistance and instruction of those whose means will not allow them to indulge in the costly preparations which are too commonly recommended;—treats of the more economical methods of grape culture and wine making, by which a man in limited circumstances may be able to pursue the business with advantage and profit. This is a valuable manual for the learner in this branch of Horticulture, which is rapidly rising in importance, and is destined ere long to become no inconsiderable element of national wealth.

FOREST TREE CULTURIST: A Treatise on the Cultivation of American Forest Trees, with Notes on the most Valuable Foreign Species. By Andrew S. Fuller, Horticulturist, author of "The Grape Culturist," Strawberry Culturist," &c., &c. Geo. E. & F. W. Woodward, No. 37 Park Row, New York, 188 pages.

This is a practical, popular treatment of a subject which commends itself to the particular attention of many portions of our country which, by the fortunes of war, have been literally denuded of their native forests. The name of the author is a guarantee of its useful and practical character.

THE HORTICULTURIST ALMANAC FOR 1867—By the Messrs. Woodward, is a valuable serial of its kind.

THE SMALL FRUIT CULTURIST. By Andrew S. Fuller, Practical Horticulturist, Bergen Co., N. J. Beautifully illustrated. Orange Judd & Co., No. 41 Park Row, New York. 276 pages.

The growing demand for practical information on the subject to which this timely publication is devoted, together with the well known qualifications of the author for such a task, will ensure to the publishers a ready sale for a large edition of the work.

SORGHUM AND ITS PRODUCTS: An Account of Recent Investigations Concerning the Value of Sorghum in Sugar Production, together with a description of a New Method of Making Sugar and Refined Syrup from this plant, adapted to common use. By F. L. Stewart. J. B. Lippencott & Co., Phila. 240 pp.

Divided into thirty chapters, in which are systematically and scientifically discussed the subjects of Sugar and the Sugar Plant; Method of Cultivation; Manures; Relative Value of Different Soils; Influence of Climate; Means by which the Maturity of the Cane may be hastened; The Tilling of Sorghum; Harvesting the Cane; Process of Manufacture; Chemical Action of Substances use for Defecation; Value of Sorghum in Sugar Production; How to Test the Juice, &c., &c. A complete and valuable manual of instructions for those who cultivate Sorghum either for syrup, or sugar, or both. Sold by Messrs. Woodhouse & Parham, 1205 Main Street.

HERMITAGE NURSERIES: Catalogue of Fruit and Ornamental Trees, Plants, Shrubs, Flowers, &c., grown and for sale by Allan & Johnson, Nurserymen, Seedsmen and Florists, No. 1506 Main Street, Richmond.

This Catalogue contains choice selections of Summer, Autumn and Winter Apples and Pears, Peaches, Cherries, Plums, Apricots, Nectarines, Quince, Strawberries, Raspberries, Gooseberries, Currants and Blackberries; also Deciduous Trees, Evergreen Trees and Shrubs, Climbing Shrubs, Vines, &c.: Hedge Plants, Hardy Herbaceous Flowering Plants, Budding Plants, (a select list,) Bulbous Flower Roots, Roses in extensive variety and of the finest kinds; and a select list of Greenhouse and Hothouse Plants, Esculent Roots, &c., &c. We re-affirm all that we have heretofore said in recommending these worthy gentlemen to the patronage of the public.

DESCRIPTIVE CATALOGUE OF FRUIT TREES, VINES AND PLANTS, Cultivated and for sale by Franklin Davis & Co., at the Richmond Nurseries, on the Brook Turnpike, one and a quarter miles from the City.

It contains selected lists of such different varieties of Fruit Trees, Vines, &c., as in the judgment and experience of the proprietors are best adapted to Virginia and the adjoining States, especially Maryland and North Carolina. The high character of this firm for practical knowledge and skill in their calling,

and strict integrity, promptness and fidelity in the conduct of their business, entitles them to the favorable consideration of the public in the dispensation of its patronage.

REMINISCENCES OF CHARLESTON. By J. N. Cardozo.

Containing, in the form of "Editorial Correspondence of the Savannah Daily News and Herald," with an extended appendix, most interesting descriptions of Charleston and its surroundings, including military defenses and operations during the late war. Price 50 cents. For sale by J. W. Randolph & English, Main Street.

Our Exchanges.

THE RURAL GENTLEMAN—A monthly devoted to Horticulture, Agriculture and Rural Economy; published on the 15th of each month, by Robinson & Co., No. 2 South Eutaw Street, Baltimore, Md. \$1 per annum. An excellent journal.

THE FARMER'S REGISTER and *Journal of Fruit Culture*—A monthly by D. Heston, Bristol, Bucks Co., Pa. 50 cents a year. A valuable publication.

COLEMAN'S RURAL WORLD—97 Chestnut street, St. Louis, Mo. A well conducted bi-monthly, at \$2 per annum. Issued 1st and 15th of each month.

THE CULTIVATOR AND COUNTRY GENTLEMAN—Albany, N. Y. This is an old and well established weekly, ably conducted by Tucker & Son. \$2.50 per ann.

THE WESTERN RURAL—A weekly journal for the farm and fireside. Edited by H. N. F. Lewis, with an efficient corps of assistants and special contributors.

THE PRACTICAL ENTOMOLOGIST—A monthly Bulletin, for the dissemination of valuable information among Agriculturists and Horticulturists. 578 South 13th Street, Philadelphia, 50 cents per annum. This monthly is in its second year and is specially devoted to the improvement and advancement of Entomological Science and the investigation of the character and habits of insects. It is edited with marked ability by D. B. Walsh of Illinois, and treats of subjects of great interest to the farmer, and heretofore little understood. The "Entomologist" is published under the auspices of the American Entomological Society, and at a very moderate cost, and affords the opportunity for much practical information to farmers and gardeners.

Any one may become a contributing member of the Society by the "annual payment of a sum not less than one dollar.

Subscriptions and other business communications should be addressed to E. T. Cresson, Secretary, of the Entomological Society, Post Office Box 2056, Philadelphia; Entomological communications to Benj. D. Walsh, Rock Island, Illinois.

We heartily commend this monthly to our readers, and advise all who are in favor of the diffusion of useful knowledge to become contributing members.

During their recent session the Massachusetts State Board of Agriculture passed the following resolutions:

Resolved, That in the opinion of the Massachusetts State Board of Agriculture, the Entomological Society of Philadelphia, [now American Entomological Society,] by its researches and its publications, has exhibited a commendable desire to increase the amount of human knowledge.

Resolved, That we regard with great favor the endeavors of this Society to disseminate in an available form a knowledge of this important branch of Natural History among Farmers and Pomologists, and we specially recommend their publications and their gratuitous labors to the favorable notice of the community.

Commercial Report.

RICHMOND, VA., July 1st, 1867.

With the close of the past month our Merchants regard the Spring season as over. Their business operations have been conducted under many difficulties, and while some have realized a fair profit, we are convinced that only such as have practised rigid economy in the conduct of their affairs, can shew a net gain which has materially increased their capital. Many have been satisfied to sustain their credit and support themselves, looking to the future for a remunerative business, and it is well, therefore, that we should look at the prospect as it now presents itself to us.

It is very clear that the "*Lion in our path*" to prosperity is an absence of capital, coupled with our peculiar political relations and the disorganization of our labor system. The absence of capital can only be supplied from three sources. The first is, by the establishment of Banks and consequent influx of capital from the North, for it is evident that the present banking system will benefit the South but little, in the increase of her capital, unless a large proportion of the Stock, is taken by capitalists outside of her limits. The second source of supply is from sales of property, and for us to be greatly strengthened, pecuniarily, by a change of owners, the purchasers must come from beyond our borders, bringing with them capital to disburse among us.

The third, and ultimately the most available supply, has its sources in our rich soil, and genial climate. It is the *net-proceeds of production*, which is to create our capital, and not, (as many seem to think,) the *gross receipts* of a year's operation.

It is true that we have rich acres that go untilled, and many would gladly sell to good men who desire to settle among us, but "the Situation" denies us purchasers.

Our Banking Institutions, Railroads, Mining, and a hundred other interests, offer tempting fields to the capitalist, but the cry continues, "the situation forbids investment." Looking then to production as promising most speedy and effectual relief to all classes, it is our plain duty to push forward with energy and economy all our industrial pursuits, and to that end, we must bring to its most effective point our disorganized labor system. The question now arises, is there a better day for us in the early future? Aside from "the situation" above referred to, we think there is. Although taxation has been heavy, and Virginia has been sustaining her credit abroad by remitting £7,500 at a cost of \$50,427 83 as the interest on her sterling debt, we are assured that fully two per centum upon twelve millions dollars of her registered debt held within the limits of the State will be paid to our citizens on and after the first of July. In addition to this, the burthen of taxation will be further relieved by an act of Assembly, providing that all holders of old registered bonds will be entitled to receive from the Second Auditor, certificates in the nature of coupons, for the amount of interest that will be payable on such bonds at the ensuing semi-annual period for the payment of such interest, and the certificates aforesaid may be used and shall be received in payment of State taxes and the public dues.

The annexed inspection returns show that our Tobacco interest is assuming large proportions, and it promises to yield much in building us up.

The Wheat crop, although somewhat injured by late rains, is thought by many to be equal to a half crop before the war. When the crops shall have been placed in market, and the indebtedness incurred in growing them shall have been paid, it is hoped that something will have been added to the capital of the country that shall form a basis for a sound, healthy trade during the coming season.

TOBACCO.

The offerings at the Tobacco Exchange from October 1st, 1866, to this date are—17,798 hhd., 2,784 tierces. 3,761 boxes; total 24,343.

The average prices for the month of June were—

Com. lugs, light wgt's,	\$ 3 50@ 4 50	Medium leaf,	11.00@ 13.50
" heavy "	5.00@ 6.00	Good stemming,	14 50@ 18.50
Good lugs,	6.50@ 7.50	Good to fine shipping,	15 00@ 22.00
Bright lugs,	10.00@ 25 00	Good manufacturing,	14 00@ 25 00
Fancy lugs,	28 00@ 35.00	Bright wrappers,	40 00@ 100.00
Common leaf,	7.00@ 10.50	Extra br't wrappers,	110.00@ 150.00

With the exception of a temporary depression about the middle of the month, the market has been well sustained, and we note a decided improvement in lugs, low grade leaf, and dry shipping and stemming leaf of the finer descriptions within the past few days.

The inspections for the three quarters of the year ending on 30th September next, as given below, would indicate that considerably over half of the crop has come forward. The statistics given exclude tierces under the weight prescribed by law, and boxes: Richmond, 15,393 hhds.; Petersburg, 5,214 hhds.; Lynchburg, 3,700 hhds.; Farmville, 355 hhds.; Danville, 5,100 packages of 200 lbs. each, reduced to hhds. of 1200 lbs. weight, 850 hhds. Total, 25,580.

WHEAT.

Nominal—the old crop being exhausted and the new crop not ready for market.

Corn—is in fair demand at 90@97½c.

Flour—Va. Superfine, \$ 11.25@11.50; Va. Extra, 12 25@12 50; Va. Family—city inspection, 14 00@15 00; City Family, 17.00.

We give below the Flour Inspector's returns since June 1st, 1865:

First quarter, ending 30th September 1865,	.	.	18 423 bbls.
Second " " 31st December, 1865,	.	.	27 364 "
Third " " 31st March, 1866,	.	.	5 229 "
Fourth " " 30th June, 1866,	.	.	1,166 "

52 182

First quarter, ending 30th September, 1866,	.	.	24,920 "
Second " " 31st December, 1866,	.	.	10,200 "
Third " " 31st March, 1867,	.	.	4 550 "
Fourth " " 30th June, 1867,	.	.	11,170 "

58,840

PETERSBURG.

We give the following report of this market as extracted from the Circular of Messrs. Rowlett & Tannor, to whom we are also indebted for the statistics of the Petersburg Tobacco market.

The general market the past week has ruled steady with a moderate trade, at unchanged rates.

The movement in cotton has been of the most restricted character—light receipts and small sales. The stock here is very small and is being daily reduced. The movement in this article the remainder of the season will depend more upon the actual receipts and prospect of the growing crop than any outside considerations.

The stock of cotton here, by actual count, amounts to 1,899 bales.

We have no special change to note the Tobacco market. The breaks have been heavy and the market has been characterized by increased activity, and for desirable grades, particularly for good shipping leaf, the bidding has been spirited. The receipts continue heavy.

COTTON.

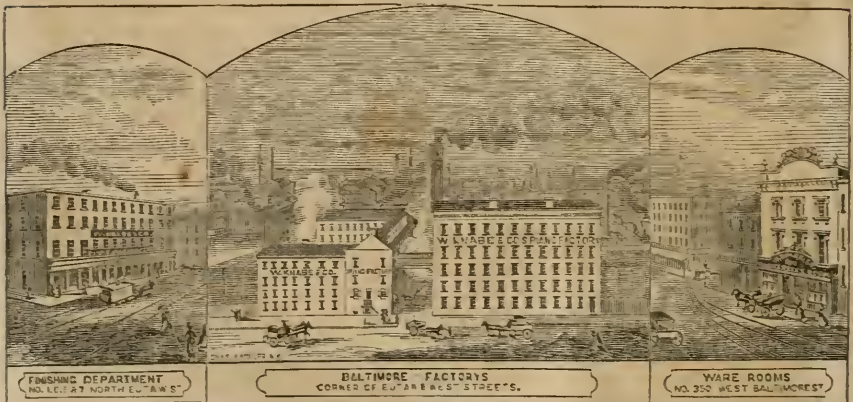
The market the past week has ruled quiet with very light sales, the demand

being confined principally to the home consumption. On Monday sales were made on a basis of 23½ to 24, the latter for selections, but since under less favorable New York and Liverpool advices, the market has been languid and dull and spinners buy cautiously and only for immediate use. Holders, however, are firm in their views, and are not pressing their stock. We quote the market quiet as follows: Middling, 23; Low Middling, 22a22½; Ordinary, 20a21.

Receipts this week, 67; last week, 103; total receipts at this port since Sep. 1, 1866, 23,503; receipts at all the ports since Sep. 1, 1866, 1,809,000; exports from all the ports since Sep. 1, 1866, 1,421,000; estimated stock on hand at all the ports, at latest mail dates, 243,000.

TOBACCO.

Notwithstanding the breaks have been very large the past week, the market has ruled active for all desirable kinds of Tobacco, with some improvement in prices of all kinds, though common nondescript and dirty tobacco is still comparatively neglected. We repeat our advice that all leafy strong tobacco and lugs, unless very bright, should be prized of good weight, say 1350 to 1450 nett. Light weight hogsheds sell much lower, unless fancy, than hogsheds of good weight. The bulk of the lugs selling are bought for shipment and light weights will not answer for that purpose. We note the sales of shipping Tobacco at \$15 to \$21 for fair and prime, and some sun cured leaf, bright and clean at \$40. We quote poor to common lugs, at \$2¼a5; fair to good \$6a9; middling \$10a12½; fair to good, \$13a20; sun cured fancy, \$15a40; coal cured wrappers \$15a100. Receipts this week, 386 hhd. ; last week, 226; total since October 1, 5,524.



WM. KNABE & CO.,

Manufacturers of

PIANOS,

Ware Rooms---No. 350 West Baltimore Street,

BALTIMORE, MD.

ADVERTISING SHEET.

A PLOUGH FOR THE TIMES. THE WATT PLOUGH.

Warranted to do far better work, and one-fourth more work, with the same power. Is double as strong and durable; not one-tenth as liable to clog or choke.

To pulverise the soil and cover up vegetation, far superior to any cuff-brace plough ever yet made—(all of which have been invented, formed and fashioned by Geo. Watt). If on trial, the Plough does not come up to the warrantee, the price paid for it will be refunded on its return to our store. We append a few from many certificates in our possession, from those who have used them, and refer to hundreds of others:

Messrs. Geo. Watt & Co.:

RICHMOND, Nov. 20, 1866.

Gentlemen—I have delayed giving you my opinion of your new plough until I could fully test it. I have for some weeks worked it with three most excellent ploughs,—a cast-steel one made by Curtis, of Ogdensburg, N. Y.; your old two-horse wrought share, and Starke's two-horse cast point,—and have satisfied myself that when the ground is at all foul *it will do better and more work, with less labor to the team and teamster, than either of the others, and that it is DECIDEDLY THE BEST TWO-HORSE PLOUGH I HAVE EVER HAD.* I have discovered but one objection to it, which will be counterbalanced by the saving of time lost in cleaning the others, and that is that my ploughmen are so much pleased with it that they will take care to wear out the old ones sooner than they should, that they may be replaced by the C. and D. (I hope you will soon get out your three-horse plough on the same principle, as it will be invaluable in heavy fallows. Very truly, your friend,

Wms. C. WICKHAM.

Mr. Booker writes: "The ploughs work admirably; I have tried them on light and heavy lands, upon clean and foul lands, and everywhere they operate beautifully. I have used many ploughs, some very good ones, *but these are far superior to any I ever worked.* I think I can't be mistaken in giving this opinion. Success to you, sir, for I am sure you deserve the thanks, and will receive the patronage of intelligent agriculturists. Very respectfully, yours,

GEORGE BOOKER.

Geo. Watt, Esq.:

SEPTEMBER 23d, 1866.

Dear Sir—It gives me great pleasure to acknowledge the superior capacity of your new plough. I tried it first on a clover lot, that had been pastured for three seasons, of a very stiff red soil. It was very hard and dry, but I broke it with a strong double team, about eight inches deep, with much greater ease than three horses pulled your old No. 6, and the work was done so much better that it would bear no comparison. Your friend and well wisher,

G. B. STACY.

Mr. Geo. Watt:

SPRING HILL, APPOMATTOX, Jan'y 17th, 1867.

Sir—The Plough you sent me last year is decidedly the best two-horse Plough I ever used; comes up to your card in every respect. Please send me four of the Ploughs like the one you sent me last summer.

W. E. BRADSHAW.

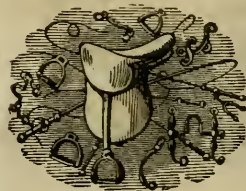
We have sold since the 1st of September last, 400 two and three horse Ploughs, and in most instances not more than one or two Ploughs to any farmer. Not one has been returned; nor have we a complaint from those using them, against them.

Geo. Watt,
Hugh A. Watt. } 1y.

Geo. Watt & Co.,
No. 1450 Franklin Street.

S. S. COTTRELL.

W. N. REDFORD.



SAMUEL S. COTTRELL & CO.

Saddle and Harness Manufacturers,

Old No. 129, New No. 1303 Main Street,

RICHMOND VA.,

A large supply of

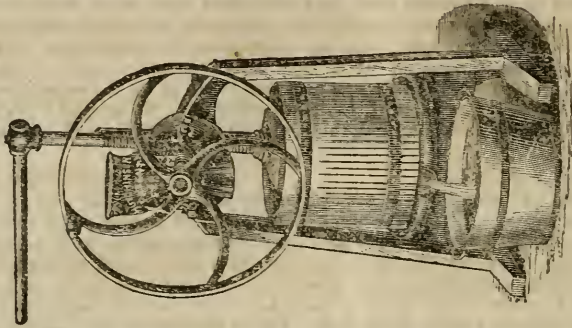
SADDLES, HARNESS, HORSE BLANKETS, BUGGY RUGS,
HORSE BRUSHES, CURRY COMBS, TRUNKS, CARPET BAGS, VALISES, etc.
Constantly on hand, at Wholesale and Retail.

Messrs. JOHN OTEY and JOHN N. JENNINGS, so long and favorably known in our business, can be found at this establishment.

REPAIRING OF EVERY DESCRIPTION.

SOUTHERN AGRICULTURAL MACHINE WORKS,

1532 MAIN ST.,



RICHMOND, Va.

H. M. SMITH & CO.

MANUFACTURERS OF

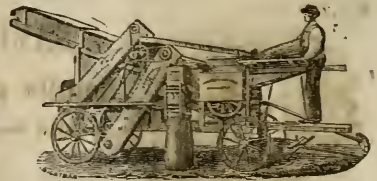
Agricultural Implements and Machinery,

Have on hand of their own manufacture, and sell with full warrantee,

THRESHERS, HORSE-POWERS, WHEAT FANS, CORN SHELLERS, STRAW CUTTERS, WELL FIXTURES, CORN PLANTERS, GLEANERS, PLOUGHS, HARROWS, ROLLERS, CULTIVATORS, CIDER MILLS, &c.

Agents in Richmond for sale of the following celebrated Machines, with which we hope to supply our friends and customers throughout the State, viz :

CLIPPER IRON AND STEEL MOWING MACHINE.
 PITTS' UNRIVALLED THRESHER AND CLEANER.
 BICKFORD & HUFFMAN'S IRON CYLINDER GRAIN DRILL.
 HICKOK'S AND HUTCHINSON'S WINE AND CIDER MILLS.
 WESTINGHOUSE THRESHER AND CLEANER.
 PELTON'S TRIPLE GEAR HORSE POWER.
 WESTCOTT'S ADJUSTABLE DASH CHURN.
 MONTGOMERY'S ROCKAWAY WHEAT FAN.
 ROCKAWAY WHEEL HORSE RAKE.



For further particulars send for Printed Circulars.

We shall be pleased to answer all letters of inquiry in regard to any thing in our line of business, and being well supplied with cuts and printed matter, can give customers a good idea of almost all kinds of implements without the expense of a trip to Richmond.

may—y

Richmond & Danville Rail Road!

THE SHORTEST AND MOST DIRECT ROUTE

BETWEEN RICHMOND, VA. AND THE

SOUTH and SOUTH-WEST!

THROUGH TICKETS can be procured in New York, Philadelphia, Baltimore and Washington,

To DANVILLE, Va., GREENSBORO' and CHARLOTTE, N. C., COLUMBIA and CHARLESTON, S. C.; AUGUSTA, MACON, SAVANNAH, COLUMBUS, and ATLANTA, GA.; MONTGOMERY, MOBILE, &c., ALA.; NEW ORLEANS, &c., LA.

THROUGH TICKETS CAN BE PROCURED AT RICHMOND TO ALL THE ABOVE NAMED PLACES; also, to LYNCHBURG, VA., KNOXVILLE, CHATTANOOGA, NASHVILLE, MEMPHIS, &c., TENN.; HUNTSVILLE, ALA., CORINTH, MISS., &c., &c.

feb. 1y THOS. DODAMEAD, SUPERINTENDENT.

Important to Farmers.

DR. VALENTINE'S

Recipe for Making Artificial Guano.

No. 1.	Dry Peat, †	.	.	.	.	.	.	20	bushels
" 2.	Wood Ashes,	.	.	.	.	.	.	3	"
" 3.	Fine Bone Dust,	.	.	.	.	.	.	3	"
" 4.	Calcined Plaster,	.	.	.	.	.	.	3	"
" 5.	Nitrate of Soda,	.	.	.	.	.	.	40	lbs.
" 6.	Sal. Ammoniac,	.	.	.	.	.	.	22	"
" 7.	Carb. Ammonia,	.	.	.	.	.	.	11	"
" 8.	Sulph. Sodae,	.	.	.	.	.	.	20	"
" 9.	" Magnesia,	.	.	.	.	.	.	10	"
" 10.	Common Salt,	.	.	.	.	.	.	10	"

† If Peat cannot be obtained, use garden mould or clean virgin soil instead.

DIRECTIONS FOR MIXING.

Mix Nos. 1, 2, 3, together; mix 5, 6, 7, 8, 9, 10, in four or five pails of water, or enough to dissolve the ingredients. When dissolved, add the liquid to the mixture, (1, 2, 3,) and mix as in making mortar. When thoroughly mixed, add No. 4, (the calcined plaster,) which will absorb the liquid and bring the whole to a dry state. Mix under cover, in a dry place—pack so as to exclude air—observe the proportions in making small or large quantities. The above recipe will make one ton, which will manure seven and a half acres of land.

Having been applied to by a number of farmers to whom I furnished it before the war, and who tested its qualities—many thinking it equal to natural guano—the subscriber has made arrangements to furnish any quantity this season, and will sell the ingredients, exclusive of Peat, Ashes and Salt, (articles on every farm,) at the low price of \$25 per ton. All orders carefully and promptly executed.

R. R. DUVAL, Druggist,

Under Spotswood Hotel, Richmond, Va.

ALLAN & JOHNSON,

1506 Main Street, Richmond, Va.

NURSERYMEN,

SEEDSMEN AND FLORISTS.

Having been engaged in the NURSERY and SEED business in this State for many years, we claim to have the proper experience of the varieties of Fruits, &c., best suited to the climate and soil of Virginia and adjacent Southern States, and of the best modes of culture, times for planting, &c., &c.

Our NURSERIES near Richmond having been recently established, we can only offer

Shrubbery, Flowers and Small Fruits,

Grown here. Our

FRUIT AND ORNAMENTAL TREES

OF LARGE GROWTH

Will be supplied from our Baltimore and Winchester Nurseries, and are of fine size and condition, and admirably adapted to this climate.

OUR SEEDS ARE FRESH, GENUINE & RELIABLE,

WE HAVE NO OLD STOCK TO GET RID OF. We procure them from the BEST GROWERS IN THIS COUNTRY AND ABROAD, and keep a

Full Assortment of everything needed for Field or Garden.

WE WARRANT ALL WE SELL.

**TOBACCO AND OATS
MANIPULATED GUANO.**

THE JAMES RIVER MANUFACTURING COMP'Y

Is again prepared to supply the Planters and Farmers of Virginia and North Carolina with its well-known

FERTILIZER,

Which will be found equally beneficial to the crops of Tobacco and Oats, as it has proved to be to that of Wheat—the Phosphate it contains, being just as essential in imparting WEIGHT and SUBSTANCE to the Tobacco leaf as in filling up the heads of Wheat or of Oats with GRAIN.

It consists of a combination of Peruvian and Phosphatic (Sombbrero) Guano, finely ground and perfectly incorporated; and can be applied either with the drill, or sown broadcast without loss or trouble. The proportions vary to suit the views of the purchaser, and in every case are weighed in with the most scrupulous care and precision.

Regular Preparation contains 1,000 lbs. of Peruvian, and 1,000 lbs. of Sombbrero Guano to the ton of 2,000 lbs.

Special Preparation of 1,333 lbs. Peruvian and 667 lbs. of Sombbrero to the ton of 2,000 lbs.

Orders can be addressed through the Commission Merchants of Richmond, or directly to the undersigned, who bestows upon this department his constant personal attention.

feb—tf

E. B. BENTLEY, Agent.

GREGORY BROTHERS,

No. 1417 Main Street, between Fourteenth and Fifteenth Streets,

RICHMOND, VA.

DEALERS IN

Ranges, Parlor, Office and Cook Stoves,

SUCH AS THE CELEBRATED

“ARBITER,” “SHEPPARD,” “IDA,” “MONITOR,” “RIP RAP,” “QUICK BAKER,” “MORNING AND EVENING STAR,” “COMMODORE,” “CHARTER OAK,” and many others too numerous to mention. Also, house furnishing articles, HARDWARE, TINWARE, &c. Also, Fairbanks’ celebrated Scales, all sizes.

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HARVEST OF 1867.

REAPING & MOWING MACHINES

IMPROVED ROCKAWAY FAN MILLS,

SOUTHERN GIANT CIDER MILLS,

HUTCHESON CIDER MILLS,

GRAIN CRADLES, GRAIN BLADES,

HORSE RAKES,

SCYTHE BLADES,

SNATHS, etc., etc.

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feb—ly



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Hat Manufacturer & Dealer,

1211 Eagle Square, Richmond, Va.

Has just removed to his New Store—or rather his old stand—where he had the good, or bad fortune (it does not matter which now) to be burnt out on the disastrous 3d of April, 1865. He takes pleasure in announcing to his old customers of Virginia, North Carolina and Tennessee, that he is ready to supply them with goods in his line, as he did for twenty-five years before the war. They will find the stock of **HATS, CAPS, and LADIES' FURS, and HATTERS' GOODS** and **MATERIALS** for Manufacturing and Trimming Hats, &c..all ready to their hand. The prices shall approximate to those of the good old times. feb—1y

JOHN C. MILLER,

(LATE OF KENT, PAINE & CO.)

IMPORTER AND DEALER IN

STAPLE and FANCY DRY-GOODS,

CORNER MAIN & NINTH STREETS,

RICHMOND, VA.

In the Retail Department the stock of Dress Goods will always be found complete.

REPRESENTED BY SAM'L M. PRICE.

feb—1y

The Arlington Mutual Life Insurance Company, of Va.

WITH AMPLE GUARANTEE CAPITAL,

Offers facilities of Life Insurance at rates as low, upon every principle of LIFE, ENDOWMENT and ANNUITY Policies upon *Non-Forfeiting Basis*, with every accommodation afforded by any responsible Company in the country, to which is added the benefits of investments at *home*.

DIRECTORS.

John Enders, Wm. F. Taylor, Sam'l S. Cottrell, John Dooley, Charles T. Wortham, Wm. Willis, Jr., Ed. A. Smith Thos. J. Evans, James A. Scott, B. M. Quarles, W. H. Tyler, J. E. Edwards, A. Y. Stokes, J. B. Morton, R. H. Dibrell, Wm. H. Palmer, Henry K. Ellyson, Asa Synder, H. E. C. Baskerville, Sam'l C. Tardy, George Jacobs, J. W. Allison, George S. Palmer, A. D. Chockley, H. C. Cabell, D. J. Hartsook, J. B. Pace, John C. Williams, Wm. G. Taylor, A. P. Abell, Wm. B. Isaacs, Geo. L. Bidgood, Sam'l M. Price.

J. E. EDWARDS, President; WM. B. ISAACS, Vice President;

D. J. Hartsook, Secretary, Charles H. Smith, M.D., Medical Examiner; H. Coalter Cabell, Legal Adviser.

JOHN H. CLAIBORNE, General Agent.

my—3m HOME OFFICE--1214 MAIN STREET, RICHMOND, VA.

BELMONT STOCK FARM.

BLACK HAWK (Morgan) and the imported NORMAN.

The "COLONEL" will stand here from April to October, and imported Norman "Bienvenu" will stand in the Valley of Virginia

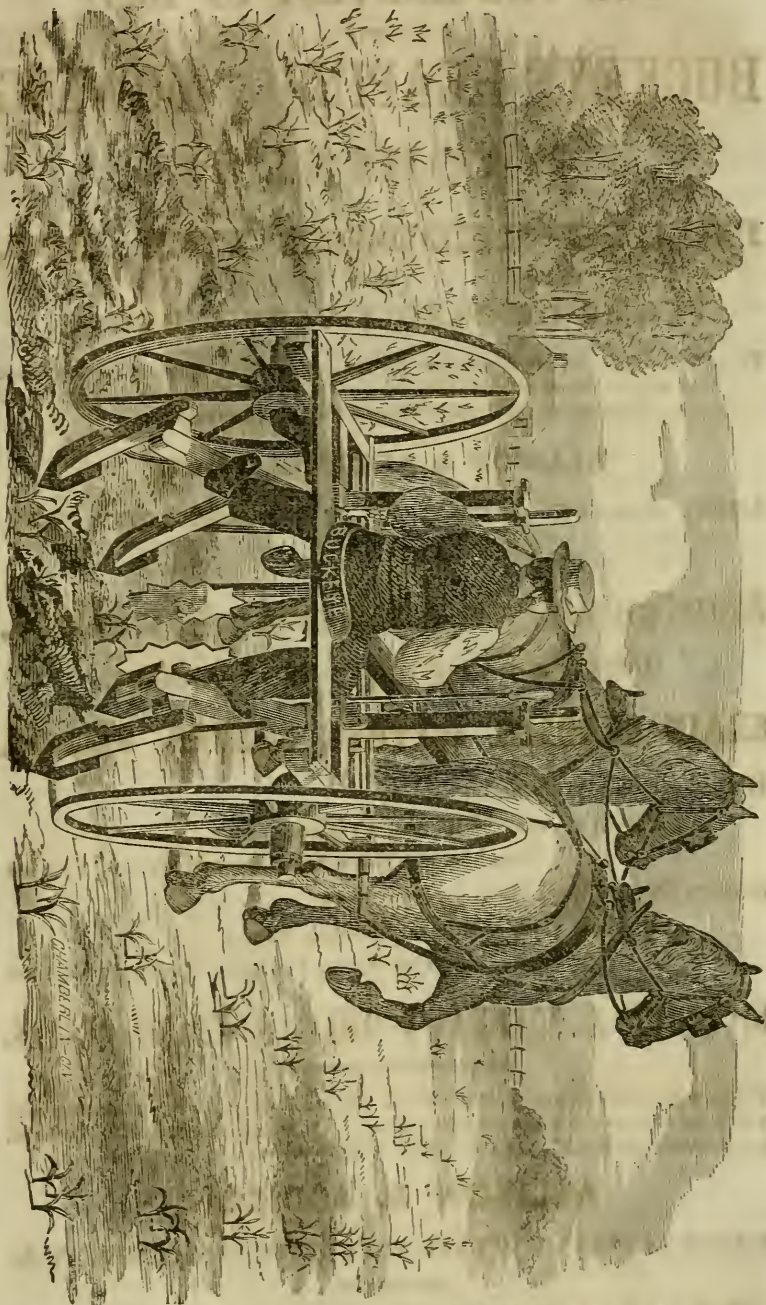
I breed only from Short Horn Cattle, and have young Bulls and Heifers; also *Albemarle Improved* Hogs, Boar and Sow Shoats and Pigs for sale, and send them by trains in any direction.

My prices are made to suit the condition of the South.

S. W. FICKLIN,

Near Charlottesville, Va.

IMPROVED BUCKEYE SULKY CULTIVATOR.



Manufactured by J. W. CARDWELL & CO.,

feb-tr Cary Street, between 14th and 15th, RICHMOND, VA.

FOR THE HARVEST OF 1867!

**BUCKEYE REAPING & MOWING
MACHINES!**

PRICES REDUCED FOR 1867,

AND

TERMS OF CREDIT VERY LIBERAL.

Those wishing to supply themselves for the approaching harvest, are requested to call, or communicate early with us, so that their orders may be filled when received, without delay or disappointment.

ALLISON & ADDISON, Agents,

1320 CARY STREET, RICHMOND, VA.

Montgomery's Rockaway Fan Mills,

WHEELED HORSE RAKES AND GLEANERS,

GRAIN CRADLES, SCYTHES, SNATHS, &C., &C.

Hickok's Cider Mills and Presses,

Smith's Cider Mills and Presses,

Hutcheson's Wine and Cider Mills and Presses.

Smith's Patent Well Curb and Fixtures,

Churns, Corn Shellers, Cutting Boxes,

Corn and Cob Mills, Ploughs, Castings, &c., &c.

BICKFORD & HUFFMAN'S WHEAT & GUANO DRILLS.

We have on hand a supply of the above Standard Machines and Implements, which we offer at the lowest market prices. Orders and communications shall, in all cases, receive prompt and careful attention.

ALLISON & ADDISON,

1320 CARY STREET, RICHMOND, VA.

DEALERS IN

Farming Implements, Guano, Field, Grass and Garden Seeds.

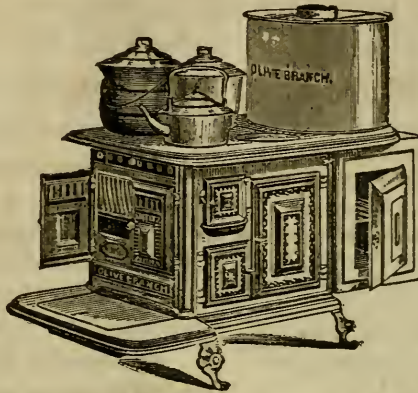
je-ly

SNYDER, BOWERS & CO.,

OF

THE RICHMOND STOVE AND ARCHITECTURAL IRON WORKS,

No. 1000 CARY STREET,
RICHMOND, Va.



After a test of sixteen years, have the verdict of their customers in Virginia and the South generally, that their manufactures are nowhere excelled for beauty of design, durability or cheapness.

THEY MANUFACTURE

HEATING and COOKING STOVES, STEAM and HOT WATER APARATUS for heating buildings, IRON RAILINGS, VERANDAHS, &c. DOOR FRONTS, complete for Stores and other Public Buildings, WINDOW CAPS, CORNICES, &c.

And sell at MANUFACTURER'S PRICES, FIRE BRICK, FOUNDRY FACINGS, feb—6m LATHES, &c. Also, IMPORT SCOTCH PIG IRON.

Virginia Fire and Marine Insurance Company.

CHARTERED 1832.

OFFICE---Company's Building, 1015 Main St., Richmond.

WILLIAM WILLIS, Jr., Sec'y.

W. L. COWARDIN, President.

AGENTS:

J. C. DENING, Norfolk.
JNO. P. JOHNSTON, Danville.
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F. M. LATHAM, Culpeper C. H.
Rev. THOS. HUME, Portsmouth.

T. H. IVEY, Lynchburg.
A. B. VENABLE, Farmville.
J. COMPTON, Lexington.
J. W. SHIELDS, Christiansburg.
W. M. TURNER, King William Co.

feb—1y

**MANHATTAN LIFE INSURANCE COMPANY,
OF NEW YORK.**

Annual Income,.....\$2,000,000.
Annual Dividends,.....40 pr. ct.

All kinds of NON-FORFEITING, LIFE and ENDOWMENT POLICIES ISSUED.
LOANS MADE ON POLICIES.

All Policies, after three years, Non-Forfeiting.

LOCAL BOARD OF REFERENCE—Hon. Jos. Mayo, Mayor, Judge Wm. H. Lyons, Judge Wm. W. Crump, Jno. O. Steger, Esq., Harrison, Goddin & Apperson, Bankers, John H. Claiborne, Esq., Chief of Police, Paine & Co., Merchants, Jno. Purcell, Esq., John Dooley, Esq., Wm. H. Haxall, Esq.

P. T. MOORE, Agent, J. ADAIR PLEASANTS, Gen'l Agent, Dr. J. S. D. CULLEN, Med. Examiner, JOHN O. STEGER, Legal Adviser.

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Office 1201 Main Street, corner 12th, over Telegraph Office.

WOODHOUSE & PARHAM,

Late James Woodhouse & Co.

**BOOKSELLERS, STATIONERS
AND DEALERS IN PIANO FORTES,**

Governor Street, near Main,

RICHMOND, VA.

feb-1y

JULIUS STEENBOCK, New York.
NICHOLAS STEENBOCK, Richmond, Va.**JUL. STEENBOCK & CO.**

Importers and Dealers in

Foreign and Domestic DRY GOODS.No 1213 and 1215 Main Street,
EAGLE SQUARE,

RICHMOND, VA.

Office New York, 5 College Street. feb-1y

PALMER, HARTSOOK & CO.

GENERAL

COMMISSION MERCHANTS.105 and 107 Fourteenth Street,
(2d door below Cary.)

RICHMOND, VA.

Geo. S. Palmer, Dan'l J. Hartsook,
Wm. B. Isaacs, feb-6m W. H. Palmer.**S. H. HAWES,**

(Successor to Sam'l P. Hawes & Son,)

DEALER IN

ANTHRACITE COAL.For Foundry, Factory and Family use,
also SMITH'S COAL.

Eighteenth and Cary Streets,

feb-1y RICHMOND, VA.

GEORGE C. GARY,

(Formerly of Petersburg, Va.)

Importer and Wholesale and Retail
Dealer in**CHINA GLASS, EARTHENWARE,**AND
House Furnishing Goods,

Iron Front Building,

1306 Main, between 13th and 14th Sts.,

feb-6m RICHMOND, VA.

G. GERSDORF,**FILE MANUFACTURER,**No. 1418 and 1420 Cary Street,
Bet. 14th and 15th,

RICHMOND, VIRGINIA.

Particular attention paid to Re-cutting
feb-1y Old Files.**W. N. BELL & CO.**

Wholesale and Retail Dealers in

Foreign and Domestic DRY GOODS,

No. 907 Broad Street,

Second door below Ninth Street,

RICHMOND, VA.

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JOHNSON & HUNTT,

WHOLESALE DEALERS IN

**GROCERIES, PROVISIONS
and LIQUORS.**"Pearl Block," Fourteenth Street,
BET. MAIN & CARY STS.

feb-1y

RICHMOND, VA.

CHARLES D. HILL & CO.**COMMISSION MERCHANTS,**

No. 18 Pearl (or 14th) Street,

RICHMOND, VA.

Solicit consignments of Tobacco, Grain,
Flour, Cotton, Bacon, &c. Purchase on
order Fertilizers, Groceries and other
supplies.

CHAS. D. HILL. feb-1y JAMES POTEAT.

**Tobacco Exchange Restaurant,
AND****BOWLING SALOON,**

Shockoe Slip, Thirteenth St., below Cary.

Charles H. Fitzpatrick, Prop'r.**SUPERIOR WINES, LIQUORS, and
CIGARS. OYSTERS, GAME, &c.,**

feb-1y In Season.

ELLETT & ROYSTER,**General Commission Merchants,**Corner of 12th and Cary Streets,
RICHMOND, VA.Offer their services for the sale and pur-
chase of Groceries, Liquors, Provisions,
&c.; also, Tobacco, Cotton, Flour, Wheat,
Corn and Country Produce generally.
Peruvian Guano and other fertilizers.

ANDREW L. ELLETT. WM. S. ROYSTER.

feb-1y

GORDON & CRINGAN,

Successors to John N. Gordon & Son,

Grocers and**COMMISSION MERCHANTS,**

AND DEALERS IN

METALS, LEATHER, &c., &c.

14th Street, near the Exchange Hotel,

feb-1y RICHMOND, VA.

R. W. POWERS.

Wholesale and Retail DRUGGIST.

Corner Main and 15th Streets,
RICHMOND, VA.

Keeps always on hand a Complete Stock of Drugs, Medicines, Paints, Oils and Dye Stuffs; also, a fresh stock of Reliable Garden Seeds. All of which he will sell upon the most Favorable Terms.

feb-6m

GARDEN SEEDS.

J. BOLGIANO & SONS.

GROWERS AND IMPORTERS,

28 Calvert Street, Baltimore, Md.

European and American Seeds

Of unequalled reliability at wholesale and retail. Papers for dealers supplied in quantities to suit.

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SPOTTS & GIBSON.

Grocers and Commission Merchants

Nos. 117 & 119, Fourteenth Street,

BELOW CARY,

Nearly oppo. old stand of Spotts & Harvey,

RICHMOND, VA.

Jesse T. Hutcheson, for a long time Tobacco Inspector at Mayo's Warehouse, will give his personal attention to sale of Leaf & Manufactured Tobacco

feb-6m

Established in 1856.

B. HEINRICH,

WATCHMAKER and JEWELER,

919 Main Street,

Between Ninth & Tenth, south side,

feb-1y

RICHMOND, VA.

KELLOGG & GIBSON.

Importers, wholesale and retail dealers in

CHINA, GLASS, QUEENSWARE,

AND

HOUSE FURNISHING GOODS,

No. 115 Main Street,

RICHMOND, VA.

T. H. KELLOGG. feb-1y J. W. GIBSON.

Ed. H. Skinker, Chas. R. Skinker,
S. H. Pendleton.

E. H. SKINKER & CO.

(Late of Richmond, Virginia.)

GENERAL

COMMISSION MERCHANTS

FOR PURCHASE OF

Merchandise and sale of Cotton, Flour, Grain, Tobacco and other Produce.

Fely No. 83 Front St. New York.

GRUBBS & WILLIAMS.

Real Estate Agents and Auctioneers,

Under National Bank of Virginia,

North-west Corner of Main and 11th Sts.

Continue to devote themselves exclusively to the transaction of a Real Estate business. They sell Real Estate at Auction or Privately in town or country; Rent Houses and Collect Rents.

feb-1y

A. LOWE & BRO.

CARVERS AND GILDERS,

MANUFACTURERS OF

Looking Glass and Picture Frames. Mantle and Pier Mirrors constantly on hand. Also, a fine selection of American and Imported Engravings.

902 Main Street, Richmond, Va.

Agents for Grove's celebrated Show Cases.

Particular attention paid to re-gilding
feb-1y old frames. P. O. Box 389.

ROWLETT & TANNOR,

GENERAL

COMMISSION MERCHANTS,

No. 94 and 96 Sycamore Street,

PETERSBURG, VA.

Solicit consignments of Cotton, Tobacco, Wheat, Corn and Country Produce, and will fill all orders for Merchandise, Guano and other Fertilizers.

Agents for Rhodes' Super Phosphates, Baugh's Raw Bone Phosphate, Whane's Raw Bone Phosphate, Pacific Guano.

Planters can be supplied with these Fertilizers on most accommodating terms.

JOHN ROWLETT.

N. M. TANNOR.

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HARRISON & POWELL,

Nos. 1721 and 1723,

Cor. Franklin & 18th Sts. Richmond, Va.

Grocers,

COMMISSION MERCHANTS,

AND DEALERS IN

Corn, Oats, Bran, Mill Feed, &c. Consignments of all kinds solicited. Special attention given to the sale of all Country Produce, and prompt returns made.

W. L. HARRISON. [feb 1y.] ED T. POWELL.

JAMES W. PEDIN,

Wholesale and Retail Dealer in

Foreign and Domestic DRY GOODS,

909 Broad Street,

RICHMOND, VA.

A complete Stock of Goods always in store, and sold at lowest market rates.

Salesmen—D. Coghill, J. R. Haynes.

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LOUIS J. BOSSIEUX,

MANUFACTURER OF

Double Refined Steam Candles,

And Wholesale Dealer in

Domestic and Foreign Fruits, French
Candies, Cigars, Tobacco, &c.,

No 1412 Main St.,

feb-1y

RICHMOND, VA.

JOHN C. PAGE, Jr.,

DEALER IN

BOOTS, SHOES, TRUNKS, &c., &c.

Keeps constantly on hand

A full supply of the Best Goods in his
line. Store

Corner Ninth and Main Streets,

feb-1y

RICHMOND, VA.

JOHN C. SHAFER & CO.,**MERCHANT TAILORS,**No. 1 Exchange Building, Fourteenth St.
RICHMOND, VA.Have just received a fresh supply of
Spring and Summer Cloths, Cassimeres,
and Vestings, of the latest foreign im-
portations, and most approved and fash-
ionable styles.SHIRTS and COLLARS of the best
make always on hand. ma-ly**WM. HOLT RICHARDSON & CO.****MERCHANT TAILORS,**

14th Street, opposite Exchange Hotel,

RICHMOND, VA.

WM. HOLT RICHARDSON.

W. FLETCHER RICHARDSON.

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GEO. B. STACY.

GEO. P. STACY.

G. B. STACY & SON,

1310 MAIN STREET, RICHMOND, VA.

GENERAL UPHOLSTERERS,

AND DEALERS IN

Cabinet Furniture, Bedding, &c.

Carpets, Paper Hangings. Window Shades and Oil Cloths,

Special attention given to the Manufacture of Mattresses, of every description,
and all other articles of Bedding. Goods carefully Packed for Shipping. feby**PAPER AND TWINE WAREHOUSE.****BAUGHMAN BROTHERS,****1319 Main Street, Richmond,**Keep always on hand a large stock of MANILLA, STRAW, BOOK, NEWS, TEA,
TISSUE, and COLORED PAPERS. WRITING PAPERS of all sizes and qualities.
BLANK BOOKS, and a general stock of STATIONERY.

Prices as low as in any cities North. Orders filled promptly.

TWINES, TWINES, TWINES.FLAX, LINEN, HEMP, ITALIAN, ZEBRA, TOBACCO, BAILING, COTTON,
JUTE, and PAPER TWINESused by all classes of Merchants Manufacturers and Consumers. We have
constantly on hand a large stock in great variety, which we will sell by the barrel,
bale, or pound, at lowest market price. Also, SEINE TWINE, soft and hard, GAR-
DEN, PLOUGH and CLOTHES LINES. feb-6m**C. H. WYNNE,****STEAM BOOK AND JOB PRINTER,**

CORNER FOURTEENTH AND MAIN STREETS,

RICHMOND, VA.

S. SUTHERLAND,
 Importer and Manufacturer of
GUNS, RIFLES, AND PISTOLS,
 GUN MATERIAL,
 Huntsmen's Goods, Ammunition, Fishing
 Tackle, Pocket Cutlery, &c.
1406 Main St., near corner 14th,
RICHMOND, VA.
 All kinds of Fire Arms repaired. [may]

HABLISTON & BROTHER,
FURNITURE DEALERS,
905 MAIN STREET,
 Corner of Ninth Street,
RICHMOND, VA.
 Always on hand a Large and Complete As-
 sortment of Furniture, &c. [may]

THOS. S. BALDWIN & CO.

Successors to KEEN, BALDWIN & Co.

Established 1838.

Wholesale and Retail, Fashionable and Seasonable

READY-MADE CLOTHING!

FOR MEN AND BOYS' WEAR. Also, GENTS' FURNISHING GOODS, a full
 line. TRUNKS, VALISES and TRAVELLING BAGS,

AT CORNER OF MAIN AND TENTH STREETS,

feb-ly

RICHMOND, VA.

**VIRGINIA STATE
 INSURANCE COMPANY.**

Office No. 917, South Side Main, bet. 9th and 10th Streets,

RICHMOND, VIRGINIA.

Capital, - - - - - \$ 200,000.

Buildings, Merchandise and Furniture, in the City or Country, insured against loss or
 Damage by fire, on the most liberal terms.



JOHN L. BACON, THOS. W. McCANCE, WM. H. CHRISTIAN,
 feb-ly President. Vice-President. Secretary.

TOBACCO & WHEAT CULTURE,
 1867.

RHODES' SUPER-PHOSPHATE,
 LONG ESTABLISHED.

THE STANDARD MANURE,
 Which does not require array of certificates, will be furnished to Planters—
 payable from crops—say for Tobacco from Wheat, and for Wheat from Tobacco.

B. M. RHODES & CO., 82 South St., Baltimore.
SCHAER, KOHLER & CO., Agents, Cary St., Richmond, Va.
 apl-6m

 OFFICE OF THE SOUTHERN PLANTER, 
 No. 1015, Va. Fire and Marine Insurance Building, Main Street.

CLARK & BLAIR,

[SUCCESSORS TO DAVID B. CLARK.]

Commission Merchants,

14th [Pearl] Street, between Main and Cary,

RICHMOND, VA.

AS THE GENERAL WHOLESALE AGENTS FOR

LITTLE'S WHITE OIL,

We invite your attention to its claims on the patronage of the public.

1st. It is beyond question, proven by 20 years' test, the best Liniment ever used.

2d. It is warranted to cure Swelled Joints, Sprains, Cuts, Saddle and Collar Galls, Scratches, Poll Evil, Fistula and all pains and sores that horses are liable to.

3d. As a Liniment for man, it stands unsurpassed, and is guaranteed to cure Rheumatism, Scalds, Burns, and all kinds of pains and aches mankind is subject to.

We are prepared to supply this Oil in packages to suit dealers, and warrant this Oil to come up to our representations. All parties ordering from us who will send us a newspaper of their selection, we will advertise in that paper for them. It is retailed every where for FIFTY CENTS PER BOTTLE.

Guaranteeing this Oil to give satisfaction, as we have any number of certificates, and with a determination to keep it prominently before the public, we solicit orders.

SCOTTSVILLE, Va., April 1, 1867.

The undersigned have established a Wholesale Depot for the sale of the "Little's White Oil," in Richmond, Va., and Messrs. CLARK & BLAIR are constituted Sole Agents. All orders for "Little's White Oil" must be addressed to CLARK & BLAIR, General Agents, Richmond, Va.

T. W. & C. E. LITTLE & CO.

my....ly

Manufacturers of Little's White Oil, Scottsville, Va.

ALL NURSERIES IN ONE.**L. L. WHITLOCK,****No. 37 Park Row, New York.**

PRINCIPLES OF BUSINESS.

1st. It is every day being proved that, in all kinds of business, the producer and the salesman are in all respects distinct in their business, and that the consumer must sooner or later pay, not only first cost of the article, but also the cost of selling that article, whether sold direct by agents or on commission.

2d. In my business the purchaser pays the commission direct to me instead of to the producer.

3d. On my books every producer's stock is entered free of charge, each article in its respective class, and consequently coming in direct competition with each other, thereby showing not only the amount of stock in market, but also where the cheapest may be obtained.

4th. Nurserymen can in this way dispose of surplus stock at low rates without injuring their own business in the future, or that of the trade, by thus advertising in their catalogues.

5th. Although my books are always open to the public, producers' names are not found there, they being represented by numbers as a protection to myself and a benefit to those wishing to sell at low prices.

6th. Persons ordering less than one hundred dollars worth will be charged retail prices, delivered free of expense, at my place of business.

7th. An order to the amount of one hundred dollars or over will be considered wholesale, and the purchaser given every advantage of the lowest wholesale prices, whether he take one or one hundred of a kind; to which amount will be added the expense of packing, freight, and my commission.

8th. With an experience of twelve years in the Horticultural Trade, and my complete list of stock, I think I may safely say that I can do better for my customers than they can for themselves, especially in amounts of one hundred dollars or over of miscellaneous stock, which would elsewhere be sold at retail prices.

je—ly

Send Stamp for Price List. Terms Cash.

TO FARMERS AND PLANTERS!

GUANO, GRAIN & SEED.

The undersigned have constantly on hand

Peruvian Guano, Bone Dust, Plaster, Coe's & Wilson's Super-Phosphates, Tobacco Ashes and all Fertilizers

Of known value, in quantities to suit purchasers.

We will pay particular attention to the purchase and shipment of Grain, and will endeavor to satisfy all who may favor us with orders.

ROBT. TURNER & SON,

43 South Frederick St., Baltimore.

mh-ly

SOLUBLE PACIFIC GUANO.

SOLD BY AGENTS IN ALL THE PRINCIPAL MARKETS OF THE SOUTH.

None genuine unless branded with the name of

JOHN S. REESE & CO.,

BALTIMORE, MD.

mh-ly

GENERAL AGENTS FOR THE COMPANY.

LEE A. BECKHAM.

H. B. LONG.

J. F. BECKHAM.

BECKHAM & CO.

Nos. 1104 and 1106 CARY STREET, RICHMOND, Va.

Wholesale and Retail Dealers in

Agricultural and Farming Implements,



mhly

Landreth's Garden Seeds,

FRUIT TREES,

Mowers, Reapers,

CIDER MILLS, &c.

Agents for

Russell's Mower & Reaper,

ÆTNA MOWER & REAPER,

Russell's Thresher and Separator,

BUCKEYE SULKY CORN PLOUGH

Southern Fertilizing Company.

RICHMOND, Va.

Col. WM. GILHAM, CHEMIST, (late Professor at the Va. Military Institute,)

This Company, now in active operation, is prepared to furnish the following articles at the lowest cash prices:

FINE CRUSHED PERUVIAN GUANO.

Warranted Pure and Genuine.

The Guano from which this article is prepared, is purchased direct from the Agent of the Peruvian Government, in New York. Care is taken to secure an article of recent importation, and each cargo is subjected to careful chemical analysis by Col. W. Gilham, Chemist of the Company. Farmers may therefore rely with certainty upon its being *Fresh* and *Unadulterated*. The Guano is passed through a series of crushing rollers, by which it is all brought to a fine state of division, ready for the drill, or for sowing broad-cast. Each bag is weighed after it is refilled, and is sold by this weight, not the weight by which it was purchased.

“Old Dominion” Fertilizer---\$70 per ton.

This is an Ammoniated Super-Phosphate of Lime, containing from $3\frac{1}{2}$ to 4 per cent. of Ammonia, 45 per cent. of Phosphate of Lime, of which about 10 per cent. is soluble, together with considerable proportions of Sulphate of Lime and Alkaline Salts. The bases of this manufacture are Peruvian Guano and fine ground Navassa Phosphate, which contains 70 per cent. of Phosphate of Lime. These ingredients, after thorough mixing, are subjected to the action of Sulphuric Acid in due proportion, and allowed to remain in bulk for from two to three weeks, to complete the necessary chemical changes, and when dry, the mixture is again brought to a fine state of division, ready for use, and put up in bags containing 167 lbs. each.

This Fertilizer is prepared with special reference to the grain and cotton crops, and when applied at the rate of, say 250 lbs. to the acre, will be found as valuable as Peruvian, and cheaper. A similar preparation containing, however, but one-half as much Peruvian as the Old Dominion Fertilizer, is now largely used by Maryland Farmers instead of Peruvian guano, to which they consider it equal, and by North Carolina planters on their cotton, many of whom prefer it to Peruvian at the same price.

PHOSPHO PERUVIAN, A MANIPULATED GUANO,

Composed of “Swan Island” Guano, a bird deposit, in fine powder, requiring no crushing or grinding, and mixed in equal proportions with Peruvian Guano, in the manufacture of a superior article of Manipulated Guano. This article the Company are prepared to deliver at \$75 per ton.

Tobacco Fertilizer

Prepared with special reference to the requirements of the Tobacco crop, and containing about 8 per cent. of Ammonia, and an ample supply of the Phosphate, which, it is believed, will be found superior to Peruvian Guano—\$75 per ton.

PURE GROUND PLASTER. Price \$13 per ton.
“ LUMP “ \$8 per ton.

Put up in strong barrels, containing 334 lbs. each.

Terms Cash. Orders respectfully solicited.

mhtf

JOHN ENDERS, President,

THE SOUTHERN PLANTER

As an Advertising Medium.

We call the attention of our friends to THE SOUTHERN PLANTER, as offering to advertisers an excellent Medium through which to reach the

FARMERS OF VIRGINIA & NORTH CAROLINA,

Where it has an

EXTENSIVE CIRCULATION

Among the most substantial men in the country; the best customers to every trade, the very class whom Advertisers desire to reach. To the

BOARDING SCHOOL, ACADEMY, MERCHANT, MECHANIC,
HOTEL KEEPER, DRUGGIST, DENTIST, NURSERYMAN,

And in short, to all who have anything to sell or make known, THE SOUTHERN PLANTER is recommended with confidence, not only on account of the substantial character of those to whom it is sent; but likewise by the fact, that possessing the additional advantage of being in book form and stitched, it is, therefore, more apt to be preserved than an ordinary newspaper, and gives

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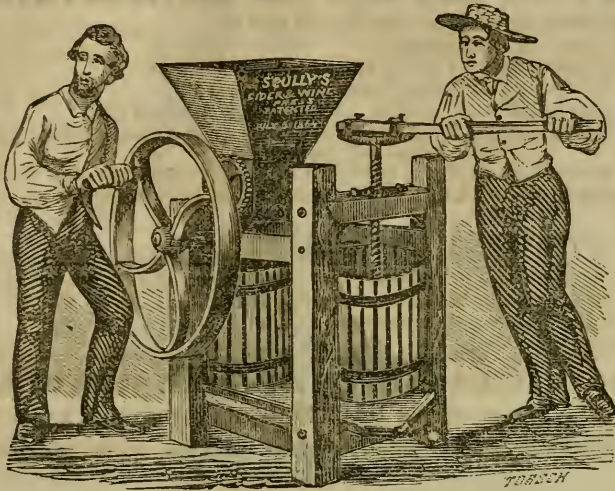
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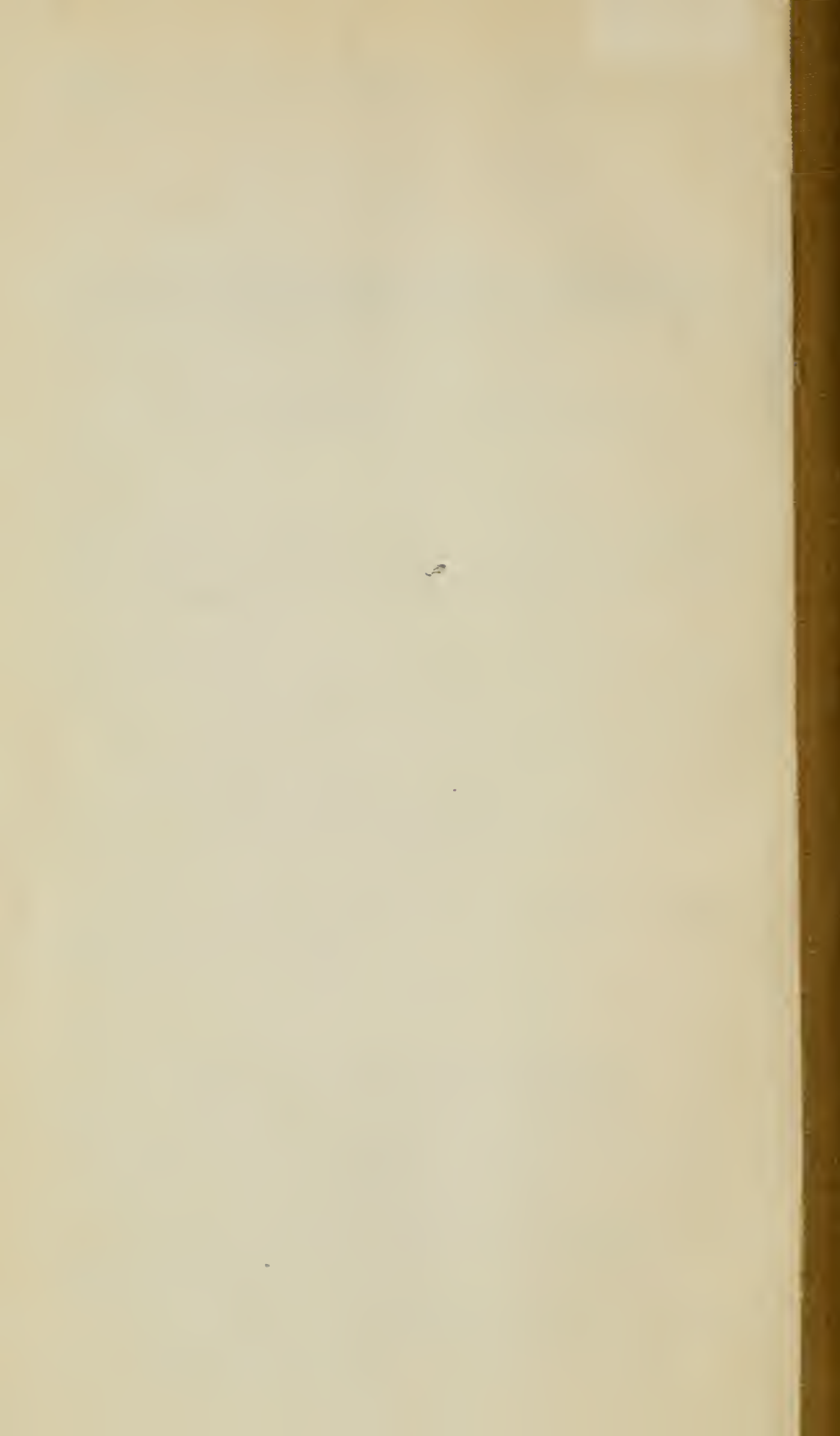
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