VOL. XIX. [MAY.] No. 5.

PUBLISHED MONTHLY. AUGUST & WILLIAMS, PROPRIETORS.

J. E. WILLIAMS, EDITOR.

THE SOUTHERN PLANTER.

DEVOTED TO

AGRICULTURE, HORTICULTURE,

AND THE

HOUSEHOLD ARTS.

PRINTED AT RICHMOND, VA.,
BY MACFARLANE & FERGUSSON.
1859.

CONTENTS.

THE SOUTHERN PLANTER

Devoted to Agriculture, Horticulture, and the Household Arts.

Agriculture is the nursing mother of the Arts. [Xenophon.

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

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

Vol. XIX. RICHMOND, VA., MAY, 1859. No. 5.

From the Transactions of the Virginia State Agricultural Society.

AN ESSAY

On the Cultivation of Indian Corn on Clay Soils of the Valley.

[A Premium of Twenty Dollars.]

Indian corn, with its tall and tapering stalk, its rich and graceful foliage, and its soft and brillant silk, is the most beautiful, as it is the most valuable crop cultivated by the Virginia farmer. And when we remember that a large proportion of the bread consumed in this State is made from corn-meal, that corn is used almost exclusively for feeding the teams that perform the labour of the farm, that all the pork and a large amount of the beef annually made is fattened upon it; and that in addition to these various uses of the grain, the stalks and blades constitute an important and indispensable article of forage, we will be satisfied that the distinguished author of "Arator" did not overestimate its value when he declared it to be "meal, meat, and meadow."

The design of this essay being to offer a few practical suggestions on the culture of this valuable grain, I shall confine myself in its preparation chiefly to deductions from my own experience and observation.

My experience being limited exclusively to a single county, (Augusta,) it is not my intention to recommend the mode described in this paper as either original, or the best; yet a comparison of the various methods pursued in different sections of the State, may be the means of eliciting useful information upon the cultivation of this grain.

Preparation of the Land.

The first and perhaps most important step, in the cultivation of a crop of corn, is the preparation of the land for the reception of the seed. And the manner in which this ought to be done, will depend in some degree upon the character of the soil. Light and sandy, or gravelly lands, do not require the same amount and kind of labour to bring them into proper condition for planting, that is indispensably necessary upon heavy and compact clay soils.

Whilst the distinguishing characteristic of the "Valley" is its vast limestone formations, there yet exists much diversity in the soils of this part of the State.

In this county there prevails to a considerable extent, what is denominated "Slate lands," differing in some important particulars from the other soils of this section. I know not what difference, if any, a chemical analysis would exhibit between

them and the limestone lands proper. Upon the slate lands no limestone is found, (or only in small quantities and of inferior quality,) they rest upon a substratum of slate, which doubtless contains a small quantity of lime, and probably a trace of magnesia. These lands differ from the other soils of the county, in being colder, heavier, more compact and tenacious. They also cover themselves more readily with a thick sod of the indigenous grasses,—the blue grass and greensward thus constituting our finest grazing lands, as is shown by the fact that cattle fatten more rapidly upon them than upon any other kind. They are likewise excellent wheat lands, the crop, however, being somewhat more liable to rust than upon lighter and warmer soils. But ample compensation is found for this drawback in the usually superior quality and larger yield of grain, and the greater freedom from the ravages of the hessian fly and joint-worm.

The limestone lands are somewhat lighter and warmer, and rather better adapted to the growth of clover than the slate lands; and upon them, in consequence of their superior warmth, corn in the earlier part of the season exhibits a larger and more luxuriant growth, but it is doubtful whether the product in grain is greater than upon slate lands of like quality.

In preparing for corn it is the usual, as it is the best method, to plow in a clover ley or sod, and in this county, upon clay lands, if they have remained unplowed three or four years, the indigenous will, in a great measure, have supplanted the artificial grasses, thereby adding to the weight and richness of the sod. There are several reasons in favour of planting corn upon sod land, where practicable. In the first place, a large quantity of vegetable matter is returned to the soil, affording an abundant supply of food to the growing crop. And secondly, upon rolling and hilly lands it affords important aid in preventing washing and gullying by heavy falls of rain during the summer, the roots of the grasses composing the sod holding the soil together, and in a large degree increasing its absorbent capacity.

In order to the successful cultivation of corn upon heavy clay lands, it is essential that they should be plowed in the winter. The process of freezing breaks down and pulverizes the tenacious clay-loam more effectually than it can be done by any mechanical means within reach of the farmer. In addition to the pulverization of the soil already mentioned, there are other reasons in favour of winter plowing deserving attention.

At that season of the year the farmer has more leisure for this laborious operation, and his teams are in better condition and more able to undergo severe labour than they are likely to be in the spring. Again, he is rarely interrupted by excess of moisture; one of the great advantages of winter-plowing being found in the fact, that the land sustains no injury from being plowed wet,—it matters not how wet so the work can be well done. There are occasionally, it is true, in the winter a day or two at a time, when the land is so thoroughly saturated with water that the work cannot be satisfactorily performed, the teams sinking fet-lock deep in the miry soil. But these occasions are of rare occurrence upon our heavy sod-lands.

But if plowing upon the heavy clay soils of the Valley is postponed until spring, it is rarely that they are in proper order for the operation more than a day or two at a time—being either too wet or too dry, and if plowed in the former condition the land is made hard, compact and cloddy; in truth it is difficult to exagerate the evils of plowing such land in the spring or summer. When too wet, and when too dry, the work can be but imperfectly performed, and that with great labour and injury to to the teams; nor can the soil be brought into that fine tilth so congenial to the corn crop. This truth was illustrated the present year in my own practice. The plowing of a lot of heavy land that had been in corn the year previous, was interrupted when nearly completed by a snow storm in February; the small portion thus left was not plowed until late in April. The entire lot was planted at the same time, and received the same culture. This fall the boundaries of the April plowing were clearly defined by the inferiority of the corn growing within them.

The pulverization of the soil by freezing is due to a property of water possessed by few, if, indeed, by any other substance. It is a well known law of matter generally, that in passing from a fluid or liquid to a solid form, its volume is diminished, or, in other words, it contracts. But the reverse of this law is true of water, it upon being

converted into a solid substance—ice—expands, and that, too, with a force that is irresistible.

It is this expanding property of water in the act of congelation that pulverizes the soil. As the water freezes it expands, and necessarily separates the particles of the soil, overcoming all their affinity for each other, and leaving the plowed land light, loose and friable. This renders it entirely safe to plow, however wet the ground may be, provided freezing takes place afterwards; for the more thoroughly saturated the soil is with water the more complete will be its disintegration upon freezing. Could the soil be made *perfectly dry* freezing would have no more effect upon it than it has upon the solid limestone; and if, upon the other hand the limestone could, by any process be thoroughly saturated with water, freezing would as effectually pulverize it as it does the soil.

My practice has for many years been guided by these principles: and I have had land plowed in the winter, when in the low places in the field the water would follow the plow in the furrow; and the land, so far from being injured by it, those places were more completely and thoroughly pulverized by the freezing, and were found in finer tilth in the spring than any other part of the field.

Another benefit derived from winter plowing, is the destruction of insects injurious to the corn; the ravages of the cut-worm being in a great measure prevented by it. I had in my experience, some years ago, a striking illustration of its advantages in this particular. Part of a field of sod-land was plowed in the winter, and the remainder not until spring; all of it was planted in corn. The part winter-plowed had scarcely a hill disturbed, whilst upon the remainder of the field nearly every stalk of the first planting was destroyed by the cut-worm, and it was only after repeated replantings that a tolerably good stand was secured.

The best time for winter plowing is after the land has been once frozen and subsequently thawed. The effect of the freezing and thawing being to loosen the land, the operation of plowing can be more thoroughly and better performed, and with much less labour to the teams than it would otherwise be. And there is rarely a winter in which, after the first hard freeze, an interval of mild weather does not occur, during which a large amount of plowing can be accomplished.

Perhaps there is no one of the multitudinous operations the farmer has to perform about which so much that is erroneous has been written as this primary one of plowing; and especially is this the case in reference to the depth at which the land ought to be turned up. Deep plowing has been indiscriminately recommended as a panacea for "all the ills" that land is "heir to," as though the addition to a soil four or six inches deep, of as many more inches of the harsh and sterile sub-soil, would make it more fertile and productive. Some amateur investigator of the curious, rather than the useful, having traced the roots of wheat or some other plant to the depth of *four feet*, this fact was at once assumed as conclusive evidence that the roots of all plants, under all circumstances, penetrated to a great depth in search of food. And the farmers were straightway told, if not literally to plow "four feet deep," yet that for successful and profitable farming *very deep* plowing was essential. It is doubtless true that the roots of some plants, under certain circumstances penetrate the earth to a considerable depth. But if either wheat or corn should, in this part of the "Old Dominion," send their roots, with gaping spongioles, to the depth of four feet in search of nutriment, they would certainly be disappointed unless satisfied with very coarse fare. My observation tends to the conclusion that plants naturally seek their food near the surface where the soil is permeable to atmospheric influences, and where they are benefitted by every summer shower, however slight. Hence it follows that it is more important to make additions to the fertility than merely to the depth of the soil. The amount of the crop being rather in proportion to the former than the latter.

Every one must, however, determine for himself the depth at which his land ought to be plowed. A rich alluvial soil, several feet in depth, might safely be plowed as deep as Professor Mapes turned up the flats of New Jersey, and a light sandy soil, upon a clay basis would doubtless be improved by mixing with it, by means of deep plowing, some of the sub-soil. But upon heavy clay lands, which are generally underlaid by a harsh and sterile sub-soil, I am satisfied

it is a great mistake to plow much deeper than the natural soil. From six to eight inches is as deep as the best lands of this county ought to be plowed. And that is beyond the average depth of plowing in this section of the State.

For several years I tried plowing for corn ten and twelve inches deep, and the only benefit I derived from it was a saving of labour when I came to gether the crop in the fall,—the quantity being considerably diminished in consequence of the deep plowing. The worst crop I ever made was upon a field plowed nearly twelve inches deep. The summer, however, being very dry, it afforded an excellent opportunity for testing the correctness of one of the stereotyped reasons assigned in favour of deep plowing, viz: that it enables the crop better to sustain the effects of a severe drouth; this field, notwithstanding the deep plowing, suffered as much from the dry weather as others of the same kind of land that had been plowed to but little more than half its depth.

In plowing for corn, especially if it is sod-land, it is important that the furrow-slice should be well and smoothly turned over, as free as possible from breaks and baulks. And the best method of plowing this kind of land is, to make the furrow-slices lap over, one upon another, so that the edge or entire thickness of the slice is exposed to the weather. The advantages of this mode are found in the fact that a larger surface is subjected to the action of the frost and atmosphere, and as it pulverizes, it completely closes the spaces between the furrows, thus effectually preventing the grass from growing up between them to the injury of the crop and the annoyance of the farmer.

Just before planting time, the land designed for corn ought to be well harrowed, and more than once if necessary, to put it in good condition, it being important to the successful after-culture of the crop that the field, in the spring, should "express the full tilth and husbandry" of the farmer. I have, however, seen fields of winter-plowed land in fine condition for planting without harrowing at all.

Mode of Planting.

Upon hilly and rolling lands,—and of such is a large proportion of the lands of the Valley,—the best method is to drill the corn in rows, as nearly horizontal as practicable, for in this way the washing and gullying of the land can be more easily prevented. And if the land is free from stumps and other obstructions, it is best to use a corn-planter for this purpose; as in addition to the greater regularity with which the seed is dropped, the labor of three or four hands is thereby saved. The distance at which corn ought to be dropped in the rows, and the spaces proper to be left between the latter, must be determined by every farmer for himself. No definite and precise rule can be given for what depends upon such a diversity of circumstances. The fertility of the soil, the variety of the corn planted, and many other things, affect this question; not the least important of which is the character of the season that is to follow—(and *that* can be foreseen by no one, however sagacious,)—it being well-known that corn will bear closer planting in a wet than in a dry season.

Time of Planting.

It is a matter of some consequence to determine the proper time at which corn should be planted, but it is obvious that no specific directions can be given for what is affected by so many contingencies. All that can be done is to indicate some general principles that may aid each one in determining the proper time for himself.

Independent of all other things, the mere elevation of a section of country, or even of a single farm, has the effect of retarding vegetation in the spring, and upon such lands the time of planting ought to be postponed accordingly. This county (Augusta) being the most elevated part of the "great Valley," vegetation, in consequence, is less forward here than in other counties of the same section, lying even farther North. But the time of corn-planting in this county, has been, for a number of years, steadily becoming earlier and earlier, to the manifest injury of the crop, and an increase of labor to the farmer. Formerly, from the first to the tenth of May was deemed the proper time to plant corn. That time would now, however, be considered late planting. Many farmers commence early in April, and before the first of May the crop is generally all planted. I am not aware to what extent this practice of early planting prevails, but presume it extends over the entire Valley.

The effect of this early planting, before

the ground has become warm enough to ensure the speedy germination of the grain, is that much of it does not vegetate at all, and such as succeeds after a long time in getting above ground, is weak, pale, and unhealthy looking, which necessarily imposes on the farmer a large amount of labor in replanting. Last spring, in consequence of the unusual amount of wet weather, the time of planting was postponed some two or three weeks later than usual. The good effects of the delay were apparent in the prompt and certain germination of the seed, the healthy and vigorous appearance of the plants upon coming up, (scarcely any replanting being required,) and that the maturity of the corn was not retarded by this late planting, as was shown by the fact that the crop was more forward on the first day of September than it had been, at that date, for several years.

The most unphilosophical determination a farmer can come to upon this subject, is to resolve that he will commence planting every year upon the same day. For our seasons are so variable that the same day, of the same month, may be two weeks, or more, later or earlier, one year than another, when measured by the condition of vegetation.

The proper time to plant corn is when the earth has become warm enough to ensure the prompt vegetation of the seed: and this condition of the ground is indicated, perhaps better, by the state of forwardness of the trees, either fruit or forest, than in any other way. It is said that the Indian time of planting was just as the dogwood was bursting into full bloom.—Without undertaking to assert that this is exactly the proper time, my experience and observation incline me to the opinion that it is; it at any rate points out the correct method of ascertaining it.

A farm with a Southern exposure, can be planted earlier than one with a Northern aspect; and so will gravelly and sandy, or a warm lime-stone land, admit of earlier planting than a cold, heavy slate, even in the same neighborhood. Every one ought, therefore, to determine for himself when he should plant, independent of, and uninfluenced by the practice of any other person. The worst possible reason a man can give for beginning to plant corn on a cold frosty morning, early in April, as he shivers in his overcoat, and fires have to be kept in the field for his negroes to warm their fingers at, is that his "neighbor B. commenced the day before."

Birds.

Many and various are the methods resorted to by the farmers to drive off the birds that occasionally pull up a hill of corn. And this is not to be wondered at, when it is remembered that a prejudice, against these ebony-colored inhabitants of the air, has been instilled into their minds from the cradle. That famous book of poetry, the delight of every child, "Mother Goose's Melodies," declares that—

> "Then said the black-bird to the crow,
> Let us to the farmer's cornfield go,
> For ever since Adam and Eve were born
> It's been our trade to pull up corn."

A moment's consideration, however, ought to satisfy every observant agriculturist that he can well afford to give them a hill of corn occasionally; their's being, in fact, the cheapest labor he can employ, as he would readily ascertain could he open a regular account with his feathered friends, charging the corn they take and crediting all the cut-worms, grubs, and other injurious insects they destroy during the summer. It is, therefore, to say the least of it, in bad taste for any one to disfigure his field with a "scare-crow,"

> "And let it keep one shape, till custom make it,
> Their perch, and not their terror."

It would be wise policy in our Legislators, and highly beneficial to agriculture, (but for that reason not to be hoped for,) if they would adopt some stringent enactments to protect the "lives, fortunes," and domestic happiness of these little, but useful friends of the farmer—the birds. Were it not for them, insects would, in a few years, multiply to such an extent as to destroy all the crops of the country. But this is too extensive a subject to be entered upon here.

Mode of Applying Plaster of Paris.

In planting corn, my habit has been to drop about half the plaster, (mixed with ashes,) designed for the crop, in the hill with the corn, and sowing the remainder, broadcast, about the time of the last plowing. I have, however, sometimes dropped it all in the hill at the time of planting; and again, I have sowed it all broadcast. The corn seems to do equally well under these various methods, the time and mode

of applying plaster appearing to be of but little consequence. Every one, therefore, may choose the mode of application most convenient to himself.

Working the Crop.

The process of working corn ought to commence as soon as it is up enough plainly to distinguish the rows, for,

"Now 'tis the spring, and weeds are shallow rooted,
Suffer them now, and they'll o'er grow the garden,
And choke the herbs for want of husbandry."

This maxim is as correct when applied to the field as to the "garden."

It is well as a first operation to go over the field with a common triangular harrow, removing the front and rear teeth so as not to disturb the corn. After this I use double-shovel plows, going twice to the row, and following them immediately with a cultivator, which requires one of the latter to two of the former, the object being to leave the surface as level as possible, thereby diminishing the amount of evaporation and counteracting the tendency to wash and gully. The cultivator also eradicates any weeds or grass that may have escaped the plows. For the object above described, a five-toothed cultivator is better than the three-toothed implement, known under that name, and generally used in this county.

Whilst the primary and most important object of working corn is to destroy the grass and weeds that would otherwise spring up to the injury of the crop, there are other effects resulting from it not to be overlooked. The frequent stirring of the soil prevents the formation of a crust upon the surface, and keeps it always permeable to the dews and atmospheric moisture, the consequence of which is that a field kept loose and in fine tilth, by frequent plowing, will sustain much less injury from drought than one left undisturbed by the plow. I have, therefore, no prescribed number of times for going over my corn, but give it as many workings as the state of the weather and my other farming operations will allow.—Corn requires, as it can receive, more work in a dry than in a wet season. In working corn I avoid, as far as possible, injuring the roots; I therefore never plow it deep.—If it has been planted upon clover or sod-land, deep-stirring, either with a Coulter or other implement, will not be necessary to loosen the soil, as the vegetable matter turned under will prevent its becoming compact and hard. The truth is, upon such land, deep plowing would do injury, by bringing to the surface the sod, that ought, as it rots, to furnish food to the growing crop. If corn should ever be plowed deep it ought to be done at the first working, as then the roots are small and escape injury.

It being an important matter in this hilly country, to prevent injury to the lands by washing rains, that object is promoted by observing the precaution, always to commence plowing corn at the highest part of the field. If the operation is begun at the lowest part, and a heavy fall of rain takes place before the entire field is finished, the higher and unplowed part absorbs but little of the water that falls upon it, consequently a large amount is precipitated upon the lower and freshly-stirred land, inevitably producing incipient gullies, to be deepened by every succeeding shower. But if the upper part be first plowed, the absorbent capacity of the soil is thereby much increased, less water flows off, and as it passes over the unplowed and comparatively firm land below, does but little damage to it.

I have already said that in the tillage of corn I avoid as much as possible breaking and lacerating the roots; I therefore never plow corn after harvest, because having necessarily remained a considerable time without working, and the roots having spread themselves over the entire row and approached near the surface, a plowing then must inevitably break them to a great extent, the evils of which may, however, in some degree be repaired by a rain following immediately; but it is hazardous to run such risks, as dry weather rather than rain, may be looked for at that season.

It is important to go over the corn at least once with the hoe—and especially is this the case if the corn is drilled—as by this means the grass and weeds growing near the hill can be more effectually removed.

Gathering the Crop.

There exists a great diversity of opinion as well as practice in reference to the best method of harvesting this valuable crop. A description of the different modes pursued, with a notice of their respective advantages and disadvantages, even if I were

competent to the task, would swell this paper to an unreasonable length, I shall therefore confine myself to a brief account of the method usually adopted in this section of the State; which although attended with some inconveniences, yet has the advantage of combining with the entire security of the crop an economy of labor attainable by no other mode. I refer to the plan that is technically called, "cutting up" the corn — that is, severing the stalk, with blade, ear, and top adhering—near the ground, and setting it in shocks of convenient size. This operation ought to commence as soon as the corn has attained a sufficient maturity not to be injured by it; but it is a difficult matter accurately to describe this condition.—Some say corn may be "cut up" safely when it has reached the "dough state;" I, prefer, however, to wait until it has just passed out of that state.

If the weather is moist and warm it is a safe precaution to cut but half the corn at first; this is done by cutting it in alternate strips of seven or eight rows—which gives to the corn first cut and set up an opportunity of drying before the shocks are completed by the addition of the remaining portion. The size of the shocks varies with the taste and judgment of the farmer—some persons making them as much as sixteen hills each way. Where the corn is drilled, if the shocks are set twenty-five feet apart, fourteen rows will make them large enough to stand up well, but not too large to dry thoroughly. When the shocks are completed, they ought to be bound tightly around the top with a band made of rye-straw, a white-oak split, or a wisp of fox-tail.

Corn, when well shocked, may be left standing all winter in the field without material injury—but this is not recommended. As the corn is shucked, the fodder is tied in bundles with bands either of rye-straw, or white-oak splits, and set up where the shock of corn stood; and if it is again bound around the top it will keep better than by stacking—it being very difficult to stack such fodder securely. It can then be hauled from the field during the winter as it is required for the stock; observing the precaution, when the ground is dry or hard-frozen, to haul it from the centre and remoter parts of the field; that which is near the borders can be used in soft weather, when the land would be injured by going over it with a wagon and team.

This method has the advantage of securing both grain and fodder at one and the same operation, and requires but little, if any more time, than would be necessary to secure the tops alone; for the same number of hands will "cut up" a field of corn as soon as they would "top" it.

Experiments have been frequently instituted to ascertain what injury, if any, was sustained by "cutting up" corn as compared with topping and blading, and with that left to ripen on the stalk without taking off the fodder at all. The result of such experiments will always vary with the state of maturity of the corn. If corn is cut up before it has passed beyond the "dough state," I presume there can be but little doubt, that it will loose somewhat in weight as compared with corn that has been allowed to ripen on the stalk without taking off the fodder at all; and that this loss will increase in proportion to the immature condition of the crop. If the corn, however, has reached the "dough state," the injury it will sustain, by being cut up, will be so slight, that it will be more than compensated for in the other advantages of this mode of harvesting.

On the tenth day of September last I had a piece of corn cut up and shocked in the usual way; it had just passed beyond the "dough state," but was not hard, the fodder being still green. At the same time a small parcel in the same enclosure, and growing upon the same kind of land, was left to ripen on the stalk, without topping or blading. On the 22nd of October I had a bushel of each shelled and weighed: the weights were exactly the same.

Selection of Seed.

The importance of selecting seed corn in the field has often been urged upon the farmer in the most emphatic and earnest manner. But unless his object is to obtain his seed from stalks producing two or more ears, with a view to perpetuating that habit in his corn, I see no advantage to be derived from that method. I think it extremely apocryphal, whether any advantage whatever is obtained from planting those varieties of corn that produce two or more ears to the stalk. As a general rule they are late in maturing, and require to be planted with wide spaces between the hills, or the ears will be small and imperfect. It is a fact well known to all corn raisers that

a good yield can only be secured by having a large number of sound ears to the acre, and that result is more easily and surely obtained by planting a single eared variety that will bear, crowding a large number of stalks upon a given area, than by trusting to any of those prolific kinds, "each, several, and particular" stalk of which is to produce a whole litter of ears.

Controlled by these considerations, I select my seed corn in the crib. I do not wait until planting time to do it, but select it, during the winter, as opportunity offers. In selecting seed corn I choose those ears that have matured well, as indicated by the grains being firm, close and compact upon the cob. Great care ought always to be used to obtain seed as pure and unmixed as possible. The different varieties of Indian corn mingle so readily, that unless much attention is paid to this particular, the farmer will soon find his crop of such a heterogeneous description, that the lines of the "witches song" might well be applied to it with but slight variation:

"Black grains and white, red grains and gray,
Mingle, mingle, you that mingle, may."

WM. M. TATE.

Augusta County, Oct. 24th, 1858.

For the Southern Planter.

Tobacco the Bane of Virginia Husbandry.

No. 3.

MR. EDITOR:

My last gave a detail of the troubles of this most troublesome of all crops, up to the process of stripping—and at this stage the account is resumed. The operation consists of taking the cured tobacco from the bulks, and stripping the leaves and ruffles from the stalks; and is performed by the best judges among the hands—who, at the same time, assort the leaves, as to size, color, and quality, according to the imaginary standard which may happen to prevail as the fashion of the times—which constantly changes like other fashions: these assorted leaves are passed into other hands, who open and examine the surface on each side, and brushing both, are then tied in bundles of five or six; this is the last surface examination of the leaf, and upon an average of years, will be found to comprehend some ten or a dozen times at least, that every superficial inch, of every tobacco leaf of a well tended crop, must pass under the manipulation or visual examination of the operatives in making and preparing it for prizing. And here may be noticed two other troubles, omitted in the foregoing numbers, more or less incident to every tobacco crop—the ground worms and the ground suckers. The tobacco worm proper, or horned worm, attacks the leaves of the plant, when grown to some size; but there is a smaller, dark, earth-colored worm, which seems to be the natural production of the highly prepared soil—loose, friable, and kept entirely clear of all living vegetable matter—which enables this earth-worm to move beneath the surface, and by an instinct of its nature is attracted (sometimes in considerable numbers,) to the top of each tobacco hill, and cuts off the young plant, just below the surface. These ruthless destroyers must be narrowly watched, so long as the stalks have not grown hard enough to resist them. No inconsiderable trouble this, as every tobacco maker well knows.

The ground-suckers spring up from the stalk below the ground, after the successive crops of suckers from the foot stalks of the leaves have been exterminated, which usually takes place some time before the plant is ready for the knife, and leaves some length of time for the ground-suckers to give trouble, as they continue to spring up until the crop is taken off. Thus it is made manifest how the tobacco crop starves all others, by demanding the largest share of labor, and all the manure—monopolizing both to such a degree by universal custom, as to spare but a stinted allowance for the garden, and a restricted patch of early Irish potatoes.

It is a well known common condition of tobacco plantations, after using up a quarter or half acre of cow-pen turnip patch,* to be utterly destitute of any succulent vegetable, or greens to boil with the bacon, for many weeks in the spring, until the advancing season for "wild sallet" comes in for the relief of the sufferers under the tobacco starvation, with poke, pepper-grass, and dandelion, kindly provided by Divine Providence, in the prolific soil of Virginia.

* The cow-pen for turnips is often seen most wastefully covered with cow dung, because the time can't be taken from the tobacco to move the pen.

But this starvation of man is small in comparison of that which tobacco inflicts upon the domestic animals. A full crop of tobacco, as a general rule, causes a short crop of corn—and scarcity of corn upon a Virginia plantation is synonymous to hard-times. The tobacco crop affording no provender for domestic animals, reduces the stock of a plantation to the scanty offal of a scanty corn-crop.

Tobacco and grass crops may be pronounced irreconvertable antagonists, and hence Virginia is so large a customer in the market for Northern hay: A state of things wholly chargeable upon tobacco—for it may be safely asserted that if one fourth part of the labour and manure now bestowed upon tobacco was used for the production of grass, we might be larger exporters of a superior article, than we are now importers of Northern hay. But man is so much the creature of habit, that tobacco makers are content to regard starved cattle as the natural state of things in the spring, and with a good store of dollars in the desk—to put up with stinted household comforts to the degree of taking his coffee without milk for many weeks in the winter—the cows having all gone dry by Christmas—and no wonder, when they have had no hay provided for them, and have been living since the natural grasses were killed by frost, upon the chaff and dry straw which happened to be on hand. The corn stalks are soon picked—and few or no shucks can be spared from the steers, (working oxen,) it being the experience of the country, that no other long forage, the product of a tobacco plantation, is nutritious enough to sustain oxen at work. Shucks, aided by nubbins, must therefore be relied upon for keeping up this part of the working stock of the plantation. But the nubbins (the inferior corn) is the customary and only resource for feeding the sows and pigs, and which, from a tobacco-starved corn crop, always turns out to be a most scanty and insufficient allowance; rarely, if ever sufficient to raise pork enough to keep the tobacco maker out of the pork market—and here is another standing count against tobacco for starving the smoke-house.

But as has been already alleged, tobacco starves the corn-crib, even to the degree, that demands a large portion of the proceeds of the tobacco crop to buy the corn necessary to support the plantation. A large proportion of the middle and lower class of tobacco makers are corn buyers.*

But this is not all: The tobacco planter, for the want of corn, has not only to buy meat and bread, but for the want of grass to raise them, has also to buy his mules and work horses, virtually being made a tributary by his tobacco, for a primary necessity in his calling, to the western drovers.

Tobacco exhausts the land beyond all other crops. As proof of this, every homestead, from the Atlantic border of the State to the head of Tide-water, and several tiers of counties above, have been, until lately, a mournful monument. This portion of the State once produced all the tobacco made in Virginia, but is now so reduced and impoverished, that, for many years past, it has not produced a hogshead for market. Tobacco has been literally the besom of destruction, which has swept over this once fertile region, and reduced it to a state too poor to remunerate labor employed in its production. And yet those who are still engaged in its culture argue that tobacco is not as great an exhauster as Indian corn, in the face of the fact, that the inhabitants of the tobacco-ruined region still make living crops of corn; and since the abandonment of tobacco and the introduction of marle, (which they never found time to look for, or apply, while their heads were full of tobacco,) are now improving their lands more rapidly than the tobacco makers, with all the late improvements of agricultural science to aid them upon the still unexhausted region of the State.† It is hard to conceive of a more exhausting process than the exposure of naked, fresh-worked land to the powerful influence of our summer's sun; this is an indispensable part of the tobacco culture—from early spring, through the two first months of summer—the tobacco land is plowed, replowed, harrowed and hilled, or, after hilling, kept carefully weeded until planted—and it is rarely the case that the crop is planted early enough

* Examples are known of planters who buy corn to a greater amount than the proceeds of their tobacco crops.

† It is admitted that tobacco makers, by the means of the improvements in modern culture, and the introduction of guano, may *positively* improve their estates, but it is confidently asserted, that they must comparatively do less in the way of improvement than they may under the abandonment of the culture.

to cover the ground so as to shield it in any considerable degree against the sun before August.

But the argument most relied upon for tobacco is, that it is the best preparation for wheat. Admitted it is as good as any, it is not better than fallows, acre for acre, and incidentally worse, for the following reasons, viz: the high manuring required for tobacco, limits the improvement to a smaller surface, and the tobacco exhausts more of the virtue of the manure than any other crop; nevertheless, being of a different nature from wheat, it leaves the peculiar pabulum of small grain in ample sufficiency, and so thoroughly incorporated with the soil, by the elaborate process of preparation and tending the tobacco crop, as to give successful results in the following wheat crop. But when compared in the more limited surface, by reason of the excessive high manuring required by tobacco with the wider space which the farmer may put into the highest preparation for wheat, the tobacco system may safely be denied to be the best preparation for wheat. With the present improved system of skilful fallowing, double the amount of surface can be put into tilth, sufficient to produce thirty-five or forty bushels per acre, which, with the other advantages of the farming system, would soon leave the tobacco plantation far in the rear in point of profit; thus the argument drawn from the assumed fact, that tobacco is the best preparation for wheat, is fallacious.

That tobacco is the most exhausting of all crops is demonstrated by the impoverishment it has brought upon all the counties of Virginia, as already adverted to, from the sea to the mountains, to such a degree, as that its cultivation has been abandoned; and the swift destruction it is every where bringing upon the remaining virgin soils, where it is still cultivated—for it is a well known fact that the richest high lands are rarely found strong enough to bear a third crop in succession, but becomes so much reduced by the second crop usually, as to be put into wheat, to be followed the next year by corn, then again in wheat or oats—after which it is "turned out," to be added to our wide domain of "old field."

After being "turned out," it is known to be incapable of ever producing another crop of tobacco, without being manured or improved by clover rotation and plaster, and of late by guano. But, whatever may be the effects of this new improver, it cannot divest tobacco of its inherent disastrous starving influences upon all other crops, as already described; and consequently, of its fatal effects upon the rural economy of the country, according to the greater or less extent to which it prevails, and which fixes upon it, most undeniably, the character of the Bane of Virginia Husbandry. These views are addressed to the agricultural public of Virginia, as seeming to the writer to rest upon the well known principles of rural economy. A future number may be employed in examining tho arguments by which the tobacco culture is defended; and before the branch of the subject of this number is dismissed, one further argument only will be presented, and perhaps the strongest of all—the argument from authority—the example and experience of Richard Sampson, Esq., of Little Dover, well known as the most successful agriculturist in Virginia. Mr. S., after a fair experiment of ten years, gave up the crop, and gives in a nut shell one of the best aphorisms of his strong, practical mind upon the subject—showing the reasons why he abandoned the ruinous culture. He says "he could not afford to cultivate tobacco, finding it took one half of the labor of the plantation, and yielded but one fourth of the value of the other products."

With such a witness against tobacco, in aid of the arguments adduced, I can here well afford to conclude my 3rd number.

JOHN H. COCKE.

For the Southern Planter.

The Guano Controversy, or Vegetable Physiology.

MR. EDITOR,—Over the name, W. A. Bradford, in the March number of the Planter, appears a rejoinder to a critique by B., in the January No., which B. regards as claiming some notice. The controversy seems narrowed down to the simple question whether vegetables have an organized system of nerves? Unless this be, in some way, established, the gentleman will not admit their susceptibility of being acted upon by *mere* stimulants. B. has asserted that vegetables are susceptible of the action of stimulants, and infers therefore that there must exist "a mode of action." Mark! B. has not asserted that there exists "an organized nervous system," but such susceptibili-

ties as sustain to the vegetable a relation similar to that of a nervous system to animals. Sensation, excitability, contractility, &c., are usually referred to the agency of nerves; but if we allow them to exist no where, except where an organized system of nerves can be shown to exist, then they must be denied to some animals. Who has ever exhibited the organized apparatus of the oyster, the worm, the zoophite? If no one, then the gentleman must deny their susceptibility to the action of stimulants. The truth is, that there are many things in nature, particularly in the animal and vegetable kingdoms, the existence of which can only be inferred from their effects—their visible phenomena. The gentleman concludes, however, that if B. "will prove that they (vegetables) are capable of being thus acted on," (that is by mere stimulants,) "I (he) will admit the existence of such a system pervading their organization." Now this seems very fair, but will the gentleman be satisfied with reasonable proof, of what B. asserts? B. thinks he has already furnished what should be convincing proof, and fears that none he can offer will induce conviction. Seeing the gentleman has so intertwined and bound up the idea of stimulation with the existence of "an organized nervous system," it may well be regarded a difficult task to untie the knot and unwind the ball. B. had supposed that "exalting and quickening the vital forces or actions" were phenomena of the action of *stimulants;* and consequently that whatever agents exert such influence, may be rightfully denominated *stimulants*, though not necessarily "*mere* stimulants." The gentleman will scarcely deny, that when "the vital forces or actions" of plants "are exalted and quickened," that the circulation of nutritious juices in the plant are at the same time accelerated. Here then, at least, we have one of the phenomena of the action of a mere stimulant. Stimulants acting upon the nervous system of animals, (the higher order at least,) "exalt and quicken the vital forces or actions" and accelerate the circulation of the nutritious fluids. A similar result, from the action of a like agent, argues the existence of similar susceptibilities of action or impression. Such would be the action of alcoholic liquors, and they approximate as near to a *mere* stimulant as any other and probably more so. Says the gentleman, "brandy, musk, opium, camphor, *et id omne genus;* mere stimulants—agents that are powerful when applied to a system of nerves, but innoxious when applied to plants." *Innoxious* to *plants*! How comes the gentleman to know this? By innoxious he is supposed to mean, innocent, producing no ill effects. B. thinks if the gentleman will pour strong brandy or alcohol on any delicate and tender plant, he will find that he is mistaken. Again, how does the gentleman know that "all the positive phenomena of such action (stimulant) are found in connection with such a known system" (of nerves?) And farther, B. might ask the gentleman, what he means by the "positive phenomena?" What B. regards as positive phenomena of stimulation, or the action of stimulants, abound as well in the vegetable as animal kingdom. The Creator has so ordained, that what is food for one, is, for the most part, poison to the other. So what may be a stimulant to one, may prove a sedative to the other. Animals cease to breathe in an atmosphere purely carbonic, while plants luxuriate in it—inhale and appropriate it as food for their sustentation and growth. Animals inspire and appropriate oxygen and exhale carbon, plants directly the opposite. Animals elaborate food for plants and plants for animals. Thus the two kingdoms, animal and vegetable, mutually sustain each other with appropriate food. But, says the gentleman, "it is one thing to increase the functions of organic life, and another to stimulate an action that is unattended with nutrition, growth or development." B. can conceive of no such stimulating agent—one which when applied to either animals or plants, shall furnish neither "nutrition, growth nor development." Brandy is an acknowledged stimulant, and the gentleman has set it down as a *mere stimulant.* This certainly causes most unmistakable development, and if in no way nutritious or promotive of growth, how comes it to pass, that those who use it freely, to a certain extent, are so much disposed to obesity and grow often to enormous size, and again laying aside its use, shrink back to original dimensions? Now, brandy and alcohol, as already intimated, are as nearly *mere* stimulants as any agents known, and if their operations so far transcend the action of the gentleman's "*mere stimulants,*" it is needless to offer another example. B. still asserts that plants are susceptible of having their "vital forces or actions" exalted and quickened "as well as nourished," and that some

manures exert this influence much more actively than others. Farther, B. claims that he has as much right to require the gentleman to prove the non-existence of the "organic system of nerves," as the gentleman has to require him (B.) to prove its existence; seeing that B. has not asserted such existence. He has asserted that vegetables possess certain susceptibilities, which he thinks abundantly appears. Plants have a circulation. Can the arteries, veins, lymphatics and the centre of circulation—the heart—be exhibited? We say the leaves perform an office similar to respiration in animals, and we believe it; but who has seen them dilate, drinking in plentiful draughts of carbon and again contract, exhaling pure oxygen? Yet some action, answering to these ends, must exist, or the result could not be had.

Says a distinguished and learned physiologist, in vegetables, "two properties direct the action of their small number of functions: a latent and faint sensibility, in virtue of which, each vessel, every part of the plant, is affected in its own way by the fluids with which it is in contact: a contractility, as little apparent, though the results prove irrefragably its existence; a contractility, in virtue of which, the vessels sensible to the impression of liquids, close or dilate themselves, to effect their transmission or elaboration. The organs allotted to reproduction, animate, for a moment this exhibition: more sensible, more irritable, they are visibly in action: the stamina or male organs, bow themselves over the female organ, the pistil shakes on the stigma the fertilizing dust, then straighten, retire from it, and die with the flower, which is succeeded by the seed or fruit."

B. has not endowed either the sunflower, or the sensitive plant, with "such a piece of exquisite machinery, as a nervous system:" nor does he regard "such exquisite machinery" necessary in order to the exhibition of the phenomena he claims, very different "machinery" may, by the Creator, whose "ways are past finding out," be made to answer similar ends. This will manifestly appear to any one, who will take the trouble to examine minutely the anatomy of animal structure from man down to the lowest order of animal existence. Familiar, as the gentleman seems to be, with the nervous system of animals, he will find it no easy task to explain, intelligibly his "positive phenomena,"—when he shall have done this, then will B. feel under obligation to attempt a farther elucidation of the mystery involved in the action of agents upon the vital susceptibilities of plants.

Farther, says the gentleman, "I am compelled to seek my causes for such phenomena, in some of the greater forces of nature, &c. None of these are of more potency than heat, and as the sun is the greatest of all natural sources of heat, why may it not be able to produce these insignificant effects, upon the sun flower and the so called sensitive plant, &c." Heat is confessedly a potent agent—and unquestionably "exalts and quickens the vital forces or actions" and is so far at least, a stimulant. But how does this potent force act? certainly not alike in the vegetable and animal kingdom as in the mineral. All the *sublime phenomena* of "upheaving and overthrowing mountains—melting down mountains and causing them to flow like rivers—dissipating rivers into thin air, and bearing them on the wings of the wind"—and such like sublime effects are ascribable either directly or indirectly, to its power of expansion. But in its action upon animals and plants there is little need of this power. The potency here excited, is an "exalting, quickening," life-giving energy; a something without which life cannot exist. It is true that some vegetables as well as some animals, are so constituted as to exist in much lower temperatures than others—yet a certain degree of heat is indispensable to the existence of all, and again, a certain increased temperature is fatal to all.

Seeing how ruthlessly the gentleman has "stripped his little Divinities of their God-like attributes," B. may be regarded as not in the best *humor* to appreciate his *elevated* association with Virgil and Thomson. Apropos, how sensible were they to the influence of the seasons; the genial, the awakening, *stimulating*, influence of the one and the depressing and saddening influence of another. B. claims no poetic aspirations, yet confesses himself cheered by the bright sun, after a sombre and cloudy day, and exhilarated by the genial warmth of the "vernal sun" after a cold and dreary winter. Indeed, all animal and vegetable natures seem to greet spring as with smiles.

In conclusion, B. asks the gentleman, to be assured that he is not insensible to his (the gentleman's) pleasant and courteous manner, nor to his *complimentary* farewell, yet his

modesty forbids a change of signature. The autograph he shall have. Possibly some day the gentlemen may meet and consummate, with much satisfation, an acquaintance thus pleasantly initiated. B.

For the Southern Planter.

Effects of Sub-soil Plowing.

MR. EDITOR:

Having read in the March number of the Southern Planter an article by Mr. Hite, in which he says, "How much satisfaction would be given if every farmer in Virginia, who has sub-soiled his lands, would state how many years he had used a sub-soil plow, and also whether or not he had found wheat and clover to withstand the frost of winter better where the land had been sub-soiled a year or two previous," I feel called upon to contribute, as far as I can, to the gratification of the interest which all farmers entertain—in a greater or less degree—upon every subject pertaining to agriculture, although I am but a novice in farming, and almost afraid to communicate my limited experience to the public. In the fall of 1857, I broke up a field belonging to my mother, of about twenty-five acres, which had been for a number of years (say ten or twelve) in timothy. I used two three-horse McCormick plows, with cast mould-boards and points, with teams of three strong horses to each; a two-horse common coulter following in the track of one of them, thus sub-soiling every alternate furrow. The sod was turned to the depth of nine or ten inches, and the sub-soil of the coultered furrows was loosened seven or eight inches more. I measured on the upper and lower sides of the field, when I ascertained that I had plowed and coultered an average depth of fourteen or fifteen inches. I regretted much after my crop had been made that I had not used the coulter after both plows. It was in the months of November and December that I plowed the field, turning the sod beautifully, and as early in the following spring as the weather would admit, I introduced the harrow, putting the land in fine condition with but little trouble, it having already been mellowed by the winter's frost.

I commenced planting corn on the 9th of April, and had planted from six to ten acres when a rain occurred, which stopped the operation. It snowed and turned cold at night, and remained cold and freezing for several days. I thought of course my day's labour, as well as the corn I had planted, was lost, but much to my surprise and gratification, I found in due time that it came up finely and grew well during the season. My next planting was commenced about the last of April. I used the remainder of the corn left from the first planting, which had been rolled in plaster and ashes and carefully kept in a dry cellar, not one hill in fifty of which came up, having sprouted and died before planting. I then had to plow and lay off the land again, and re-plant it, which of course delayed the completion of the work till very late in the season. I knew the land was fine and that the preparation had been good, and therefore had faith in the final result. The last planting came up beautifully, and in a short time you could see no difference in the field, all being uniform. As soon as the corn was high enough, I took my harrows, having removed the front and one back tooth, and harrowed it all nicely, killing out all the young grass. I then introduced cultivators, with seven or eight teeth about four inches wide, the ground being in such perfect order they worked elegantly, and left the land as clean as it well could be. As soon afterwards as I discovered the young grass shooting up, I started my cultivators again, followed by the hoes, and thinned, leaving two stalks to the hill, which left the land again perfectly clean. I worked it next with double shovel plows, which finished the working of that field. I dropped plaster and ashes on the hill when about a foot or more high.

I never saw a more beautiful field of corn. As it was on the public road, every body that passed was struck with its fine appearance. One gentleman observing the great height of the corn and its luxuriant growth, was induced to take a stalk of it to Lexington for exhibition. The stalk, root included to the top of tassel, measured eighteen feet, and had on it two perfect ears of corn.

The land is mulatto soil with a clay subsoil. I cut the corn up and shocked it in the field, and I think I can say with safety the field averaged sixty bushels per acre, some farmers thinking it would make seventy-five. It so happened I could not measure the corn. After the corn was shocked, I started my harrows to level the grass and

weeds which had grown since the last plowing of the corn; after which I seeded the field in Zimmerman wheat, (red) at the rate of about two bushels of seed to the acre, and covered it with double shovel plows. I never saw a more beautiful field of wheat in my life than it was last summer, and had it not have been for the rust, the great enemy of the wheat crop, I would have made at least thirty-three bushels to the acre. But, alas! man's calculations are vain; the destroyer came, and my crop was ruined. I made of tolerably fair wheat for last year not more than one-third of a crop, weighing about sixty pounds per bushel,—the general weight in good seasons being about sixty-four or sixty-five pounds per bushel.

Judge Brockenbrough has put the same field in wheat this year, (white blue stem or purple straw.) It looks very fine indeed at this time, (March 17th,) is well matted over the field, and very luxuriant.

I am glad to see that so much more interest is taken in farming in our county than formerly. Some of our most successful farmers and men of wealth are introducing all kinds of improved farming implements, such as McCormick's reapers, wheat-drills, lime-spreaders, &c. The county is brushing up, and every farm is improving.

Fearing my communication is already too long, I will conclude by saying I have had no opportunity of judging of the stand of clover after the sub-soiling, as the judge has only seeded the field this spring with clover and timothy.

If you consider this worthy of a place in the Planter, you can publish it.

Very respectfully,

JAS. H. BOWYER.

From the Scientific American.

Asphalt---Composition Roofing.

It is very desirable that many buildings should be constructed with flat roofs, for which common shingles are inapplicable, and tin too expensive. A composition for such a purpose, perfectly waterproof, easily applied, cheap, and durable in its nature, would be of great benefit. Quite a number of compounds have been tried for this purpose, some of which have failed to secure the desired ends, while others have been highly successful. A roofing compound of asphalt, coal tar, and sand has lasted for ten years on certain roofs, and is still as good as when first put on, while the same materials laid upon other roofs had to be removed within one year after being laid, on account of cracks in the cement. Such success on the one hand and failure on the other with the same identical substances has occurred in every section of the country. As this composition roofing is about the cheapest known, it is highly important to discover what can be the cause of its want of success in any case, as it is very evident that if successful in one instance, it can be made so in all cases. It has been found by experience with such composition roofs, if laid upon a moist bed, or if the cement itself contains moisture or volatile oil, they are liable to crack and scale off. One or both of these causes, perhaps, contributed to the failure of the roofs alluded to.

To make such roofing, two or three layers of thick tar-paper should first be tacked down upon the boards, then brushed over with a thick coat of hot pitch, so as to render the surface smooth and expel all the air, to prevent air bubbles forming in the cement. When the pitch is perfectly dry, the asphalt composition is to be put on. This consists of 15 lbs. pitch, 25 lbs. asphalt, and 30 lbs. dry sand. The pitch is first melted, then the asphalt, as finely comminuted as possible, is added. This amount will answer for ten square feet in two layers; it should be boiled for two hours, and kept stirred during the operation, to expel all the volatile oil. When thus prepared, it is carried in buckets to the roof of the building, and poured carefully upon it in sections, set off with boards set on edge. Care must be exercised not to permit any of the sulphates of iron or sulphur to be mixed with it. A thin layer of tow or hair laid upon the pitch before the cement is poured on will render the roofing more elastic. Previous to its becoming dry, a layer of marble dust or ground chalk should be beaten into it, and on the top of this a layer of fine white sand and gravel. The object of this is to prevent the rays of the sun penetrating into the asphalt to soften it. Two layers of this composition should always be laid on—the top one after the other has become dry.

Common pitch will answer the same purpose as natural asphalt, if two pounds of coal tar is mixed with every twenty

pounds of dry sand. Such roofing can be very easily repaired if it cracks, but if sufficient care is bestowed in preparing and laying down the materials, no such repairs will be required for several years.

From the Ohio Cultivator.

Handling Horses while being Shod.

Many horses, both young and old, are much spoiled by shoers. Horses sometimes stand quiet and easy, at other times they refuse to stand still while one foot is up—they struggle until it is released, and frequently the shoer beats, speaks sharply, swears, and frightens the horse, so that he must be held by force or abandoned. Another takes the tools and sets his shoes without any trouble. Now for a few of the reasons:

Under certain circumstances, the muscles cramp, causing severe pain. Almost at any time a horse's hind leg may be raised so high, or in such a position, as to cause severe cramping, not to be endured. When a horse has had all the muscles relaxed by exercise, and stands and cools quick, an unusual position will most certainly produce cramping, and at the same time makes him irritable. A horse that has stood for some time in the cold, uneasy, and suffering with anxiety to get home, is in bad condition to stand the bangs and often painful position of shoeing, and too often fretted to that degree that he never gets over it—too often forced to stand and endure the pain of severe cramping, pricking, etc., until he will never forget it, and often refuses to enter the shop again.

Some horse shoers have a habit of raising the foot and leg so high that no common horse can stand it, and thus he will shoe horses half his lifetime before he knows the fault is in himself. The awkwardness and ill temper of some shoers is sufficient reason to withdraw your patronage, although they may do their work well. The damage done by forcing the horse to stand in pain, and the injury to his disposition, is infinitely more injury than to go ten miles, and spend a day and pay double price to one who has some sympathy, and shoes him without pain—one who exercises some reason and judgment and patience, and seems to sympathise with the suffering animal—has little or no trouble, and does no damage.

I once knew a horse that if he was minus a shoe, would go by himself to a particular smithey, and there stand until the shoe was set. I once owned a horse that was shod three or four years without any trouble—at last he was sent to a shop to be shod, the shoer being a little intoxicated, frightened him, beat and abused him in such a manner, that he ever after feared to approach a blacksmith shop, and if forced to enter one, would tremble with fear. I think I shall be justified in saying that one-half of the horse shoers are incompetent to the task, saying nothing about their workmanship of setting shoes. I have no doubt but some fancy shoers are the cause of many splints, bogs, and curbs, as well as kicking, cringing, pulling at the halter, etc., etc.

Reader, if you are the owner of a good horse, go yourself and see him shod, unless you are well acquainted with the shoer, and know him to be careful, patient, mild-tempered, and humane. Withdraw your patronage from all reverse characters, before you sustain a loss. Never submit to or employ a shoer, whose character or intellect is inferior to that of your horse. If you do, you may have him lamed, abused and spoiled.

W. Pierce, V. S.

Ravenna, Feb., 1859.

Fast Horses Agriculturally Considered.

In all our horse talk and writing, we have spoken disparingly of that class of horses, the only merit of which is, that they are merely fast. These gaunt, leggy spiders, that can do nothing but run, are about as useless in this world as those fancy gentlemen in flashy vests, who generally attend them in their airings. And we have still less sympathy with the gamblings attendant upon the meetings of this class of men and horses upon the turf. We have never attended such a meeting, and have no desire to. Thus much for our disclaimer.

Of late, quite a respectable portion of the agricultural press, and many of the news and literary papers have come down upon the "trials of speed" at agricultural fairs, which they say is only horse-racing, under another name. Well, it is hard to say just where we pass the line of healthful rivalry, when once we enter the path of competition. Mrs. Smith and Mrs. Jones both compete for the prize for the best ten pounds of but-

ter. Mrs. Jones does her best, but Mrs. Smith does a little better, by her superior dexterity with the skimmer or the ladle, and she wins. Here is a woman race, with all of its rivalries and expectations and disappointments, on a small scale. Almost every body says it is right; we shall not dispute with them. Clark has a Suffolk pig—he believes in Suffolks. White has a Byfield—he believes in Byfields. Clark and White set out to see which will make the best porker in a given time. One tries the jugglery of ground and cooked feed, the other the mystery of steamed potatoes and corn in the ear. One beats, of course, and the other thinks he cheated. Here is a hog race.—Judge B. and General C., being troubled with plethoric purses and ambitious brains, go to England or Timbuctoo, and each buys another calf, which is educated and brought up far more carefully than those who call them father, and at a proper time exhibited for the big prize. Here is a bull race, a step or two in advance of the others.

Charley has a nice filley, with thin, sloping shoulders, long hip, and such a good walker; he would like to see the nag that could out-walk his filly. Charley is riding into town, and Jim comes up on the same errand, and having learned the state of Charley's mind, accommodates him to a walk with his sorrel for a quarter of a mile; the stakes are the good opinion of each boy for his nag. Charley loses. Nobody ever thought that was a horse-race; well, may be it wasn't. At the county fair, John had a Morgan and Will had a Bellfounder; standing still, the judges could not tell which was best, and as one or the other had to be best, the judges said, "Let's see them move." John trotted, and Will trotted; John trotted faster, and Will trotted faster; John trotted as fast as he could, and Will trotted as fast as he could, and they both trotted as fast as they could, and kept on trotting; and the people gathered about, and each one of the five thousand made up his or her mind which horse they would rather have, and so did the judges, and the trotting was over. And then some folks thought they began to smell a horse race! and some folks have a nice and discriminating sense of smell.—Our olfactories are not that sharp.

But enough of this pleasantry. We are willing to take a more serious view of the subject. One objector says, "Fast horses are *not* an agricultural necessity, nor even an agricultural product. No practical farmer need be told that the rearing and training of such horses is at utter variance with agricultural success. Fast horse flesh has no practical value since the introduction of railroads and telegraphs." That is what a young gentleman wrote of the late exhibition of the United States Agricultural Society at Philadelphia.

It is an "agricultural necessity" to raise fifty bushels of wheat to the acre, and so get fifty dollars instead of fifteen dollars for your crop! Is a two thousand pound bullock an "agricultural product?" Let us abolish these railroads, so that the beeves we send to Gotham will get nice and tough, as in former years, by a four weeks' travel on foot, because these New Yorkers are getting better steaks than they deserve, and our cattle-feeders are getting too much money. Let us have a moral reform society, and petition the Legislature to pass an Act, forbidding any farmer to raise a colt that can trot faster than a mile in fifteen minutes, or that shall be worth over fifty dollars at four years old, because "fast horse-flesh has no practical value" now, and a five-hundred dollar colt is "an agricultural product."

Oh, George! It may do to talk that way in Sleepy Hollow, but the very Quakers of Ohio would laugh at you for telling such stuff out here. You should have seen friend Joseph put his Black Hawk around the ring at Cleveland, and friends William, and James, and Thomas, and John, and lots of others, among the fastest and most successful competitors. Do you say Ethan Allen is not an agricultural product? and our Champion Black Hawk? Flying Cloud?—Highlander? Monarch? Hassan? Kennebec? You never sat in the buggy with Reber of Lancaster, after his black mare, or with Brown of Trumbull, after his gray, or rode through the oak openings of the Darby with Fullington beside his Morgan stallion, chasing cattle. Take a seat with our farmer friend, Mordecai Lee, of Stark, after his Fly, and when the wind begins to whistle in your ears, ask Mordecai what he will take for the mare, and see how quietly he will tell you, she is not for sale; and after a little more such experience, learn some good hard horse sense, and confess that raising of such is *not* "at utter variance with agricultural success."

We can hardly bring our pen to write serioulsy on this subject, after all. Life is but

a race, of one kind or another, and the best advice we have to give is, not to run against each other's sulkeys, or leap ditches so wide that you will stick in the middle. Don't get out of breath. And don't fret. So we will come to the end of the race in good order.—*Ohio Cultivator.*

Mourning Customs.

A French writer gives a summary of the different observances among mankind, relative to mourning and funeral ceremonies, which we think will interest our readers. All the world, says he, are acquainted with the grandeur of the Roman obsequies and funeral games. The Greeks also burnt the corpses of distinguished men, with funeral feasts, and the lamentation of hired weepers, though they generally displayed a less sumptuous grief, and better regulated piety. The Persians buried the bodies of the dead; the Scythians ate them; the Indians enveloped them, for preservation's sake, in a sort of locker; the Egyptians embalmed and dried them, exhibited them on festal days, placed at the table among their guests guarded them as their most precious possessions, and loaned and borrowed money on these strange pledges. In our time, the custom of dancing at funerals is only practised in India and among some savage nations; but funeral entertainments still prevail in many European countries. Amongst others the ceremony of interment is solemn and silent, which nevertheless does not interfere with the wish that all may be forgotten as speedily as possible. We observe more ostentatious rites for persons of consequence. Their carriages follow them to the graves, and sometimes their horses are paraded, which having been made to fast seem to partake of the affliction of the occasion. The Orientals, from whom we borrow this custom went further—they made the horses in funeral processions weep, by blowing a particular kind of powder up their nostrils.

In Italy the mourning was formerly white for women, and brown for men. In China it is white; in Turkey, Syria, and Armenia it is blue; in Egypt, yellow; in Ethiopia, grey. Each of these colors had originally, its mystical signification. White is the emblem of purity; celestial blue indicates the space where the soul ranges after death; yellow, or the tinge of dead leaves, exhibits death as the end of all human hopes and man falling like the leaf of autumn; grey represents the color of the earth, our common mother; and black, the funeral costume now adopted throughout Europe and America, is an allusion to the eternal night.

In England, the sovereign never wears black; he is clothed in dark purple as mourning. Till the reign of Charles VIII, white was the funeral garb in France. The Emperor Leopold, who died in 1705, used to suffer his beard to grow in disorder during the whole period of mourning. In this he imitated the Jews. The dowager-empresses never left off weeds, and their apartments were hung with black till their death.

The Chancellor of France is the only person who never wears mourning. The brothers, nephews, and cousins of Popes never wear it; the happiness of having a Pope in the family is too great to allow them to be affected even by his death.

But the most remarkable of all these usages, is, perhaps, that of the people of those ancient nations, who dressed themselves as women when they lost their relatives, in order, it is said, that the ridicule attached to their vestments might make them ashamed of their grief.—*Scientific American.*

Cause of Frog Showers.

The actual fact that considerable spaces of ground have been suddenly covered with numerous small frogs, where there were no frogs before, has been proved beyond a doubt. Some have called in the aid of water-spouts, whirlwinds, and similar causes, to account for their elevation into the regions of air, and some have even thought that they were formed in the clouds, from whence they were precipitated. It has generally been in August, and often after a season of drouth, that these hordes of frogs have made their appearance, but, with Mrs. Siddons, we will exclaim, "How got they there?" Simply as follows:

The animals have been hatched, and quitted their tadpole state and their pond at the same time, days before they become visible to, or rather observed, by mortal eye. Finding it unpleasant in the hot, parched fields, and always running a great chance of being then and there dried up by the heat of the sun, they wisely retreated to the coolest and dampest places they could find, viz: under clods and stones, where, on account of their

dusky color they escape notice. Down comes the rain, and out comes the frogs, pleased with the chance. Forthwith appears an article in the country papers; the good folks flock to see the phenomenon. There are frogs hopping about; the visitors remember the shower, and a simple countryman swears the frogs fell in the shower, and he saw them fall; frogs, visitors, countrymen, editors, are all pleased, and nobody undeceives them, nor are they willing to be undeceived.—*Buckland's Curiosity of Natural History.*

From the Ohio Cultivator.

Hot Beds—Progressive Management.

After your plants are fairly up, they will require considerable care to prevent their burning, especially if the sun should be hot. If you observe that they get very small at the bottom and lop over, you may conclude they are too hot, the remedy for which is, water them freely with cool water and allow them more air. If your plants turn yellow, they are too cold, and then warm water, if any, should be used, and they should be kept closer, especially in cold weather and at night. Be Careful to shut down your sash awhile before the sun goes down, so that it may generate some heat in your bed, as a preventive against the cold of night. Cold, cloudy weather is worst, as it is then difficult to keep the hot bed close enough, and at the same time allow the plants a sufficient supply of light, which is as necessary for their healthy growth as heat or moisture. We have had plants, when covered, and light only admitted at some places, lay flat down on the bed towards the light, thus showing beyond question the necessity of light to vegetation.

If you want a liberal supply of plants, make another bed, same as first, (only as the season grows later you will need less heat consequently less manure,) into which prick out your tomatoes, egg plants, peppers, etc., four inches apart every way; then, in your old bed, which by this time has lost considerable of its heating power, prick out your cabbage, cauliflower, and like plants, also about four inches apart each way, thus giving them all plenty of room to grow up stocky and firm. Remember that one good plant is worth a dozen poor ones, either for profit, or to cultivate merely for pleasure,—for we envy not that man his existence upon this goodly world of ours who takes no pleasure in beholding the growth of the vegetable kingdom, especially that part of it, which, with the development of every leaf, bids us hope for the plentiful harvest beyond.

About the middle of April, or as soon as the grass and oats begin to grow, remove your cabbage and like plants to their final place. Then take up every alternate row of your tomatoes, and set them into the bed from which the cabbages were taken. In taking up, we use a transplanting trowel, and are careful to get under the plants so as not to injure the roots. If you take hold of a plant and pull it out of the ground, you destroy all of the fine roots, and thus prevent it from growing for a week or ten days, or until it re-supplies itself with them. In selecting ground for cabbages, take that which has been made rich with stable or barn-yard manure. It is folly to plant cabbages in poor land, or expect good solid heads without manure.

In the latter part of May, or as soon as all danger from frosts is over, you may remove tomatoes and other tender plants to the open ground. Tomatoes fruit best and earliest on clay land, manured, but do very well in our black swales without manure. They should be set in rows both ways, and not less than six feet apart each way, thus giving them plenty of air and light, which is the best preventive against rot. Just observe the practice of good market gardeners, and on land, too, which they would not rent for $20 per acre per annum, and you will see they do not crowd their tomato vines so close that they run into each other.—Three or four feet apart each way is room enough for egg plant or peppers, for both of which the soil should be rich by being well manured. A little hen or bird manure, put in or about the hills, is very good. Directions for sprouting sweet potatoes, and their after culture, we will give in next number of the Ohio Cultivator.

G. S. Innis.

Brilliant Stucco Whitewash.

Many have heard of the brilliant stucco whitewash on the east end of the President's house at Washington. The following is a recipe for it, as gleaned from the *National Intelligencer*, with some additional improvements learned by experiments:

"Take half a bushel of nice unslaked lime, slake it with boiling water, cover it during the process to keep in the steam.

Strain the liquid through a fine sieve or strainer, and add to it a peck of salt, previously well dissolved in water; three pounds of ground rice, boiled to a thin paste, and stirred in boiling hot; half a pound of powdered Spanish whiting, and a pound of clean glue, which has been previously dissolved by soaking it well; and then hanging it over a slow fire, in a small kettle with a large one filled with water. Add five gallons of hot water to the mixture, stir it well, and let it stand a few days covered from the dirt.

It should be put on right hot; for this purpose it can be kept in a kettle on a portable furnace. It is said that about a pint of this mixture will cover a square yard upon the outside of a house if properly applied. Brushes more or less small may be used according to the neatness of the job required. It answers as well as oil paint for wood, brick or stone, and is cheaper. It retains its brilliancy for many years. There is nothing of the kind that will compare with it, either for inside or outside walls.

Coloring matter may be put in, and made of any shade you like. Spanish brown stirred in will make red pink, more or less deep according to the quantity. A delicate tinge of this is very pretty for inside walls.—Finely pulverized common clay, well mixed Spanish brown, makes reddish stone color. Yellow ochre stirred in makes yellow wash, but chrome goes further and makes a color generally esteemed prettier. In all these cases the darkness of the shades of course is determined by the quantity of coloring used. It is difficult to make rules because tastes are different; it would be best to try experiments on shingle and let it dry. We have been told that green must not be mixed with lime. The lime destroys the color, and the color has an effect on the whitewash, which makes it crack and peel.

When walls have been badly smoked, and you wish to have them a clean white, it is well to squeeze indigo plentifully through a bag into the water you use, before it is stirred in the whole mixture. If a larger quantity than five gallons be wanted, the same proportions should be observed.

Every girl who intends to qualify for marriage, should go through a course of cookery. Unfortunately, but few wives are able to dress anything but themselves.

Pruning Apple Trees, etc.

We are requested to answer the following questions:

1st. "When is the most proper time to prune apple trees?

2nd. "How high should the main stem be to the first limbs?

3rd. "What application is best to prevent rotting where large branches have been cut off."

1st. When trees are transplanted from the nursery to the orchard, they should be pruned, removing the branches so as to lay the foundation for a *clear, open head*, and shortening all of the remaining shoots to three or four buds of the previous season's growth. The object of this cutting back, is to compensate for the loss of roots and fibres occasioned in removal from the nursery, and thus establishing an *equilibrium* between the demand of moisture by the leaves, and the supply from the roots. There is an immense amount of moisture given off from the leaves of a tree, during the day, and when, from mutilation, or partial loss of the roots in digging, this supply is not kept up, the tree lingers and often dies in consequence. After this, our practice is to prune at any time when a branch is discovered to start from an improper place, consistent with the design of the head. If this course is practiced for five or six years, after the trees are set, but little pruning will be necessary, and will be done when the branches are so small as to be proper at any time. But if an orchard has been neglected, and considerable pruning is thought necessary, it should be done with caution, and the Spring is the best time to do it, so that the wounds may heal immediately. When the pruning has been thus deferred, till the trees have gained considerable size, we would never advise to cut off large branches, unless they have become defective, or are interferring with others to the positive injury of the tree, but rather to thin out the smaller branches nearer the extremities. The undue pruning of an established tree produces opposite evils to those resulting from having a full head, when a tree that has been removed from the nursery with the loss of two-thirds of its roots, and a still larger proportion of its spongioles, through which alone the tree derived its nourishment from the soil.

It is painful to go through the country and witness the reckless, and we might say, wanton decapitation of thrifty apple trees,

apparently without an object or design; at any rate none founded on reason, nor with the remotest knowledge of the laws of vegetable physiology. Nature, after she has been subjected to this kind of *butchering*, ever true to herself, attempts to repair the injury, and at once sends up half a dozen "*water sprouts*" to take the place of the branch that has been destroyed, and these assume an upright growth, giving a less perfect form to the tree, and leaving the mutilated stumps exposed to decay, which ultimately leads to the premature death of the tree.

2nd. The height of the main stem of the tree should be governed, somewhat, by the habit of the growth of the particular variety; for instance, the Belleflower, Pennock, and various other kinds, grow with drooping branches. These should be trained to about four feet to the commencement of the head. Trees of a more upright growth should never be trained to more than *half this height*. The error has long prevailed of training fruit trees, apple, pear, and peach, too high. The trees, generally assume a leaning position, with the prevailing winds. The fruit is more difficult to gather, and is also more liable to injury in falling, while we know of but one advantage that can be claimed in favor of high training, and that is, rendering it more convenient for cultivating with the horse and plow, or cultivator. While the trees are small the team can be run quite near them, and the weeds and grass that cannot be reached may be easily removed with the hoe, and in a few years the shade of the tree will prevent a vigorous growth of them about the stem, so that in fact there is nothing gained by running the trees up to the unnatural height of bean-poles, but much is lost. To form a handsome head to a fruit tree, the work should be commenced in the nursery. The stem should be cut back so as to cause the head to start at the point we have named. When this has not been done, the orchardist, in transplanting, should have the object in view, and cut back the stem accordingly in order to encourage the growth of a lower tier of branches. For this reason, we prefer to plant two year old trees, when well grown, to those of a larger size that have been improperly trained in nursery.

3rd. From what we have said above, large branches will seldom require to be removed. But when, through previous neglect, it becomes necessary, let the branch be removed with a sharp saw, and near to the body of the tree. Like the amputation of a member from an animal subject, let it be done with skill, and only in extreme cases of necessity. The best application to such wounds is a solution of shellack in alcohol at about the consistence of common paint, applied with a brush or sponge, after the outside has been slightly dried. Place a quantity of shellack in a bottle of alcohol and set it in a warm place and shake it occasionally, and in a few days it will be ready for use. Experience will suggest the proportions. Keep the bottle closely corked, and it will be fit for use for years.—*Southern Homestead.*

From the Transactions of the North Carolina State Agricultural Society.

AN ESSAY

ON

Horizontal Plowing & Hill-Side Ditching.

BY

NICHOLAS T. SORSBY, M.D., *of Alabama.*

(Concluded from April No., page 216.)

SECTION VIII.

Philosophy of the Grading Method.

Surface drainage is one of the most important operations connected with the tillage of the Southern soil. The value of the grading method cannot be over-estimated. It has to contend with a troublesome element, that is a moveable element, always seeking its level, whose particles have a great affinity for each other, and running together whenever they can, thus accumulating in a mass, and increasing its volume and velocity when in motion. This element we wish to control with a level and the plow on the surface of arable land, and derive all the advantages of it we can as a feeder of plants, and at the same time, get rid of the excess that would prove injurious to the soil and growing plants. Nature does this for us in some soils and teaches us how to do it for ourselves in others. It sinks the water in porous soils, and stores it up for future use of plants, and removes it when superabundant, from undulating close clay soils before it does injury to the plants that do not require it, teaching us to level porous thirsty soils, and deepen and drain compact close soils. We should study carefully the operations of nature, and apply its beautiful

principles to the present subject, and conform them to the limited capacity of the uneducated minds of men. Very few fields of one hundred acres have the same inclination of surface, and one variety and depth of soil. Land slopes in every direction, and each hill-side or plane of inclination requires sometimes a different mode of drainage and a different method of culture.

In examining a field, we find some acres requiring the level culture, others again, one method of grading, and another a different method, and so on perhaps, through the whole list of the different methods of grading. It would be improper, then, to employ one system alone for every part of the field. The different methods should be applied according to the demands of the land. Science should guide us, and the one-system horizontalizer is led into error by his efforts to apply it to all localities and inclinations of surface of land. We should be acquainted with all the systems, and not make a hobby of any one. Better try first one and then another, in experimenting, and select those that are best and most applicable to the land. If we find a straight row more convenient and better than a crooked one, if it be correct, adopt it, without sticking to the idea that the horizontal culture consists of a system of crooked rows. Experience will soon teach the new beginner the degree of grade necessary to give to his rows and drains, and the number of drains or ditches to use, to drain a certain area of land. The grade to the rows and drains is governed by the kind of soil, the declivity of the land, the extent of the surface to be drained, and the method of horizontaling they are intended to aid. If the level culture, with drains, be adopted, a few shallow guard-drains with a fall of from one to two inches for every span of the level, may answer in moderately close clay soils, and less fall in porous sandy soils. If the grading method be adopted, the fall of the rows and the drains depends upon the kind of method of plowing used, and the nature of the soil cultivated. We should recollect, that the washing power of water descending a hill recently plowed, is dependent upon the declivity and the length of the hill, the depth of the plowing, the character of the soil, and the quantity of water in motion. Hence, the greater the fall, the longer the hill, the shallower the plowing, the more porous and light the soil, and the greater the volume of water, the more the land will be washed. If the grade be not sufficient and the dimensions great enough, the rows are apt to be choked and broken. A regular and proper grade must be given, and if an error be committed, it should be on the side of two little fall. If the grade be too much the rows will wash into gulleys. Guard-drains and hill-side ditches should have grade and capacity enough to drain the land speedily and effectually, without having their sides and bottoms washed too much, With a proper fall and dimensions, they may be used to convey sand to fill up gullies, basins, and deposit it convenient to cover galled places.

SECTION IX.

Advantages of the Grading Method.

It possesses all the advantages of surface drainage of arable soils in a simple and the best possible manner without doing serious damage to the land. It is the best method ever invented to assist in breaking up galls and gullies, and filling up depressions in the the land, and the beds of old ditches and branches, as well as ponds, basins and bogs, and in aiding the plow and the hoe in restoring worn out soils.

It possesses, also, many of the advantages of the level culture.

Disadvantages of the Method.

By careless construction of drains, and neglecting to attend to them afterwards, they are liable to choke and break, and wash the land below them into gullies. When they have too much fall, each row or drain is apt to wash into a gully, and do harm to land below their mouths by covering it with sand. They distribute water irregularly, and where not demanded, drying the ridges and hills too much, and drowning the bottoms. Upon the whole they are of minor importance compared to the benefits of drainage.

SECTION X.

Subsoil Plowing

Means loosening the subsoil with a plow without any mould-board to turn it up.

We have seen, that Nature teaches us three important operations that are essential to the perfection of the horizontal culture, viz: to open, to deepen and to drain the soil.

An open, deep and dry soil, we all know, can be cultivated to better advantage and profit, by either the level culture or grading method, than a close, shallow and wet soil by any method. The latter requires much labor and time to open, deepen and drain it, and if a good soil the labor pays, if a bad soil the labor is often lost.

Under the soil of some stiff red clay lands, long cultivated, originally good, there frequently exists a stratum of compact clay and sand, called a hard-pan, formed by the treading of the stock and sole of the plow, cemeted together by oxide of iron, clay and fine sand. It exists, sometimes, in gravelly soils, but less frequently than in clay soils. Wherever it prevails it makes the land hard to cultivate, and it produces sorry crops. It is always on extremes of wetness or dryness. Such land is difficult to horizontalize.

Again, the plow forms in clay land, on the subsoil, small gutters or channels, into which the water sinks, accumulates, and flows and washes the soil, obstructs the work of the horizontalizer by breaking the ridges and undermining the banks of drains and ditches when they are not made deep enough on hill sides to extend below these channels.

The subsoil plow aids very much the horizontal culture by breaking up the hard pan, the gutters or underground water furrows, galls and gullies, on clay lands; it opens, deepens, pulverizes the subsoil, drains the surface soil by sinking the water, and extends the area of air, manures, and the roots of plants, and thus produces a decided amelioration of the soil and subsoil.

The best time to do the work is winter and spring, when the land is moist and soft, and when time can be taken to do it well. The most effectual plan is to open a furrow with a two-horse plow, with a good turning mould-board, and follow in the same furrow with the two-horse subsoil plow, as deep as both plows can be drawn. If the time cannot be spared to run so many subsoil furrows, half the number will answer a good purpose. An expeditious plan for corn land is to open deep, the water furrow between the ridges, with a scooter plow, and follow it with the subsoil plow; put in the manure, and bed out with scooters and shovels, finishing with a turning plow to make a good water furrow.

When employed in lands for small grain the subsoil plow can be run to advantage in the old water furrow, which is the centre of the land when plowed out, and also in the new water furrow left open. We need not fear subsoiling clay and gravelly soils when hard and compact, especially when old and much worn.

SECTION XI.

Trench Plowing.

This differs from subsoiling, by raising up the subsoil, and mixing it with the surface soil, with a turning plow following in the furrow of another turning plow. It brings up subsoil, disintegrates the hard-pan and distributes it through the surface soil. It is of great assistance to the horizontal culture to break up the gullies, gall and hard-pan, and thus lay the foundation of the process of restoring the fertility of worn out lands.

If the soil was originally of a good quality, and the subsoil of the same quality, trench plowing is of much advantage to the land to deepen and mix the two. But if the land be poor, and the subsoil poor red clay, the trenching should be done by a scooter plow, following in the furrow of the turning plow with the view of breaking up the subsoil, and pulverizing it, without mixing them too much. Mixing a poor clay with a poor soil is bad policy, unless much manure is added to improve it. Subsoiling and trench-plowing are often confounded with each other, but are quite different operations.

SECTION XII.

Land-Galls.

These are abrasions of the soil, by rain water removing the soil of clay lands long cultivated by the old wash away method, and leaving the clay exposed. They might be very properly called land-sores, of a virulent character, and hard to heal. The best way to treat them, is to scarify them deep every spring, sow them down in peas, plow them in the fall, and sow in rye; repeat the same operation next year, cover them with leaves, stalks, long manure of any kind, and the third year a tolerable crop of corn or cotton may be grown on them. To manage them to the best advantage, they should be surrounded, or cut off to themselves, by guard-drains, or hill-side ditches.

SECTION XIII.

Gullies.

These are open water-channels, caused by

rain water and careless up and down hill plowing. They are hideous objects to the eye of a scientific and practical farmer, and should receive the condemnation of all good husbandmen.

There are many ways of filling them up, but in doing so, sometimes two are made in place of one, unless it be properly done and aided by the horizontal culture. The land requires to be well graded and the direction of the water changed, and not be permitted to flow so abundantly down the gullies as before. When they are less than three feet deep, they may be stopped and filled up in two or three years, in this way: Every twenty steps drive up stobs or oak boards across and in the gulley, close together, to catch and hold the dirt and water in part; then, throw in leaves, tussucks of grass, corn and cotton stalks, pine straw, pine tops, with the laps up hill, and plow up and down on each side of it, and drag in as much dirt as possible with hoes. Sow them in peas and rye, and let grass grow in them. Plow horizontally across, keeping the same regular grade in passing them; to do so, the rows will make a curve up and down.

Large gullies will require more labor and time to fill them up. Cut a ditch across them at proper distances apart, and pile logs on each other in the ditch, until the top log reaches above the banks of the gully. Now gather all the rubbish, stumps, stones, logs, leaves, pine saplings, with the laps up hill, into the gully, and draw in all the dirt convenient and pack it against the logs, and on the pine tops, so as to make a dam. The drains and hill-side ditches can be emptied into them, and supply dirt to fill them up. Allow grass, weeds, peas, and small grain to grow in them. In a few years they will be filled up, and bear some crop every year to hide them from the gaze of a neat farmer.

SECTION XIV.

Guard-Drains and Hill-Side Ditches.

Guard-drains are shallow, open water channels, made with the plow and hoe, on arable land, laid off with a leveling instrument, with a regular and gentle grade, directed around undulating ridges and hill-sides, for the purpose of receiving and conveying away superfluous rain water.

Hill-side ditches are a variety of guard, or catch-water ditches, but intended to operate more effectually than they, by having a greater capacity and grade, in order to remove a greater volume of water in a shorter time from hilly lands. They are a part of the system of horizontal culture, and are used to aid and protect it, and correct its defects. We may very properly term them the safety-valves of that system, when properly constructed, and waste-ways when improperly constructed.

They are valuable adjuncts to the horizontal culture, and especially to the grading methods, when made according to correct principles of hydraulics. On loose, sandy lands, they should be dispensed with whenever it can be done with safety, and as few as possible be used, and they as far apart from each other, and as short as the nature of the land will admit of, to effect the desired object. Clay lands, that have been plowed up and down hill, in straight rows for years, and a good deal abraded and washed into gullies, require the ditches and drains to be well made. It takes two or three years sometimes to break up the old water-furrows and gullies, and turn the curve of the water, unless deep plowing be combined with the grading method. Guard-drains usually answer the purpose on gently undulating lands.

Hill-side ditches are best on hilly lands. Inexperienced horizontalizers would do well in commencing the horizontal culture, to employ drains to protect their imperfect work. They should be made as short as possible, avoiding all abrupt curves or sudden bends, and directed around ridges or hills from a medium point, dividing the water and discharging it on both sides of the ridge or hill into a ditch, gully, branch, or outside of the field, where no damage to adjoining lands may be done. The fall should be gradual and uniform, and just sufficient to discharge the water without washing the sides and bottoms of the drains.

The size of drains and ditches should be determined by reference to a variety of circumstances, the combined influence of which, although not reducible to any very exact rules, may generally be estimated in practice. We must consider 1st, the *annual* quantity of rain; 2d, the quantity which falls on the land during a heavy rain; 3d, the nature of the soil as to porosity or compactness; 4th, the inclination of land; and 5th, the length of slopes and extent of sur-

face to be drained. Every horizontalizer must take these things into consideration and judge for himself.

A general and important rule as to the capacity of drains is, that they should exceed rather than fall short of the dimensions ordinarily required to discharge the quantity of water for which provision is to be made. A correct knowledge of the character of the soil and the action of water upon it is necessary to determine the depth of the drains. Thus: a light, deep, porous, sandy soil, will absorb water as fast as it falls, if it lies level; if undulating, it will absorb it not so fast, and the deeper and more porous the soil and sub-soil, the more and faster it will absorb. On the contrary, a shallow, sandy soil on a clay sub-soil and clay lands, will absorb less water, and more slowly, and more of it will pass off. It will follow the under-ground plow-furrows when absorbed, and the drains should extend below those furrows to catch the water. The close clay soils, and the stiff lime lands absorb water slowly, and if they be deep, the drains should extend below the soil, and should be nearer together than in porous soils.

The kind of drains to be used, their depth and distance apart, can be ascertained by experiment alone. It is safest for the new beginner to follow the example of those who have tested them on similar soil to his, and where they have been found to answer well.

The following scale of the depths and distances of drains and ditches, may give an idea of what they require, according to the classification of soils into compact, medium, and porous varieties, each of which may be subdivided into several degrees of porosity and retentiveness:

CHARACTER OF SOILS.					DRAINS.	
NOT SUBSOILED.	DEPTH OF SOILS.		DEPTH OF DRAINS.		KIND OF DRAINS.	DISTANCE APART.
	Feet.	Inch's.	Feet.	Inch's.		
POROUS.						According to the declivity of land.
Light loam, (fresh land,) Sandy " " "	1	00	0	10	Guard-Drains.	Wide apart.
Light gravelly Sand,.... Coarse gravelly Sand,...	0	10	0	12	Guard-Drains.	Wide apart.
MEDIUM.						
Clayey Loam,.....	0	8	0	12	Guard-Drains.	Not so wide apart.
Gravelly Loam..... Friable Loam,.....	0	10	0	10	Guard-Drains.	Not so wide apart.
COMPACT.						Need subsoiling.
Tenacious Clay,.....	0	6	1	00	Hill-Side Ditches.	Close together.
Friable Clay,.....	0	8	0	12	" " "	" "
Soft Free Clay,.....	0	10	1	00	" " "	Not so close.

If the land be subsoiled, the drains must be deepened, and made wider apart. The tenacious clays are not very commonly cultivated in the South. They are too wet for cotton.

SECTION XV.

Drill Husbandry

By the ridge and furrow system, in contradistinction to the check and hill method, is indispensable to the horizontal culture. Ridging and bedding up land is so familiar to every plowman in the South, that little need be said relative to the manner in which it should be done. They are made both by shallow and deep plowing. We prefer shallow plowing and flat beds, in new ground, stubble or sward land, and in porous light sandy, and loose gravelly soils. Deep plowing is best in old hard upland clay soils, (that need deepening and opening,) in bald prairie lands, and in low wet lands, of both kinds.

The height of ridges and lands are dependent upon the kind of culture, the crop grown, and the character of the soil.

For potatoes, we desire them high when the plants are set, and when the crop is laid by.

For corn, we prefer them flat in dry uplands, higher in lowlands, with clean water furrows.

For cotton, in fresh land and porous alluvial, and light sandy lands, moderately

flat beds may answer very well. They are regulated by the width of the beds. In clay lands, the cotton beds should be high and narrow, and the water furrows deep and clean. We prefer not to plant cotton in wet land, but if it be done, high beds well drained, is the only remedy against the disastrous effects of water. The cotton beds are made close or wide, according to the quality, and productiveness of the land. In rich river bottoms, and black cane-brake lands, they vary from five to eight feet wide. Thin and medium quality upland, sandy and prairie lands, they vary from three to four feet in width; some poor lands, they are as near as two and a half feet apart.

We cultivate our land in ridges for corn, cotton, peas, and potatoes; the ridges vary in height and distance according to the quality, and dryness of the soil. They are from six to fourteen inches high, and from three to four feet wide apart, that is from crown to crown. When desiring to sow small grain on land, in ridges, we sow the grain, and plow four or five ridges into a land, and preserve the direction of the rows.

We sometimes sow cotton land in oats and rye, and throw four turning plow furrows on the grain, and plow out the stalks with a large two-horse shovel, thereby making a flat bed, drained by the water furrow, and preserving the width of the beds.

We sometimes sow rye in the fall in cotton land, and run two sweep furrows in each row. In very porous land, if the rye be sown just before cattle are turned in the field, no sweep furrow need be run.

SECTION XVI.

The Advantages of the Ridge and Furrow System

Are, that when the ridges or beds are well put up without two great an inclination, it facilitates drainage by breaking up the crust formed on the surface of land that is sometimes so close and tenacious as to prevent the water from sinking into the subsoil beneath the roots of plants; it exposes a greater surface and depth of land to the action of the sun and air; it enables land to be cultivated that cannot be cultivated on the hill and check method, or any other method; it renders land drier and less subject to the destructive effects of wet seasons; it makes land easier to work at all times with less injury to the crops; it renders the plowing of spring and summer less hazardous and laborious; the tillage of spring and summer more certain and effectual; it secures to the crops a nice, mellow bed of loose, dry and warm earth to grow and expand in above the cold and wet subsoil; in fact, it produces an artificial climate, which improves the health, and hastens the growth of young and tender plants that demand such especial care during spring; and finally, it prevents land from washing away, and is the basis and support of the horizontal culture.

SECTION XVII.

The Check and Hill Method.

This method answers a good purpose on very loose, porous, level pine lands, for potatoes and ground peas, cultivated mostly with the hoe. It is objectionable to the horizontal culture because it upsets and breaks up the horizontal rows, and turns the water loose, on the land, and destroys the effect desired by the horizontal system.

SECTION XVIII.

Plowing Straight Rows by Stakes.

This method has been pursued by farmers, for ages, and is the favorite plan with the majority of them at this time.

The great ambition of the plowman who lays off the rows, is to make them perfectly straight, regardless of hill or valley, across the field from fence to fence; nothing but a ditch stops him.

It is astonishing to see the accuracy with which it can be done by a few stakes set in a line with each other. Of course, the rows make beautiful drains to dry the hills, and cover up and drown the valleys with sand and water. The hill tops and sides are in a few years cut into gullies, and the soil precipitated into the valleys to impoverish them with sand and clay.

This is truly, the *wash-away and killing method,* and should be abandoned by every farmer, or planter who cultivates hilly lands. Level plains of sandy land, can be plowed in this manner very well, without doing much injury to the soil, particularly, if the rows are changed and crossed every year or two. We adopt straight rows whenever we can run them on a level.

SECTION XIX.

Horizontalizing by the Eye.

Instead of running the rows up and

down hill, in straight lines, this method directs them around the hills, and diagonally across them, with a considerable fall to them.

If they are directed diagonally across the fields, and are desired to be straight, they are laid off by stakes. If intended to circle the hill, the horizontalizer walks around the way he desires the rows to run, and the plowman follows him and lays off a guide-row. The rows are then laid off by the guide-rows. This is guess work, and very inaccurate. We have seen a very intelligent planter, who was familiar with the horizontal culture, circle a basin badly gullied, on horseback, followed by two plowmen, one laying off after the other. The basin was surrounded by a guard-drain that kept the water from the adjoining land out of it, and conducted it off out of the field. The plowmen and the horizontalizer were below this drain. As they passed over the gullies, it was "gee Ben, haw Dick, haw Ben, gee Dick," sometimes in rapid succession, and was very amusing. We called this work a horizontal farce.

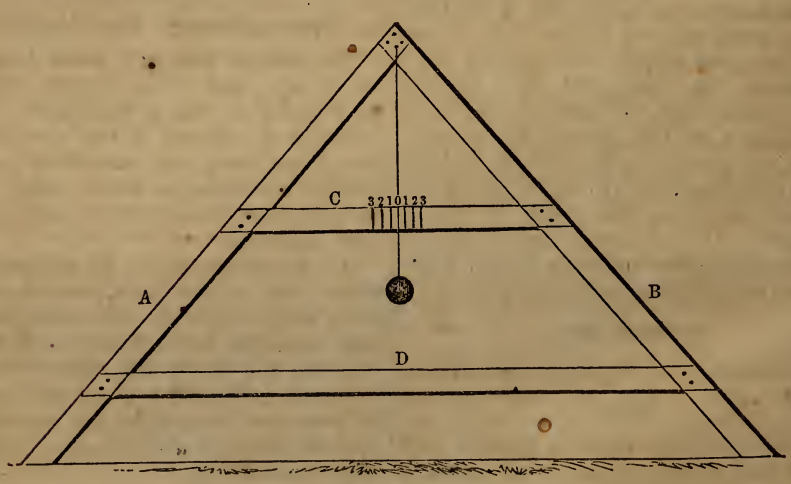
The rows were laid off like the track of a snake in the sand, and had they not been protected by the guard-drain, they would have been cut into many troublesome gullies and galls.

SECTION XX.

The Span or Rafter Level.

Of the many leveling instruments in use, among Horizontalizers, the above is the best, because, it is the simplest, the easiest of application, and is most generally employed. Besides, any carpenter can make it.

In horizontalizing land it is necessary to success, to keep a perfect level of the rows in the level culture, and a uniform fall in them, and the drains in the grading system. The most convenient and handy level is made with a span of 12 feet 4½ inches and 6 feet high. This span is ¾ of a perch: So that we can readily calculate the length of the rows and the ditches, and estimate the rise or fall of them per perch.



THE SPAN OR RAFTER-LEVEL.

EXPLANATION OF THE FIGURE.—To construct this level, take two strips of dressed heart pine plank, well seasoned, A B, 3 inches wide, ¾ of an inch thick, and 12 feet 6 inches long. Another strip for a foot brace, 1½ inches wide, ¾ of an inch thick, and 11 feet long. D.

Also, another for a middle brace, or graduated bar, 2 inches wide, ¾ of an inch thick, and 6 feet long. C. Lap one end of A and B together, let them into each other and make them secure with wood screws, so that when fast the other ends of the strips may be 12 feet 4½ inches apart from outside to outside, and the level, when finished, be 6 feet high.

Make the foot brace, D, fast to these two strips, one foot from the ground, when the level is standing on its feet.

Make the middle brace, C, fast to the same strips, three feet from the top, and saw off the ends of all, so that the level,

when completed, will have the dimensions, and span the difference above mentioned. Paint it, and when dry graduate it thus, viz: Suspend a plumb line with an ounce lead from the centre of the top, and let the bob extend two inches below the middle brace.

With a spirit level find a perfect level on a plank, and stand the Rafter Level on it. Mark where the plumb line crosses the cross bar with a pencil, and the places occupied by the feet; change the feet, and put each in the place occupied by the other; mark again with a pencil where the plumb line crosses the bar; if it crosses exactly in the place it crossed before, that is the centre of the level, and the true line; if not, the exact distance half way between the two lines is the level line. To be very exact, the assistance of a spirit level will find it. The true line of level being found, mark on the top of the bar 0, and make a plain line on the front side of the bar to correspond with 0. Now put a ½ inch block under the left foot of the level, and mark where the line settles, and ½ on the top of the bar; remove the ½ inch block, and put a 1 inch block under that foot, and mark where the line crosses the bar, and 1 on top of the bar; proceed in that manner until it is graduated to 6 inches. Repeat the same process for the right foot, and other side of the line on the bar, and the level will be graduated ready for work.

SECTION XXI.

Application of the Rafter Level to the Level Culture.

The manner of using the level is the same for both methods, with this difference: for the *Level Method* the rows are laid off, and plowed on a dead level, whilst for the *Grading Method*, a fall is given to the rows and drains.

It is necessary to be more accurate, and apply the level oftener for the level method, than for the grading method.

Before going to work, we must determine first, upon the kind of crop to be cultivated; second, the character of the soil; third, the inclination of the land, whether comparatively level planes, undulating ridges or hills; and fourth, the method of horizontalizing desired.

To illustrate and explain the different methods, we select a forty-five acre field, which we call the Gin-house field. Upon examining it, we find a plane, a hill, a ridge, a basin, a pond, and the balance undulating irregular surfaces, and wet flats and ditches. The soil is grey, and dark sandy, on a yellow and red clay subsoil, of medium quality, that has been much abused by bad plowing, and constant cropping. It presents the variety of soil, and undulations of surface, necessary to explain our subject fully.

It was horizontalized by me in 1851.

SECTION XXII.

To Horizontalize a Plane by the Eye on the Straight Row Method.

We will go to the field, with the level well graduated, accompanied by a small boy, who carries a bundle of canes or green sticks, some one foot, and some six feet long. A sensible plowman, with a quick, tractable mule; with a scooter or rooter plow, and a hill-side mould-board plow follows.

To try the skill of the plowman, and the temper and spirit of the mule, we select a plane on which the Gin-house stands, for operation. We suppose the field to be a stubble-field, having been always plowed up and down hill. Having determined upon the direction of the rows, and the points of departure and termination for them, we direct the plowman how to proceed—order him to set his stakes, "be sure you are right, and then go ahead," and lay off four feet rows. As negroes' memories are short, and they are careless, and mules slow and stubborn, we wait to see him started. If he proves to be inefficient, and lays off crooked rows, irregular distances apart, and can do no better, we dismiss him, as not trusty and skilful, and procure another plowman, because much depends upon his skill for our work to succeed. Should he answer the purpose, we leave him and go hence to

SECTION XXIII.

Circle the Round Basin.

This basin has been partially drained by a ditch passing through it, and emptying into the main ditch, but never successfully, because the ditch has never been deep enough, and the margins of the basin are too high to admit of deepening it enough without much labor.

We desire to circle it on a level, so that each row may hold its water, and keep it out of the ditch as much as possible.

We will commence at the ditch, at the east side of the basin, above the margin of the basin, where the land is comparatively level, to lay off a guide-row that may embrace all the sloping land inside of it.

We set the feet of the level on similar ground, and move the forefoot, that is to lead off, until the plummet line, or spirit bubble, indicates the true level. We stick down a long cane by the side of the plumb for the guide stake. We then move the level and put the hindfoot by the side of the stake, and move the forefoot from side to side, until the true level is found; we move it again, and put the hindfoot exactly in the place the forefoot occupied, and find the level again; we stick a short cane down under the plumb; we move the level again, and proceed in the same manner, getting the level every time, and sticking a short cane down every third, and a long cane down every sixth span of the level, until we surround the basin, and return to the point, or near the place we started from, and we put down a guide stake there. The level may return to the ditch above or below the first guide stake. It makes no difference, so the line is run correctly, where it returns to the ditch.

We now lay down the level and walk around and examine the stakes. We will, perhaps, find them standing very irregularly, not in a perfect curved line, but a little zigzag. A skilful horizontalizer can detect in a moment, by the eye, almost where the true line of level is, and can move the stakes and re-set them, so that the line will have a more regular curve; it being somewhere between the stakes, inside of some and outside of others. Having arranged the stakes to our fancy, we start at the guide stake, the plowman following, and we walk from stake to stake, the plow moving them as the mule throws them down, and the little boy picking them up, until we arrive at the last guide stake, which is likewise plowed up.

We have now laid off and plowed a circular row, not a perfect circle, and if there be no sudden curves in it, and it suits our fancy, we let it stand; but if we have any doubts about its accuracy, we take the level and try it, and if necessary, mark the inaccurate places, and run them over with the plow.

We now move the plowman on the inside of this guide row, and commence four feet from that row and run a row by it, the plowman carrying a four-feet measuring rod, with which he occasionally measures the distance between them to see that he keeps the proper distance; and thus he keeps around until he returns to the guide-stake. As the ditch is narrow and shallow he passes over it, takes another row, and goes around as before, on the basin side. We take the level and follow him, and test his row to see if it be correct, and if there be any variations of importance from a true level, we stop him and correct it. There are two or three ways of doing this. A very convenient way to keep the row going on around, is to widen the distance between the rows a little at one place, and narrow it at another. Or, if this cannot be done, we put in a short row beginning at the ditch and going around until the defect is corrected. We have then to start another row and lay off by that, which the plowman can do, and go round again. Sometimes it becomes necessary to widen or narrow two or three rows, or put in two or three short rows, before the defects are remedied.

In finishing the basin, the rows get shorter and shorter until we have to wind up with a few short straight rows run parallel with the ditch. This concludes the work inside. We now examine the first guide row and the land surrounding it, and if we see that it has not embraced all the sloping land, we run one or more rows on the outside of it, either entirely or partly around the basin, as the case demands. If the basin had no outlet by a ditch, we could commence to circle it, on either side, and go round and stop on returning to the guide stake, nearly opposite to it. We then get on the inside of it, and run the rows by it, as above stated. It is seldom that a guide row, on making a circle, returns and meets again. Sometimes, when we start to circle a basin, we commence so far above the margin of the slope, that the level goes off into the field instead of around the basin; in that event, we go lower down on the margin to commence, so that the row may go around the basin. But, if we find it necessary, after trying the level method for this basin, to protect the rows by a guard-drain from the water around oozing into them, we can lay off a guard-drain around it, to catch the water and discharge it into the ditch.

If we find, upon experiment, that the level culture is not applicable to the basin,

we can try a grading method. This is sometimes the case.

The plowman beds up the land high in this basin, in the same way that he beds up straight rows of the same distance apart, except that he plows around the basin, and does not stop to turn round at the ditch until he is obliged to do so from the nature of the rows.

SECTION XXIV.

Horizontalizing a Hill on the Level Method.

No. 1.

We will now work on the *Peach Tree Hill.** About an acre on the top of this hill is an uneven plane. The hill slopes North, East and South. There is a fence on the South and West, and a ditch on the North and East.

We can commence work almost any where, on the side or the top of the hill. For convenience of plowing we will begin on the top, not far from the angle of the fences, and lay off a level row from fence to fence. This is done in the same manner that we did for the basin, moving the level as there, and staking the row for a guide row. When done the plowman begins and plows it out. We test it and find it correct, and nearly straight. We put him to laying off four feet rows by it next to the fence. They become nearly straight before he finishes them. Whilst he is at work there, we step down thirty paces to the brow of the hill, and commence at the west fence and lay off another guide row, which makes a curve as it goes around to the south fence. We examine our stakes, re-set them, and the plowman plows it out. We test it with the level, and correct the errors with the plow.

The plowman, after finishing the first set of rows, has gone on the other side of his guide row, and is laying off by it. We watch and try his work with the level, and see that he keeps his distance. We find directly that the south end of his rows terminate at the fence, and the north ends at the second guide row just laid off, and unless his rows are on a level they will pour the water into this guide row, or by the side of the fence.

When he finishes this work he goes below the second guide row and lays off by that, and we go twenty steps below it, and lay off a third guide row. To do this we find two gullies to cross, made on the side of a fence that has been removed.* They have a ridge between them, on which the fence stood.

We call the hoe hands, not far off, shrubbing a ditch bank,† and send for a plowman with a turning plow, who is plowing in the first set of straight rows laid off by the eye; before he arrives the hoe hands have nearly filled the gully with shrubs, pieces of rails, tufts of grass, and the like substances, and have them ready for the dirt. The plowman goes up and down the ridges, and turns the dirt on and towards the gullies, and the hoes drag it on and fill up the gully with soil, tramping it down hard at the same time. This job done, we dismiss them for the present.

Unless there is a good reason to commence laying off this third guide row at the fence; we commence at the head, or beginning of the gullies, and lay off the row on one side, and then return to the starting place, and lay off on the other side of it. To do this work well, we first span the gullies and get the level to start with. We then lay off from the guide stake. We left the plowman on the lower side of the second guide row. When the plowman has laid off five or six rows by the second guide row, he lays off this third guide row. As he crosses the gullies he turns up the rows a little, and crosses in a curve, or else after the dirt settles in the gully the water might accumulate in it and make a break. This row is examined for correction, and corrected. The plowman now lays off rows on the upper side of this guide row until his work meets. If there be any short rows they are between the two last guide rows.

We go thirty paces below, and lay off a fourth guide row. This will be sufficient for this hill-side. The plowman lays it off, plows a few rows above it, and then a few rows below the third guide row, to throw the short rows between the two sets of rows. The balance of the rows are laid off by the

*See Fig. 1. Peach Tree Hill.

*Gullies should not be allowed by the side of fences. The fences, if possible, should be placed on level land, even if they are crooked. So should all plantation roads. All gullies should be stopped and filled up several days before the land is horizontalized, in order that they may receive a rain or two and settle the dirt in them.

†Ditch banks and fence corners should be shrubbed, and all sprouts on the field grubbed up before the horizontalizer goes to work, so that his work be not delayed.

last guide row. They get shorter and terminate between the angle of the ditches.*

SECTION XXV.

Horizontalizing this Hill by the 2d Level Method, with Guard-drains.

If we desired, we could make two guard-drains on this hill-side. One where the second guide-row is, at the brow of the hill, and the other where the fourth guide-row is, at the head of the gullies. We select these places, because the rows are more liable to break at the brow of the hill, and because the gullies have made breaks already. The first guard-drain would have less land to protect than the second, and its dimensions can, therefore, be less. We would make it ten inches deep, twelve inches wide, with a fall of one inch to the span of the level. The second drain would be twelve inches deep, and eighteen inches wide, and varying from one to three inches fall to the span of the level. To lay off the first one, we would commence at the south fence, at a certain place we desire to discharge the water. We might pass it under the fence into my neighbor's field, but as he has no corresponding drain, we let it go down the fence on our side.

We lay it off just as we do a circular row, except that we give an inch fall for every span of the level, and turn up the end at the west fence to catch any water that might descend by the side of the fence.

To lay off the second drain, we commence at the head of the gullies, because, if we commence at the fence, the drain might not pass them at that point, and to stop all breaks, gullies and washes, we must remove the cause of them first, and the cause is usually found above the commencement, and sometimes some distance to one side of the break. It sometimes requires a skilful eye to detect it. We commence at the gullies and give two inches fall, and proceed to the south fence, and at the fence we give three inches to the last span, to prevent the mouth of the drain from choking with trash and sand. We return to the gully, and run the other way to the west fence, and to the first span we give one and a half inches fall towards the south fence, then one inch to the next span, and continue that fall to the end, and turn it up two inches at the fence. We have a drain row with a fall of from one inch at the west fence to two, and lastly, three inches fall at the other end. The gully by the fence takes the water into the ditch below.

The drains having been laid off and staked, so as to know them, we lay the rows off on a level as above stated for No. 1. Should they break, the guard-drains will arrest the water, and remove it when desired. This will suffice to explain this method.

SECTION XXVI.

Horizontalizing this Hill by the Grading Method.—No. 1.

Suppose we desire to lay off this hill with a fall to the rows, without the aid of drains or hill-side ditches, we would commence as we did for the level method, and lay off the top of the hill on a level, as we find it convenient to discharge the water up there. Then we would lay off the first guide row at the brow of the hill as was done for the level method, but give a fall of one inch to the span of the level towards the south fence. We would lay off a second guide row, where the third guide row is for the level method, at the head of the gullies, and give the same fall as the one above. One more guide row would be sufficient. In plowing out the rows, the plowman lays off a few rows below the first and then a few above the second guide rows, so that the short rows, if any, may be midway between them. Now, if the short rows were to empty the water into any one of the long rows, it would cause that row to wash into a gully. So we plow them on a level. The same disaster would happen if the short rows were to terminate with a fall with a guide row. To avoid that mischief, we lay off long rows by the guide rows, so as to throw the short rows between the long rows as above mentioned.

The balance of the land can be plowed by the third guide row. But we find that they will terminate at the ditch, and there is no provision made for the exit of the

* See Fig. 1. Peach Tree Hill. This hill was laid off by this method in 1851, and the gulleys stopped in two years. As the rows next to the main ditch held water too long in the spring of the year, some of them have been altered so as to give a little fall to them, to empty the water at the fence, and then into the ditch. The hill-side was plowed as deep as one good mule could do it, and it has improved and produces much better than it did the first year with the same management.

water. We have either to lay off a drain by the side of the ditch, or lay off two rows next to the ditch and parallel to it, and make a drain of the water-furrow of the second row next to the field. This is the best plan if the land adjoining the ditch is higher than the adjoining land. The graded rows then empty into that furrow, and it is conveyed to the gully by the side of the fence, and from thence into the main ditch.

But should the ditch have too much fall to admit of the above plan, we should have to adopt some other plan to receive the water and to discharge it into the ditch. We should have to plow all the rows in the angle of the ditches on a level, or cut a guard-drain from the point of intersection of the ditch and south fence, to the north ditch, and give two inches fall to it, and empty the rows in the angle of the ditches into it.

SECTION XXVII.

Horizontalizing this Hill by the 2d Grading Method.

We have to lay off the drains, and then the rows with the same fall as that of the drains. Two drains in the same places as those for the level culture would answer. We would discharge the water at the same fence, and with a grade from one to two inches fall and twelve inches deep and fifteen inches wide. The rows are laid off by the drains as above stated. The first rows above and below the drains should be five feet distant, to give room for the channel and bank of the drains. All short rows should be between the long ones, and plowed on a level. If they terminated into a long one they would wash it, and if they terminated in the drain below they would fill it up with sand.

SECTION XXVIII.

Horizontalizing by the 3d Grading Method.

The rows by this method must discharge the water into the ditches. We cannot explain it so well here, unless we suppose the main ditches and the gully by the side of the fence to act as substitutes for the hill-side ditches. The drains are laid off as by the preceding method, but with more fall, to convey the water off more speedily. We then run the rows with a fall of one and a half inches into the ditches. Many of them will terminate at the ditches and many elsewhere. The liability to wash the land, and the trouble of discharging the water, would make it objectionable on this hill-side, but the method might answer a better purpose on other places.

SECTION XXIX.

Horizontalizing by the 4th Method.

The straight row method could be applied here; and with the protection of hill-side ditches with three inches fall to them, the land would not sustain as much damage as it has done by the same method without the ditches. For hill-side ditches would do for this hill-side, with a fall of from three to five inches, eighteen inches deep, and twenty-four wide. They must be capacious, to receive and retain the sand and water. After they are laid off and staked, the plowman sets his stakes, and plows up and down hill. In cultivating, the plowman has to raise his plow over the banks of the ditches as he passes them. This is troublesome, and he is likely to plow down the banks. This method would do mischief to this hill in a few years, and causes much labor to keep the drains clear, and the banks up. It would be very objectionable to this kind of land.

SECTION XXX.

Laying off Guard-drains and Hill-side Ditches with the Rafter Level.

A skilful horizontalizer can lay off these drains very well, with an Engineer's, and other levels of simple construction, but, as we write more especially for the instruction of new beginners of the art, we shall use the rafter level. We will select the Triangular Ridge, in the same field for operations. It lies North and South, near two hundred yards long, the apex of the triangle being East and the base West, about one hundred and fifty yards wide. The ridge inclines South, East and West, and the water naturally flows South, South-east, and South-west. It is bounded on the East by a fence, on the West by a ditch, on the North by a ditch, and on the South by a flat and drain.

We take the level and go on the ridge where the greatest slope South begins, and the greatest expansion East and West takes place, more properly, where the ridge begins to break up, and spread out into the flat, South, West and East. We set the level across the backbone of the ridge, and

find the exact level, and stick a stake down by the side of the plumb-line, called the medium stake. We now go East, and place the hind foot by the side of the stake, and move the forefoot until the plumb-line settles at the half inch mark of fall on the graduated bar; we then move the level, and put the hindfoot exactly where the forefoot stood, and move the forefoot until the plumb-line settles at three-quarters of an inch fall on the bar; we move it again, and repeat the same movements until we get two and a half inches fall, and continue that fall to the last span of the level, and give it three inches fall; we finally turn down the level to the corner of the fence to six inches fall, so as to give the drain a sufficient curve to catch the water descending in a gully by the side of the fence, and convey it out without breaking the bank of the ditch. We return then to the medium stake, and proceed exactly in the same way for this part of the drain, as we did for the preceding part, until we get to the wet flat bordering the ditch, and from thence to the ditch we give three inches fall, and turn down the line, so that it may enter the ditch at an acute angle, to keep it from being choked at its mouth.

In laying off this line, we stick a long cane at every sixth, and a short one at every third, span of the level. We now lay down the level and examine the line. We find the stakes standing irregularly, some out and some inside of the line, rather zigzag. We re-set them by the eye, and order the plowman to follow us with the scooter plow. We walk from stake to stake, and just ahead of the mule, (who will soon learn to follow,) and leave them for him to knock down and the little boy to pick up. When we reach the end, at the ditch or fence, the plowman waits until we examine, with the level, his furrow, to see if it is correct; if there be any deviations from a correct and regular fall, we mark the places and direct the plowman to run them over. When it is done right, he takes the hill-side plow and retraces the line, throwing the furrow down hill, and thus continues throwing two or three more furrows in the same manner, and the hoe-hands drag out the dirt and form an embankment, making it higher at the fence and ditch, as the danger of its breaking is at those places. The plowman runs two or more furrows in the drain from each end up to the one-inch grade, and stops at that point, as it is deep enough there. When the ditch is finished, it will vary in depth from the medium stake to the ditch and to the fence from six to eighteen inches, and in width from eighteen to twenty-four inches.*

As the wet flat bordering the ditch the whole length of the ridge, needs draining, and as the land has been cross-plowed, and cut into ruts by the plow and water, we conclude to treat it after the method developed in the next section.

SECTION XXXI.

Horizontalizing with the Grading Method.

No. 3.

We give a fall to the rows of one inch to the dry land and three inches to the flat.

We commence and lay off a guide row where the wet and dry land join, at the hill-side ditch, and run north to the main ditch. This row is nearly straight. The plowman lays off all the rows by it to the main ditch in the wet land, with the same fall, and four feet apart. We go to the medium stake, and lay off a row North, on the backbone of the ridge, and find it varies but little from a straight line, and terminates at the North angle of the ridge at the ditch. We give it a fall from that point to the hill-side ditch of one inch to the span of the level. The plowman now lays off the rows on each side of this row by it, to the first guide row and to the fence. We see that it is done correctly, and put in a short row occasionally, to keep the correct and regular grade. In cultivating this ridge, we have had to make a few water-furrows across the rows in the wet flat with the plow, to drain it quicker during heavy showers. This is all the trouble we have had with this ridge since it was horizontalized.

SECTION XXXII.

Guard-Drains.

Below this hill-side ditch we have made three guard-drains, two on the East side of the ridge, and one on the West, the first one about fifty yards from the ditch, and the second one thirty yards below that one, both nearly parallel to the ditch. The first one about half the length of the ditch, and the second one not quite so long as the first; both have a grade of from one to three

* See Fig. 1, H. S. D. Triangular Ridge.

inches; they are twelve inches deep at the outlet, and six inches deep at the heads, and fourteen inches wide.

The one on the West side of the ridge is in the shape of a capital E, and the lower end of it is a double drain, receiving and discharging the water on both sides of it into the main ditch.

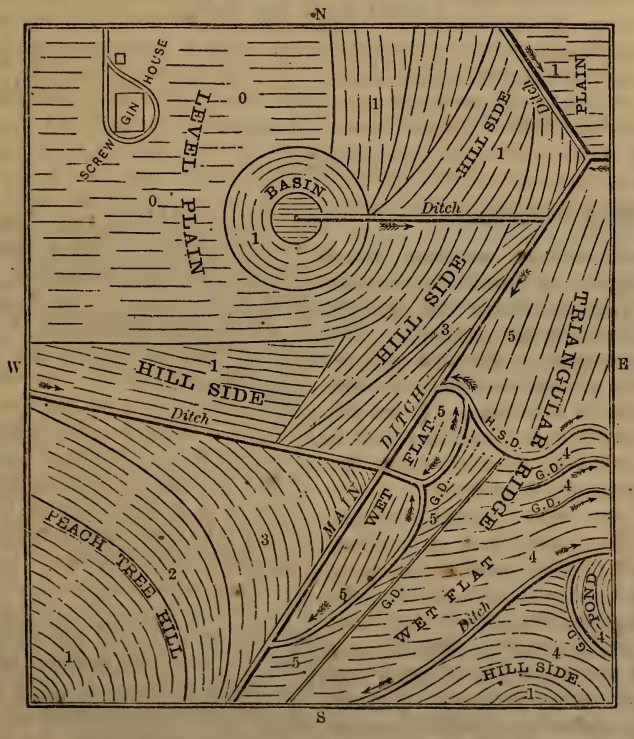
The two first are laid off in the same manner, commencing at the fence and proceeding up into the field.

The third drain we commence at the hill-side ditch, into which the drain discharges at the North end, and curves up and down, and then up and down again, to the main ditch South, and just before it reaches the main ditch it divides into two, separated merely by the bank. The middle of the E connects with a drain that leads to the ditch, making three outlets for this drain, one into the hill-side ditch, and two into the main ditch.

We need not describe the laying off and constructing of guard-drains, as it is the same as for the hill-side ditches.

We might write many more pages on this subject, to illustrate the minutiæ of this beautiful art, but as the *Essay* is already much longer than we desire, we refrain, but will illustrate it by a couple of *figures* for the examination and study of those who take sufficient interest in the art, and hope to make it sufficiently intelligible for the understandings of my readers.

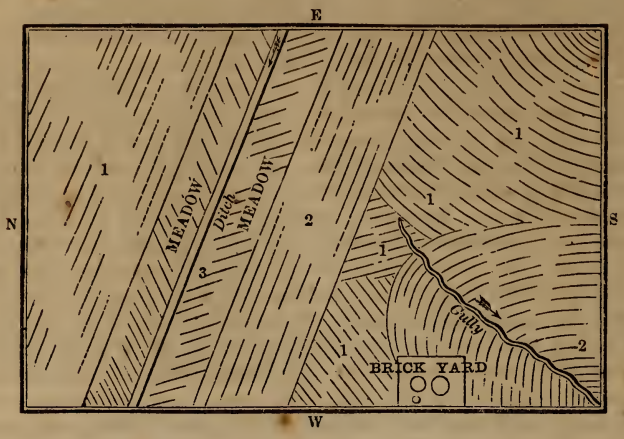
FIG. 1.—GIN HOUSE FIELD, 45 ACRES.



EXPLANATION OF THE FIGURE.

0. Straight rows by the eye.
1. Level Method,..... No. 1.
2. " " " 2.
3. Grading Method,..... " 1.
4. " " " 2.
5. " " " 3.
" " " 4. Not illustrated.

FIG. 2.—BRICK YARD FIELD, 10 ACRES.



EXPLANATION OF THE FIGURE.

1. Level Method,.....No. 1.
2. Grading Method,..... " 1.
2. " " ..... " 3.

The gully was stopped in two years.

Hints to Farmers.

Be Systematic.—Here we have one of the first principles of successful agriculture. Let all your transactions be conducted in a business-like manner. Take note of every operation, whether you buy or sell, receive or disburse, sow or reap, make a promise or a bargain. To do this, it will be necessary to keep a diary, and we would say, do so, if for no other object than as a ready means of comparison.

Be Thorough.—Never half-do anything yourself, nor permit your men to glide over their labors. "If it is worth doing at all, it is worth doing well," would prove a *golden* maxim to thousands of farmers if they would not only adopt it as a portion of their creed, but exemplify its teachings in their daily life. Away with these *scratchers*—men that go *beneath the surface* are the kind wanted.

Leave your Land in good heart.—It should be the object of every tiller of the soil to leave his land in good condition after the removal of a crop, and, at the same time, obtain as remunerating returns as possible. This can be done only by husbanding all the sources of fertility upon the farm, and adding thereto in every available manner. This is the Alpha and Omega of progressive agriculture. Never boast of a "bank account" if it is obtained at the expense of your farm.

Study your Profession.—It is not alone the energy that wields the spade or holds the plow that insures success. The culture of the mind must go hand in hand with the culture of the soil. The relations of science to the farmer's calling are intimate. Good books are aids in the attainment of knowledge, but, never pin your faith on the *ipse dixit* of any individual—think, experiment and judge for yourself.

Stick to the farm.—Amid your plans for the future, never, for one moment, harbor the idea of bettering your condition by entering the arena of commercial life. Do not exchange a home of quiet, real enjoyment for the turmoil and illusion of a city residence. Barter not sweet repose for visions of empty wallets, nor let notes due on the morrow assume the prerogatives of the nightmare. Very poor comforters for care and anxiety are these little *realities* in the commercial world. *Stick to the farm.* What though hard labor be the every-day command, it is noble, healthful, and conducive to the full development of the whole man.—*Ohio Valley Farmer.*

For the Southern Planter.

The Dairy.

To the Executive Committee of the Va. State Agricultural Society.

GENTLEMEN:

It is a well known fact that throughout Virginia, even in those portions of the State where the natural and artificial grasses succeed as well as in the most favored of the Northern States, and where of course more or less attention is paid to grazing, very little attention is paid to dairy produce. During a portion of the year large quantities of butter are made in certain regions it is true, but this butter is in nine cases out of ten, an incidental product, rather than a primary object of production. The farmer must keep cows to breed from, and to supply milk and butter to his family; if more butter is made than the family requires, it is sold in the nearest town or at the country store, just as extra poultry would be. As to cheese, so little is made that none ever finds its way to market. True dairy husbandry, by which I mean the devotion of the farm to the production of butter or cheese, or both, so that these products become the almost exclusive sources of revenue to the farmer, is almost unknown amongst us. As a necessary consequence of this, the people of Virginia are paying an annual tax, amounting to several hundred thousand dollars, for dairy products to farmers of the Northern States; all of our large cities failing to secure a supply at home, are obliged to import large quantities of both butter and cheese, the first to make up for a deficient supply, and the second to supply the demand for an article that we do not produce at all.

The question naturally arises, does this failure to produce a sufficiency of two important farm products for home consumption, arise from our inability to produce them, resulting from peculiarities of soil or climate? or does it arise from the fact that, our farmers think there is more profit in growing grain, or grazing, than in the dairy? That by far the largest portion of the State, east of the Blue Ridge, is unsuited to the dairy, there can be no doubt, to attempt to make that a dairy country, would be the height of folly, but the case is very different in Western Virginia. The great Valley, and numerous other sections farther West, is pre-eminently a grass country, and it seems to me that, the true policy of many of its farmers would be, to turn their attention to the dairy and cultivate less grain, particularly wheat. I am led to this conclusion by various considerations, some of which I propose submitting to the committee in this communication, with the hope that I shall be able to show that, considerations of interest and policy, call for the introduction and wide extension of dairy husbandry in Western Virginia.

New York and Pennsylvania are celebrated for their fine butter and cheese, and the former is by far the greatest dairy State in the Union. The geological features of these States are the same precisely with those of Virginia, west of the Blue Ridge. A traveller starting from the Ridge and going westward, would come upon the same formations, and in the same order that he would if he started from the northern part of New York, and came southward into Pennsylvania. In both cases he would cross the great *Silurian*, *Devonian* and *Carboniferous*, or coal bearing series of strata, in regular order from the lowest, or oldest, to the highest, or most recent. Now since the soil has its origin in the rocks which underlie it, and its properties, both physical and chemical, are determined in a great degree by the nature of the particular formation to which it owes its origin, it follows that there must be a general resemblance between the soils of New York and Pennsylvania and Western Virginia; and that if care is taken to trace out the boundaries of particular formations, the boundaries and extent of the soils which bear a close resemblance to each other, will also be determined. For example, several of the Silusian deposites known in New York as the Utica Slate, Trenton Limestone, Chemung Group, &c., are extensively developed in that State; wide areas in the counties of Herkemer and Jefferson are covered by the first two, while equally extensive areas are occupied by the latter in Orange, Steuben, Chemung, &c. These counties comprise the very finest dairy regions of New York, and undoubtedly owe their peculiar fitness for this branch of husbandry to their geological features. By reference to the geological reports of Virginia, we find that these same formations, only known by different names, are extensively developed in our State; the first two throughout the length and breadth of the valley, the latter in Monroe, Greenbrier, Pocahontas and Randolph counties; now since the soils of New York, which rest upon these formations, are

so pre-eminently suited to dairy farming, why it may be asked, should not the soils of the extensive region above referred to be equally well suited to it.

But we are not left to scientific induction alone, to show that the soils of this region of Virginia are as well suited to the dairy, as those of New York. It is a fact too well known to admit of question, that the Valley, Pocahontas, Monroe, and numerous other counties in Western Virginia, are fine grass growing regions, that they produce the finest grasses abundantly; and since the fitness of any region for dairy purposes, is determined by its capacity to produce the finer quality of grasses, it follows that the portions of the State above referred to, must be pre-eminently suited to dairy husbandry.

It may be objected that we are too far South, that our summer climate is too warm; to this I would say that, to the farmer who understands his business, and is properly prepared for the manufacture of butter or cheese, this can be no real objection. He can have cool spring-houses, butter and cheese-rooms, cool dry cellars, &c., as well as they can farther North, and while it may require a little more care, he can certainly keep the produce of the dairy sufficiently cool to have it in good condition for market. I know, from close personal observation, that our climate offers no real obstacle to dairy farming; that both butter and cheese of the very first quality can be made, and that they can be made to keep well. Granting, however, that the warmth of our climate requires more care on the part of the dairy farmer, it operates decidedly in our favor in other respects. We have good pasture earlier in the spring and later in the fall than they can have in the North, and our winters being both warmer and shorter than Northern winters, the expense of feeding, during that unproductive season, must be greatly diminished.

The extensive region referred to may, however, be very well adapted to the dairy, and yet dairy farming be unprofitable, or at least not so profitable as other systems; it is proper, therefore, that we should consider the question of the profits of dairying, as compared with the profits arising from the ordinary mode of farming in Western Virginia. Perhaps the strongest argument in favor of dairy farming is to be found in the fact, that in the State of New York, wherever the soil is suited to the purpose—and where it is no better suited to the growth of the finer grasses than our own—dairy farms are considered the most profitable; that the dairy products of New York are increasing from year to year, and that the State Agricultural Society, seeing from an early period of its existence, the importance of fostering this branch of husbandry, has by its premiums, by the dissemination of valuable information, &c., been very active in turning the attention of the farmers of New York to it. If now the dairy is so profitable in New York, can there be any reasonable ground for supposing that it would be less so with us, if properly managed? I think that I can show that it ought to be not only equally profitable, but more so. Hundreds of thousands of pounds of butter and cheese, both made by Northern farmers, are annually sold in our midst; if now the Northern farmer finds it profitable to produce these articles to send to us for consumption, surely it ought to be equally, if not more profitable, to our farmers, who have soils equally well suited to dairy farming, to produce them for so good a home market. With this fact of the importation of large quantities of Northern dairy products before us, taken in connection with what has been said in relation to the peculiar adaptation of many of our soils to the production of these articles, it must be shown that our farmers are enabled to turn their grass and grain to better account than Northern farmers can, before the argument in favor of dairy farming can be shown to be fallacious.

As this matter of profit is of primary importance, and as the information at my command was not of such a character as to enable me to compare dairy farming with the methods ordinarily practised in this region, I applied for information to the Secretary of the New York Agricultural Society, who has for years been exerting himself for the extension and improvement of dairy husbandry in his own State. Besides supplying me with valuable documents on the subject, he gave me the names of several gentlemen who are familiar with dairying in all of its details, from two of whom, the Hon. G. Denniston and A. L. Fish, Esq., I have received a great deal of very valuable information, I shall quote largely from these gentlemen.

Mr. Denniston says, in relation to the value of dairy farms, the prices realized for butter and cheese, and the prices of dairy stock, that in Orange and Chemung counties, New York, a good dairy farm is worth

from $50 to $80 per acre, and in Steuben from $20 to $70; that dairy cows are worth from $40 to $60 in the Spring, and from $30 to $50 in the Fall. Butter sells for from 18 to 24 cts, when packed for market, and cheese at from 8 to 10 cts. Mr. Fish says that, "land that *four* acres will summer and winter a cow, is bought and sold, with appurtenances, at from $50 to $70 per acre." With land at such prices, and with their butter and cheese at lower prices than can be realized for the same articles in Richmond, or other Virginia cities, Mr. Denniston says that, "when dairies are kept, but little farming is done—only as much corn, wheat and oats are raised as are necessary for home consumption—*the dairy being deemed more profitable than grain raising.*"

Now assuming that the attention of our farmers had been turned to dairy farming, and that the quality of our dairy products was equal to that of northern dairies, they might reasonably expect to make it more profitable than the dairymen of New York possibly can: 1st. good grazing lands can be had in all of the counties of Western Virginia, for much less than they have to pay for them in New York; 2nd. we have a good home market; in which our farmers could always realize as high a price for their butter as they do in New York, and a higher price for their cheese; and 3rd, our springs being earlier, our falls later, and our winters more mild, the cost of keeping dairy stock would necessarily be much less. In relation to this last point, Mr. Fish says, "We have to feed our dairy cows here with an equivalent to *good hay*, six, and often seven months out of the year, requiring from two to three tons to each cow."

In order that every farmer who may think of turning his attention to dairying, may be able to compare the produce of an ordinary dairy farm with what he himself produces in other crops, I subjoin extracts from the sworn statement of Mr. Halbert of Chemung county, New York, who received a premium from the New York Agricultural Society for the first quality of butter. "My farm consists of 200 acres of land, which was farmed the past season as follows. I have kept and milked 40 cows, and my grain, pasture, and meadows are as follows: 24 acres of wheat; 8 of buckwheat; 10 of oats; 20 of corn and potatoes; 2 of summer fallow; 40 of meadow; 74 of pasture, 22 of wood and waste land. Commenced making butter about the 1st of April, and up to May 4th made 512 lbs, then commenced packing for the fall market. Made in May, twenty-six days, seven hundred and forty seven lbs.; in June, 30 days, made eleven hundred and eighty-six lbs.; in July, 31 days, ten hundred and seventy-nine lbs.; in August, 31 days, ten hundred and sixteen lbs.; and from September 1st, up to December 15th, which is about the close of the season for making butter, three and a half months, nineteen hundred and forty-eight lbs. I sold my dairy, this year, for 23 cents per lb., which amount was five thousand and thirty-four lbs.; the spring butter, the butter that was sent to fairs, and the butter that was made after the dairy was taken off, amounted to fourteen hundred and fifty-four lbs.; the whole averaging 23 cents per lb., amounted in cash to fourteen hundred and ninety-two dollars and twenty-five cents. This is over and above family use—and our family will average over eight in number—which makes an average of $37 50 per cow, including heifers."

This is exclusive, too, of the pork made from the butter-milk, which is an important item of profit in every butter dairy.

In comparing the product of this farm with our farm operations, it should be borne in mind that as 114 acres, or about two-thirds of the arable land of the farm is in grass, 74 being pasture; the labor required to carry it on is necessarily much less than if it had been devoted principally to grain, and the price realized for the butter, 23 cents, was from three to five cents *less* than can always be gotten for the same quality of butter in the Richmond market, at that season of the year.

While, considering the relative advantages of dairying, and growing grain, it should be borne in mind that in raising grain, and selling the greater part of it off the land, as every grain farmer must, there is a constant drain upon the soil, whereas in making butter the drain is nothing, as every thing taken from the land in the grass, is returned in the manure. In making cheese there is more or less drain upon the land, but nothing like so much as in growing grain. Mr. Denniston says, that the farmers of New York, find dairy farming to be the very best means of restoring land, that it goes on increasing in fertility from year to year, without interruption.

Granting, however, that it is more profita-

ble to devote the lighter and more easily worked soils of Western Virginia, to both grass and grain, or to mixed husbandry, there is still a large class of soils which could be more profitably employed for dairy purposes than for any other. First, there are many soils that are difficult to work, on account of the nearness of the underlying rock to the surface, or where the rock is constantly protruding in large masses through the soil. Such soils usually make fine pasture, and when in pasture, may be kept in good condition for an indefinite period, by simple top-dressing. If, however, they are cultivated in grain, the result is unsatisfactory; the soil is difficult to work, requires more labor than ordinary land, and the yield is necessarily very precarious. Second, we frequently meet with land well adapted to grass, but so steep as to make it difficult of cultivation, at the same time it is almost impossible to cultivate it and prevent the surface soil from being washed off. All such lands if laid down in good seed, and top-dressed occasionally with the manure from the cow-house, would be just as valuable for dairy purposes as any other.

But I am not left to mere comparisons and speculations, to show that the dairy may be made profitable with us. I have the experience of farmers in our own midst, who have tried dairying—on a small scale it is true—and yet sufficiently extensive to prove to them that it is profitable, if properly managed. Mr. Gibson of this county has a farm which he devotes exclusively to the dairy, believing that it yields him a larger return in that way than he could get from it in any other. His business arrangements are such, that he can pay but limited attention to this farm, so that it is, he says, less profitable to him than he could otherwise make it, he sells his butter at the Institute at a shilling per pound for six months of the year—the period during which the greater part of it is made—and at 20 cents the other six months, and his profits are *ten per cent on the capital invested.* This butter is equal in quality to Goshen butter, and were it packed, and sent to Richmond in winter, would sell for as high a price. Mr. Gibson keeps thirty cows, and a sufficient number of hogs to consume the buttermilk. He has a dairy woman who learned her business in Germany, and who thoroughly understands it in all its details.

The cheese dairy is not regarded as quite so profitable in New York as butter; with us it would undoubtedly be the most so. In all this region, and in the grass growing region to our West, the only cheese we get comes from the North or West, and is brought to us by the merchants, who, to make a profit on it, are obliged to sell it to us at from sixteen to twenty cents, or even more, depending upon the quality. At such prices, or any thing approaching them, the production of cheese could not be otherwise than profitable. It takes about three gallons of milk to make one pound of butter, while the same milk will, according to Mr. Fish, make three pounds of cheese. Where cheese is worth but eight or nine cents, and butter twenty-three or four, the latter, when we consider the superior value of buttermilk over whey for feeding hogs, is no doubt the most profitable; but where cheese is worth almost as much as butter, the former becomes much the most so. There can be no doubt then of the profits of the cheese dairy so long as we have so good a home market; but suppose the home market fully supplied so as to bring down the price, we still have Richmond, and other cities to send to, where the prices of cheese are always higher, by several cents, than those realized by Northern dairymen.

It appears from an estimate very kindly furnished me by Messrs. Bacon & Baskervill of Richmond, that there are about 1,000,000 lbs. of butter sold annually in that city, and 2,000,000 lbs. of cheese. Of the former about 600,000 lbs. is of northern and western production, while the whole of the latter is the produce of northern dairies. The northern butter ranges in price from twenty to twenty-eight cents, depending upon the time of the year; or the tax paid northern farmers by the city of Richmond, is not far short, of $144,000. The wholesale price of ordinary northern cheese is from ten to eleven cents, and western from nine to ten; putting the whole at ten cents, we have the sum of $200,000 as the tax paid in one of our cities for this article—this leaves out of the account all fancy brands, such as "pine-apple," "imitation English," &c., which always command a much higher price.

With such facts before us, it becomes us all to give the subject of the dairy due consideration; and especially does it become the farmers of the grass-growing region of the State, to consider whether dairy husbandry

ought not to receive more attention than it has heretofore had at their hands.

In what I have said in relation to prices, profits, &c., I have assumed the production of a superior article of both butter and cheese; to make any thing else could not but result in loss instead of profit. If any of our farmers propose going into the dairy business, they must be prepared to send butter and cheese into Richmond, Petersburg, &c., of such a quality that they may compete successfully with the best northern articles, otherwise the prices realized will be two low to leave much of a margin for profits. For this purpose the butter must be well made, and well packed, so that it will keep well, and must be put up in clean, inviting looking firkins; while the cheese, after having been properly made, must be kept until it is thoroughly cured before it is sent to market.

In order to meet the wants of any farmers who may feel disposed to give the dairy a fair trial, I have obtained from Mr. Denniston a very full account of the method of making the "Orange County" butter of N. Y., which is regarded as the standard of excellence, together with complete directions for the manufacture of "New York stall cheese. He has also given me numerous directions as to pastures &c., &c., all of which will be found to be particularly valuable, not only to the dairy farmer, but to all who keep cows, and have any butter or cheese to make. These directions are in the form of two communications, in answer to numerous inquiries that I have addressed to him, they are so full and complete as to leave nothing to be desired, and I give them in Mr. Denniston's own words.

"The cellar, where the milk is kept, should be cool, well ventilated—clean. The milk ought to be strained into pans containing 10 or 12 quarts each. If the weather is very warm the pans ought to be set on the cellar bottom—otherwise on shelves. The milk ought not to be churned until it becomes thick, or loppered—the milk and cream are then churned together. Some dairymen skim off the cream and part of the milk and churn that, but Goshen butter is churned from the *milk and cream*. The churn used is the common "dasher churn," driven by dog, horse, or hand power according to the size of the dairy. The churn may be half or two-thirds full with milk; and a pail of cold water added before starting to churn. In cold weather warm water is put in. The churning should be with a slow, regular motion—and to make good solid butter will take from one hour to one hour and a half—before the churning is done, another pail of water ought to be put in. When the butter is done, take it out, wash it through one water in a large tray, throw the water out, then salt the butter, using about one ounce of pure Liverpool ("Ashton") salt to each pound of butter. Work the salt through the butter—put it in a cool place and let it stand an hour, then work it carefully over, and set it aside for five or six hours—work it over again, and set it aside in the same cool place until the next morning, when it is packed. In working butter great care ought to be taken to *work out all of the milk*—but not to work it too much, so as to break the grain, and make it "salvey." If any milk is left in, the butter will *soon become rancid*, if worked too much it will be "greasy" or "salvey," and not solid. Butter worked just enough will be *solid—sweet—yellow*—and the drops of brine on it will be "*clear as crystal.*"

"Orange County butter is packed in white oak firkins—the staves selected so as not to leak the brine—the firkins will weigh about 18 or 20 lbs. empty. The firkins are soaked in pure cold water for some days before using, by being filled with the water—they hold from 80 to 100 pounds of butter. When the firkin is full, a linen cloth is placed over the top of the butter, and on this cloth a layer of salt an inch in depth is laid, made a little damp with cold water. The butter stands until marketed, then the salt and cloth are taken off—a fresh cloth wet with brine put on, and the firkin headed up. Great care should be taken to have the firkins kept perfectly clean. The outside ought to be as bright as when turned out by the cooper. No leaky firkin, or any that will filter the least particle of brine, ought to be used. This is the way Goshen butter is made."

"One of the best butter-makers in Chemung County manufactures as follows: The milk is put into 12 quart pans, and set on the bottom of the cellar where it remains until it becomes loppered. It is then, both milk and cream, poured into churns which hold a barrel each. A pail full of water to six of milk is added, and the whole brought to a temperature of 68 degrees. The churning is done by horse power, and re-

quires two horses. Just before the butter is fully come, another pail full of water is put into each churn to thin the buttermilk, so that the butter may rise freely. The butter is taken from the churn into large wooden bowls, thoroughly washed with cold water, and salted with one ounce of Ashton (Liverpool) salt to each pound of butter, and lightly worked through with a wooden blade. It is afterwards worked at intervals of about three hours, three or four times with a common ladle, and packed into firkins the next morning."

"Butter, when packed, should be kept in as cool a place as can be found until it is sent to market—a cool cellar is the best place. Dairy butter is generally marketed in November and December. Our dairymen generally sell fresh, the butter made in spring before grass comes, and that made last in the fall after grass—they pack as long as the cows can be kept on good grass. Many feed their cows cornstalks in autumn, and continue to pack until winter."

"The proportion of pasture and of meadow land depends altogether on the season, and on the grass. Clover will not feed as long as timothy and the finer sorts. The true rule is to keep the pasture fresh by changing *from field to field*. Cows are very nice in their selection of food, they will select as cautiously as any epicure if they have a chance, and to make them profitable for dairy purposes, they *at all times* ought to have *plenty of grass and water*. In our climate we allow that two tons of hay per cow is none too much for winter, at your place less probably would answer. Corn meal is good food for cows in winter and early spring, with hay. It is very important that cows be brought through the winter in good condition, their value for dairy purposes depends on this. In our State the dairymen stable their cows through the winter, keep them warm and comfortable, and feed them well."

"In all our dairy districts, the land becomes more rich and productive from year to year. I am acquainted with acres that have not been plowed for twenty-five years; the sod is stiff and rich—the grass thick and fine. It is never fed down, except here and there in patches, the cattle selecting the finest and sweetest portions, treading the rest down into the earth to enrich the succeeding growth—thus adding to the productive capacities of the soil."

"To produce good butter, the grasses ought to be a mixture of clover, timothy, blue and other finer native grasses. We lay down our lands with clover and timothy—the white clover, the sweet vernal, and other fine grasses, come in the second or third year, making fine, sweet pasture for several years after. Where we intend to make butter, we let our land lay in sod for a number of years—the older the sod, the finer and more nourishing the grass. We prefer to restore our grass lands by top-dressing, rather than to plow and re-sod. Newly seeded lands do not produce as good grass, for dairy purposes, as old."

I would simply add, in this connection, that Mr. Gibson's dairy woman informs me, that our own blue grass, when well set, makes better butter than any other, or any mixture of grasses that she has ever seen tried.

Manufacture of Cheese.

"The manufacture of cheese consists in the complete separation of the curd from the whey, and in the proper compressing and curing of the curd. There are leading principles, relating to every stage of the manufacture, that should be noticed.

1. The evening and morning's milk are used. The evening's milk is strained into a tub, and the next morning added to the morning's milk. The temperature of the milk is then raised to from 84 to 90 degrees, by putting it into a tin vessel, which is floated in hot water. From 84 to 90 degrees is the proper temperature for the milk to be coagulated.

2. Use calf's *rennet*. This is prepared by turning out the contents of the stomach, turning the stomach inside out, hanging it up to dry, and afterwards packing it down in salt. The rennet is used by steeping a small piece in a cup of "luke-warm" water, adding a little salt. The rennet is put into the milk when the latter is at a temperature of 90 degrees, and just enough is added to make the milk coagulate. Continue to beat the milk until the curd appears distinct from the whey; this can be ascertained by pressing the surface of the milk; if the curd appears to be coagulated and solid, and the whey a pale green shade, it is a proof that the curd is in a condition to be separated from the whey, and to become fine and smooth in breaking; but if the curd

appears soft, it is not ready for breaking, and must remain until it is.

3. When ready, the curd is broken by a *cutter*, formed of wire crossing an inch apart. This is pressed through the curd, perpendicularly, in different directions, so as to separate it into small and equal parts. The finer it is broken the sooner it will separate from the whey. The time occupied in breaking the curd must be determined by circumstances. The curd must be in a condition to separate from the whey; also, to be broken even; as a general rule, the process must be continued until the curd is separated into fine and uniform parts, and appears to be tough enough to become separate from the whey.

4. As soon as the curd is settled, and the whey appears clear on the top, begin to dip the whey off, and to scald; the heat is applied faster or slower, in scalding the curd, according to the action of the rennet, as that acts rapidly or less so. The practice is to raise the temperature gradually from that of the curd, when broken up, to 90 degrees, and from that to 106 degrees. While scalding, the whey and curd are kept in motion to keep the curd from running together, and that it may be equally cooked throughout—the time varies from half to three-quarters of an hour, and sometimes longer. The test by which to know that the curd has been *cooked enough*, is, that it will feel elastic, and when chewed between the teeth will "*squeak*."

5. As soon as it is sufficiently cooked, it is separated from the whey; this is done by dropping it on a strainer spread over a tub or sink. The curd should fall in at a temperature of about 94 degrees, when it is to be salted.

6. The salt used ought to be pure Onondagua or Liverpool; one pound of salt to 40 of curd. The curd is salted when warm, say 94 degrees, and when well drained of the whey. It must be worked fine, so as to work the salt uniformly through the mass. During the salting process the temperature should fall from 94 to 75 degrees.

7. As soon as the salt is thoroughly worked in, and packed for a few minutes until the curd sinks in temperature to about 72 degrees, it should be put to press. If put to press at a higher temperature it will be tough and strong—if lower, it will crumble and not press together.

8. The press ought to vary from three to ten tons weight, according to the size of the cheese; the cheese ought not to be pressed too hard at first, as it will drive out much of its richness with the whey. Press twelve hours, then turn it and press twelve hours longer.

9. If we wish to color the cheese, we use "*annatto*;" incorporate it with the *rennet*, and apply it in setting the milk with the rennet.

10. After the cheese is taken from the press, it should be cleaned of all blotches or scum that may have risen to its surface, and sufficient oil and beeswax rubbed on to keep it from cracking. This being observed strictly, and the cheese turned over from day to day, a rind will be produced that will be impervious to flies.

11. The oil used to rub the cheese is "whey oil." The whey stands until a scum rises upon its surface, which is skimmed off and cleansed; the milk is worked from the butter, it is then tried down until all the milk and water escape, and it becomes what we call "whey oil." The cheese is turned over every day, and this oil rubbed on quite warm all over the surface, but be sure to rub no more on than will become readily incorporated with the rind.

12. After the cheese has been pressed, it is important to put around it a bandage of *thin muslin*, this is done by cutting the muslin into pieces of sufficient width to pass around the cheese, and over the edges about one inch. It is soon drawn on (by one who understands the process) with a thread and needle. This will keep the cheese from spreading and cracking.

13. It is important to watch the cheese, turn them every day and rub them to keep them free from defects, and to preserve the rind. In about three months from the making, cheese is fit for market.

To make the business profitable, the farm ought to be good for grazing, with plenty of living water on it for the cows at all times."

From Mr. Fish, I learn that "All varieties of soils that grow grass are stock soils, but our best dairy soils are what we call *uplands*, free from standing water, thoroughly impregnated with lime, yielding all the varieties of clover, timothy, red-top, &c., in the same sod, furnishing fresh food during the grazing season. No one kind of grass will be good pasture through a whole season—to seed for pasture, sow many kinds at once." He also says, that "Our best dairy-

men sow in drills an acre of corn to every ten cows, which is fed when in blossom, *if needed*, if not it is cut and dried for winter feed. It makes good milk for butter or cheese."

I have already referred to the fact, that a very considerable amount of butter is made in this region in the summer months, more a good deal than can be consumed at home, hence much of it must find its way to Richmond, Petersburg, &c. I learn from Messrs. Bacon & Baskervill, that about 400,000 lbs. of Virginia butter is sold in Richmond annually; a very large portion of which is "very inferior, being badly made, and much of it rancid before reaching market; the average price of which is about from 12 to 25 cents, a very small amount of nice 'mountain roll' commanding the latter price." By comparing these prices with the prices of Northern butter, we find that the latter will average at least ten cents per pound the highest. We are then, besides paying the heavy tax already referred to for 600,000 lbs. of Northern butter, in the single city of Richmond, actually losing $40,000 on the butter that goes there from our own State, and all for the want of care in the making and packing.

Let us consider for a moment how our butter gets to market; we shall then be able to understand why it is so inferior, and at the same time to suggest what will at least be a partial remedy. Taken as a whole, the butter is much better made than its condition, when sent to market, would seem to indicate; it is true that want of care in making, is one cause of its inferiority, but this is not the only, or the principal one. The greater part of all the Virginia butter that goes to market, and nearly all that is really poor, is packed at the country stores; where families give the subject sufficient attention to pack for themselves, it is an accident if the butter is not good.

Whatever butter is for sale in the family, is taken to the nearest country store; the merchant buys it in exchange for goods; if he can sell it out again from the store very well, but in certain seasons, just when the butter keeps good the shortest time, it accumulates on his hands, and he is forced to pack it. It of course has to stand some time after making before it is packed, which of itself is an injury to it, and when it is packed, very little, if any, selection is possible—good, bad and indifferent, golden yellow and milk white, sweet and strong butter, must all go in the same firkin, from which the air is never excluded from the time the butter is packed until the day it is sold. The natural effect of all this is, that before the butter can be gotten to market, frequently before it leaves the store, it is rancid, the proportion of poor butter being almost always sufficient to spoil the whole; when it is sold, the merchant, who could not afford to give a fair price for the article in the first place, is doing very well if he realizes the price originally paid; his profits, if any, are made on the goods sold, not on the butter.

Again, by the way in which butter is sold every where, except in the cities, a premium is offered for butter that is but half worked, the price is the same, no matter what the quality, and hence butter that is poorly worked, and still retains a portion of butter-milk, being heavier, actually brings the highest price.

Now the remedy that I would propose is, for the farmers, or better the farmers' wives, to see that their butter is properly made, and carefully worked—they could do no better than follow the directions for making Goshen butter—and then if the home demand is not sufficient to ensure a good price for it, let them have it packed in nice clean firkins, as it is made. The more frequently churning is done the better will the butter be, as a general thing; frequent churning prevents the possibility of the milk or cream getting "cheasey." The vessel containing the cream should always be kept cool, and well stirred every time an addition is made to its contents. Mr. Gibson's dairy-woman, whose butter I have already referred to, makes it a point to churn daily in summer; when the number of her cows will not warrant this, she keeps her cream as cool as possible, and the first thing on going into the dairy in the morning stirs it well, taking care to leave none to dry on the sides of the vessel.

In packing butter it does not matter so much about the quantity put in at once, if proper care is taken. After having been thoroughly worked, so that the drops of brine standing on it are "pure as crystal"—none other should be packed, as it cannot be kept sweet—the butter should be put in the vessel, very carefully pressed down, so as to force out all air bubbles, made smoothe on the top, and covered with a clean linen cloth, moistened with water, on which is placed a

layer of about an inch of clean damp salt. When the next churning is ready for packing, let the cloth be carefully removed, so as not to spill any of the salt on the butter; pack down as before, replace the cloth, and so continue until the firkin is full. The butter should be kept as directed under the head of butter making. The firkin should be tried before it is used, to see that it is perfectly water tight. Families that do not make butter enough to pack, may keep their surplus butter fresh for a long time, by carefully working it, making it up into rolls and dropping them into strong clean brine; the brine will exclude the air, without affecting the taste of the butter in the least. This plan has been practised in my own family for years, and we have no difficulty in keeping our butter fresh as long as may be necessary. We sometimes purchase a two months' supply of fresh butter in mid-summer, and invariably find the last roll as sweet as the first.

By packing their own butter farmers would not be obliged to sacrifice it in summer, but could keep it until late in the fall or the winter, when it almost always commands a fair price even at home—a much higher price at any rate than can be gotten in summer; if, however, the quantity made during the season was sufficient to make it an object, it could all be sent to market in the nearest city, as readily as the farmer ships his wheat or flour. The merchants would soon see the necessity for making a proper discrimination in price between good and bad butter; and would find it more to their interest to pay city prices, freights, commissions, and a small profit off, for a good article of packed butter, than to pay the ordinary price for a poor article that they must pack for themselves. Then, too, those who had heretofore been careless or indifferent about the quality of their butter, finding that a good price could only be had for a good article, would soon see the necessity for giving it more attention; thus a stimulus would be given which would improve our dairy produce generally, and at the same time make it more remunerative than it ever can be, so long as the present system is practised. WILLIAM GILHAM.

V. M. I., April 1859.

Truth is the most powerful thing in the world, since fiction can only please by its resemblance of it.—*Shaftsbury.*

For the Southern Planter.

Horizontal Culture and Hill-Side Furrows---By Whom Originated?

In the April number of the "Planter" is a very interesting article by N. T. Sorsby, Esq., of Alabama, on "Horizontal Ploughing and Hill-Side Ditching." Therein is ascribed (justly I presume) to Col. T. M. Randolph, of Virginia, the honor of having introduced into this country the improved method of cultivating rolling lands. Mr. Sorsby does not state that hill-side ditches were originated by Col. Randolph, but supposes their use followed on the heels of his improvements, say about 1815 or 1816.

Of Col. R.'s innovation Mr. Sorsby says, "it would be gratifying to know whence he introduced it and where it originated."

In the Abbé-Raynal's History of the East and West Indies, published about 40 years earlier than the date above specified, the principle is fully developed. I cite the passage. B. 11th, p. 468 of Lond. Ed'n. of 1776.

"One might prevent the danger of having shelving grounds destroyed by storms, by making furrows transversely on a line that should *cross* that of the *slope* of the hillocks. If the declivity were so steep that the cultivated grounds could be carried away, notwithstanding the furrows, small drains something deeper might be added for the same purpose at particular distances, which would partly break the force and velocity that the steepness of the hills adds to the fall of heavy rain."

The author was prescribing a remedy for the abrasion of lands in the West India Islands, which are peculiarly liable to washing rains. He does not affirm that he had ever seen the plan adopted; on the contrary, he leads us to infer that it is an original suggestion of his own, so that it still remains an open question "*whence* horizontal ploughing was *introduced?*" Be that as it may, it is clear that the idea was no new one at the time that Col. Randolph was credited with its origination. Unless he had never seen the book in question (which is improbable) the honor awarded our Virginian should rest on his just claim to have been the first to demonstrate the beneficial results of the new system to us. H.

To forgive provocation is one of the proofs of a great mind.

The New American Style of Cottages and Villas.

In attempting to introduce an American style, I have cherished the same motives that have prompted other foreign architects to the same task with their respective countries; and as we are now beginning to appreciate what is true art, and the beautiful, I have reason to believe that my efforts towards the production of an American style will not be fruitless or fail to be recognized by every lover of art. I have endeavored to conceive the exterior and interior architecture as characteristic of the manners and customs of the people, and at the same time different from all other foreign styles. The principles combined are the following:

1. The exterior architecture characteristic of the life of the occupant.
2. Characterizing by external details the different interior apartments.
3. Spirit and poesy of designs.
4. Unity and harmony of the masses, exterior details, and colors.
5. Combining every requirement of comfort.
6. Exterior and interior grandeur.
7. An equality with the interior apartments so essential to beauty; and
8. Economy in construction and simplicity in detail.

All of these principles will be found upon this miniature example which I offer as only an introduction. In relation to the principles combined, I will describe them briefly.

With the 1st—I have here shown the characteristic for a village merchant; the statues and the simplicity of the details giving it an air of liberality and love of art. 2nd. In defining this principle, which I claim as original, I will describe the characteristic for each room. In this instance, the parlor is represented by the bay window and statues, they being the richest part of the exterior. The dining-room (not seen in this view) is represented by a wide window and its details. The kitchen disguised in this instance from its situation. The entrance a distinct and interesting object in itself, the main bed-room by the wide window over parlor, and the servants' rooms by the diminutive windows. With the 3rd principle, the outline and its form are full of life and interest. With the 4th principle a uniformity with the windows and details, an equality by their situations, a bold relief and perfection of rafters of roof, and the colors used in painting. With the 5th principle, (I have here shown the owner's requirements,) entering, you have a large hall, doors to every room from hall—a beautiful staircase, hall lighted by window over front door—dining-room communication with kitchen by means of the two passages, one by the hall passage way, the other by the butler's pantry—kitchen has large fire place, sink on one side, dresser on the other, and a small wood house by kitchen door, marked A. The small room marked B is a boudoir, for the purpose of the lady of the house entertaining her morning visitors without using the parlor—on second floor are four bed-rooms, closet to each, the door of each room communicating with hall stairs, and also a linen closet and store-room in wing. With the 6th principle the position of rooms, their proportion and equality gives the appearance of grandeur. With the 7th principle, all doors and windows are in equal parts of the rooms. And lastly, with the 8th principle, economy in the construction and simplicity of all details—the wing a story and a half, the apex of roof connecting under eaves of main building—the first story is 11 feet high, second 10 feet, the second on the wing 7 feet 6 inches. In regard to ventilation, the small openings seen on the exterior are small ornamental boxes, 6 inches wide, 1 foot high, having valve shuttles and a small window on inside, both window and shutters opening by means of a cord, pulley and spring.

In winter it is perfectly tight—the situation is one foot below the interior cornice, and ornamental in appearance. This residence is built in a substantial manner, filled in with brick—roofs of tin, painted light blue—body of house a light shade of sienna, trimmings, &c., four shades darker. The effect of the whole is an air of repose and harmony, which is always interesting to behold, and I hope from this introduction I will find many friends who will give this example a just criticism—and that this example will convey a comprehensive idea of my efforts towards the production of an American style of architecture. Should any of the many readers of this journal contemplate building, I should be happy to furnish them designs and practical estimates, etc.

Respectfully,

LAWRENCE R. VALK,
627 Broadway, N. Y.

N. B.—The cost of construction will be $2,200, with decorations externally and internally. It can be built for $1,850 in plain style, and the same external decorations be preserved.

For the Southern Planter.

Experiments With Sombrero Guano, Etc.

CHANTILLY, Fairfax Co., Va.,
March 28th, 1859.

MR. EDITOR:—Can you inform the readers of the Planter of the results of experiments with Sombrero Guano, also the guano from Nevassa Island, applied directly, or broadcast to the crop separately, not compounded with other fertilizers of known power and effect? My own experiment with half a ton of Sombrero, from Fowle & Co., Alexandria, Va., on corn in the hill, proved to my satisfaction that it was almost worthless; certainly less beneficial than an equal application of ashes, applied at the same time under like circumtances in all respects. Phosphatic Guano, if soluble and active, (as many cargoes of the Mexican, Colombian and African proved to be,) are to our grass growing and shift system of agriculture, surely the only guanoes which will pay, if used for a series of years; it is therefore very important that careful experiments with these Phosphatic Guanoes, should be made the present season, and made in a manner to test practically their value, to insure this, they,—whichever the party experimenting may select, must be applied alone and not compounded, as advised by

those offering them for sale. After their respective merits are clearly ascertained, then any compound may be made, that may be deemed desirable. Peruvian with a soluble phosphatic guano, like the samples of Colombian used by me from Fowle & Co. in 1856–1857—in the proportions of one of Peruvian to two of Colombian, have proved in my case more valuable than any specific manure I ever used; and it is to ascertain for myself as well as the farming community, from actual experiment, the value of these guanoes, now so generally recommended by dealers, that I have been induced to make this request and these suggestions through your valuable paper.

Your obedient servant,
S. T. STUART.

Fruit Growing.

Winchester, Va., March 21st, 1859.

MESSRS. AUGUST & WILLIAMS:

Gentlemen,—Looking over my memoranda of *work* to be done in March, I find this item, ☞Remit $2 00 to Southern Planter,☜ which I take pleasure in doing, thereby securing to myself the exclusive privilege of abusing you as much as I please, if a number misses, for the next twelve months.

The articles in the Planter, upon Fruit, have been very acceptable to me, as I have leisure, occasionally, to bud, graft, and prune, and always time to consult the Planter, to ascertain how these things are to be done.

I am propagating from an apple that originated in this neighborhood—no doubt a seedling, (as it is an old field tree,) therefore better suited to our climate. This apple is a great keeper; it is no rare thing with the gentleman, who owns the original tree, to present his friends with the fruit of two seasons, that is, the apple of this and last year, together, each eatable; size of fruit, one-quarter larger than Newtown pippins; color, pale yellow; flesh white, brittle and juicy; tree constant and prolific bearer. I have a small orchard, which, with care and *no grazing*, will come into bearing in a year or two, consisting principally of this fruit. I am convinced our native apple is better than those from the North. I once obtained a few of the celebrated keeper, the Ribston pippin, (English,) and they proved to be a Fall apple with me; and from what I see of the Baldwin, Rhode Island Greening, and Northern Spy, they will not make a keeper with us. Now, sirs, if you could christen my apple with some *highfalutin* name, I might induce *amateur* fruitists (of responsibility) to exchange a few cuttings with me.

Yours respect.,
H. M. BAKER.

We take the liberty of publishing the letter of our friend, that it may meet the eyes of those of our subscribers who are engaged in fruit growing.

Messrs. Davis, Sinton, Guest, Robey, Taylor, and Tudor, all have nurseries, and understand the business thoroughly. To them we refer our friend for any information he may need in their line.

Our correspondent's item of "Work for the Month," has never been before published. We like it greatly, and cordially recommend it to the attention of our subscribers, who we hope will not fail to make a similar entry in their note books, *and act upon it accordingly*. We are strongly inclined to ask our neighbors, the industrious and hard-working Editors of our "exchanges," when they make up their list of of items of "Work for the Month," not to fail to insert so valuable a hint as "Remit $2 00 to Southern Planter."

Ornamental Gardening.

THE ANEMONE.

The anemone has long shared the attention of the florist, and, in his arrangements, has generally been associated with the ranunculus, resembling the latter in its natural habits and requisites of culture. The single and semi-double flowers are considered nearly as fine as the double ones. The sorts are numerous; but, at present, are seldom distinguished by names. In a fine double anemone, the stem should be strong, erect, and not less than nine inches high.—The flower should be at least two and a half inches in diameter, consisting of an exterior row of large, well-rounded petals, in the form of a broad, shallow cup, the interior part of which should contain a number of small petals, mixed with stamens, imbricat-

ing each other. The colors should be clear and distinct when diversified in the same flower, or striking and brilliant when there is only one tint.

Of late years, anemones remarkable for the magnitude of their flowers and the brilliancy of their hues have been added to the list, and make a most attractive appearance. The plant continues long in flower, and the leaves often remain so long green, that it is difficult to find a period of inaction in which to take up the roots. It has been recommended that, as soon as the bloom is over, the bed should be screened from rain, by mattings, until the leaves wither. As the tuberous roots are rather brittle, they require considerable care in handling. A bed of single anemones, it may be remarked, is a valuable addition to a flower-garden, as it affords, in a warm situation, an abundance of handsome and, often, brilliant flowers.

GENERAL CARE OF FLOWERS AT THIS SEASON.

At the present time, the whole collection of flower-plants should be looked over, and wherever there is a deficiency of stock, a fresh supply should be brought on. Seeds of various plants should be sown—rare and choice ones re-potted. Camelias will now be nearly out of bloom, and will soon begin to grow; syringe them well every fair day, and keep them moist at the roots; prune all straggling plants into shape, and perform the operation of inarching. Pelargoniums will be growing rapidly, and some of the earliest showing bloom; water rather more liberally, and tie out the shoots as they advance in growth. Roses in small pots should be shifted into larger sizes, and cuttings put in for a young stock. Japan lilies, which have attained a good growth, may now be changed into larger pots. Fuchias will now begin to grow, and should be shaken out of the old soil, and re-potted in fresh, rich compost. Azalias should now be freely watered, and young plants in small pots may be shifted into larger size. Heaths require to be kept as cool as possible, and their shoots should be often topped. Cactuses will now begin to grow, and should have a rather more liberal supply of water. Petunias, verbenas, heliotropes, salvias, and all the various fine-bedding plants, should now be propagated from cuttings, if the stock is not sufficient.

CAMELLIA JAPONICAS.

The camellia Japonica, or Japan lily, is one of the most beautiful of evergreens for the greenhouse or conservatory. It propagates freely by cuttings, the single-flowering kinds being increased in this way, to be used as stocks, on which the finer varieties are multiplied by grafting, budding, or inarching. Cuttings of the last year's wood should be taken about three inches long, cut below a joint, the lower leaf removed, and then planted firmly in pots of sandy loam. Pot them, when rooted, singly into the smallest-sized pots, and keep them in a frame. In this they are kept, being re-potted as they require it, until they are wanted as stocks. The choice varieties are better for growing without much artificial heat.

After they have done flowering, they should be kept in the greenhouse, or some other suitable situation, until they have made their growth—when a sheltered, out-door situation, free alike from sun or covering, and, with plenty of air, will suit them best. They like plenty of air at all times; but, while growing, it is necessary to keep them from draughts of cold or drying air, which cause them to curl and become stunted, spoiling all the beauty of the new growth.

Grafting, budding, and inarching should be done just before the buds start on the sort to be multiplied, and just as the stock begins its growth. The proper soil is two-thirds loam, one-sixth turfy peat, and one-sixth decomposed manure; these should lie together for some time, out of the reach of heavy rains, and should be thoroughly mixed. They are readily raised from seed, if the seeds are put in as soon as ripe, and placed in the greenhouse. When the seedlings have advanced one season, and the first year's wood is ripened, the bloom may be very much hastened by inarching the top upon a strong stock; but this is only worth doing in the case of such as indicate novelty. The plants require always to be kept very clean.

FLOWER-GARDEN SOILS.

The operation of digging is the most efficient method of moving the soil of a flower-garden. Although tiresome, as well as disagreeable to an inexperienced person, a little practice makes it comparatively easy, so that in a moderate degree it may be done

with facility, even by a lady. The spade used for this purpose ought to be light, for convenience of handling—bright in the blade, for parting readily from the soil—and sharp at the cutting edge, that it may need less force to press it into the ground. In the same way as in trenching, an opening, or furrow, must first be taken out at the end where the work is to commence, and the earth to be carried to the end, where it is to finish, ready for filling up the last furrow. A second furrow or trench should then be dug in a line with the first, dropping each spadeful of earth in a reversed position into the open trench, and taking care to bury the manure properly, if any is used. By proceeding thus in a regular manner, from right to left, and then back again from left to right, the whole piece will, when finished, present a level surface. In digging for immediate planting or sowing, pains must be taken to break the lumps, and reduce the soil to what is called a fine tilth. All stones should, of course, be carefully removed, as well as all other undesirable substances, and this can only be thoroughly done when the soil has been well pulverized.

TRANSPLANTING EVERGREEN SHRUBS.

All shrubs, and especially large ones, should have an ample supply of water when they are transplanted; and this is most effectively given when the water is run into the new pit or hole in which the plant is placed, along with the filling in of the earth, beginning when the hole is about one-fourth filled, and continuing till it is nearly quite full. The quantity of water should be such as to form a strong puddle round the ball; this mode of watering keeps the roots moist, as well as consolidates the earth about them, and if carefully done at first, will scarcely require any addition. If the water is not administered till after the earth has been fully pressed in round the roots, frequent repetition and larger quantities will be necessary.

There has been much difference of opinion, and many discussions respecting the most suitable season for transplanting evergreen shrubs. Some recommend the autumn months, and others prefer the spring, carefully avoiding, at either period, frosty and withering weather. It is admitted by all, that the transplanting of evergreens should not be attempted when the plants are in full growth; for though even they survive the shock, the chance is that many of them will perish or die down to the ground. It seems also ascertained, that the loss of evergreens when transplanted is caused by the excess of perspiration from their leaves, compared with the quantity of sap taken up by their mutilated roots; and that, consequently, dry, parching weather, at whatever season it occurs, is, other things being equal, a most unpropitious time for the operations of transplanting.

SEEDLING ROSES.

To hasten the blooming of seedling roses, the seedlings should, when they come up in May, be kept well moistened, but not too wet, until they can be well taken hold of, in order to pot off. Put one each into the smallest-sized pots, and let them, as soon as they are established, be placed in the shade, out of doors, but the greatest care must be taken to prevent the attack of the fly, or vermin of any kind. They must be looked at daily, and upon the least appearance of fly, the plants must be placed under cover, and fumigated and syringed regularly. It is still better, if there is frame room, to put them in when potted, because it gives an opportunity of shading, of keeping off too much wet, protecting them against wind, and of fumigating without the least difficulty, when necessary. They should, however, seldom have the glasses on. After they have been five or six weeks in these pots, they may be bedded out in rich beds of loam and manure, without disturbing the balls; they may be planted about a foot apart, in beds four feet wide. Before the close of the budding season, many will have grown quite large enough to breed from, and the most promising may be cut back, and three or four buds put on remarkably strong stocks. Select a strong branch for budding on, and, at first, let some portion of the branch beyond the bud be left on to grow; a very small shoot beyond the bud will do to draw the sap past the bud. These buds will strike off vigorously the next season, and make considerable growth; but before the bud has shot far, cut the stock away everywhere but the portions budded on. The growth they will make this summer on strong stocks will insure their blooming the next season.

New York Mercury.

The Southern Planter.

RICHMOND, VIRGINIA.

Guano.

Since the introduction of this fertilizer into the United States, we are inclined to believe that a majority of our farmers have paid less attention than formerly, to making and husbanding putrescent manures. In relying upon it entirely, as the means of making a crop, we are satisfied that all who have done so, have committed an error which they have probably by this time regretted. "Bought wisdom is best," and there are doubtless many agriculturists who are largely out of pocket, for the information they possess on the subject of Guano, while they are inclined strongly to suspect that in this case they may have paid rather too dearly for their "whistle." This is a true picture of our own case, at all events. We have for several years past been afraid of Guano, for the same reason that "a burnt child dreads the fire."

From having often witnessed the almost magical effects of guano, applied to poor and sandy soils, we supposed that the use of 200 lbs. per acre, amounted to an insurance against loss in a wheat crop, while the land would be left certainly improved. But having acted on this belief, we lost our crop of wheat (in part) in consequence of "scab," and the ravages of "chinch bug," and were compelled to give up our theory, and change our practice for one more economical. We have not abandoned the use of guano entirely, nor have we relied upon it wholly as a manure, except for potatoes. We find it a valuable adjunct to the ordinary manures of the farm, which may be made richer in ammonia and inorganic constituents, by the addition of a little guano and plaster combined. When we have used it for this purpose, the mode of application was to sow it lightly over the manure heap, on a wet and "drizzly day."

We are satisfied that various and very different results attend the use of guano, depending not only on the modes of application, but on the soils themselves. For instance, we have seen the most profitable results of its use, on *red clay* soil. Next to this, on warm and sandy lands, while upon "grey clays," we have rarely seen *any* improvement of the land after the crop was gathered, and very often the crop itself has not been sufficiently augmented in quantity, to justify any outlay for guano.

We give our readers some of our own *opinions, merely*, about guano, which we beg may be understood as such only, and not on our part stated as positive facts. 1st. Guano should be used sparingly, until its effects upon, or rather adaptability to the soil, may be sufficiently apparent to free its use from any of the risk, so often attending upon "guess work." Will it pay? should be a question to which every farmer ought to have a satisfactory reply before venturing on any experiments with high priced fertilizers at any time; but greater than usual caution seems to be required now, since field crops have suffered so many unusual disasters, within the past four years, from accidents and enemies, hitherto not very common. 2nd. "Elide Island Guano" is as good as "Peruvian;" in fact, from what we have seen and heard of its effects, we think about it, as the Irishman did of men when being asked "if one man was not as good as another?" he replied, "Indade, I think so, and a great dale betther." The crops of wheat in this vicinity, where this guano was used last fall, are unusually promising at the present time. Some allowance must, of course, be made for the wet season, which has been favorable for the full development of the effects of every kind of guano. We have, however, heard it so highly praised by persons who have used it, that we do not rely upon the present appearance of the wheat crop, in forming our opinion of its excellence. 3rd. "Ducked Guano," which is usually sold by dealers at a low price in consequence of its condition as "damaged," we do not believe is at all injured—if it has been "ducked" in salt water especially. The best crops of wheat and corn we have known to be raised on two particular farms in Henrico, have been produced by the use of "ducked guano," combined with a quantity of plaster sufficient to render the guano dry enough for sowing. 4th. The application of guano, to crops of almost every kind, at the time of sowing, is cheaper and more efficacious when a

drill is used in preference to the old way of sowing it broad-cast. 5th. Guano mixed with dry ashes, is much improved in value by the combination, although scientifically the two are held to be chemically incompatible. If *any* water is added at the time of mixing, the escape of the ammonia is rapid and injurious; hence both the ashes and guano should be perfectly dry at the time of mixing, and the sooner the compound is plowed under, the better. We have seen this experiment tried, with beneficial results, both as to the crop and the land.

If the experience of any of our friends does not agree with these notions of ours, we should be happy to hear from them, and to know wherein we have erred.

We also invite attention to Mr. Stuart's communication, (to be found in our present number,) and solicit reports of the results of any experiments which may have been made by any of our readers, with Sombrero, Nevassa and Colombian, guanos uncombined with others. We have had no experience with them. Of the different varieties of "Manipulated," now offered in market, we suppose the greatest difference between them to consist in the different names of the manufacturers, viz: Kettlewell, Reese, and Robinson, as they all claim to contain 8 per cent of ammonia, with from 45 to 50 per cent of Phosphate of Lime. Nor do we doubt that they are in their composition all that these gentlemen represent them to be. We intend to use this spring "Manipulated Guano" on our tobacco crop. *We* have not had experience enough with these Guanos to justify us in complimenting them as highly as we have heard some farmers do, in whose judgment we had full confidence, but we can say with the utmost propriety, that these guanos are so thoroughly prepared by machinery, as to save a deal of trouble in "sifting" and breaking lumps. They are sent to market in admirable order for farmers' use.

A new variety is just introduced to notice, called the "American Guano." The published analysis of it is very unsatisfactory, as the per centage of *Sulphate and Phosphate of Lime* is given in such a way as to leave every one in the dark, as to the relative quantities of the two articles. We should prefer to know the exact proportion of the Phosphate of Lime included in the stated per centage of 71 to 72.50.

Plaster is easily procured, and at a much cheaper rate than it can be bought for in any kind of guano, however largely it may figure as a constituent element thereof. We understand that analyses have been made by Dr. Maupin, of the University of Virginia, and by Major Gilham, of the Virginia Military Institute. *Why are they not published!* The high authority of these names would greatly promote the sale of the article if reported of favorably by them. Unless they are published we shall be governed by the legitimate inference from that fact, and abstain from its use, and from recommending it to our friends.

The Valley of the Rappahannock.

We find in the April number of *De Bow's Review*, an interesting and well-written article, from the pen of our old friend and neighbour, George Fitzhugh, Esq., describing the principal points of interest along the Rappahannock. To those of our readers who can procure the "Review," we commend Mr. F.'s articles as a means of becoming acquainted with one of the most charming sections of the State.

We enjoyed a pleasant home for years, in the midst of the neighbourhood of which Mr. F. writes in the April number at a period of our life, when all its objects seemed "couleur de rose."

We thought then, as we think now—

> "There is not in this wide world
> A valley so sweet."

Nature has been very liberal in her bounty to this valley. The most beautiful scenery everywhere meets the eye: the soil is quick and warm—admirably adapted to both farming and gardening purposes, while it always gives a generous return for liberal treatment. The river not only furnishes a ready means of conveying to market the large crops of grain grown on its banks, and fish, oysters, and wild fowl of all sorts as luxuries for the table, but adds an ever-present beauty to the landscape. We had almost said, "a living can be had for the asking," throughout the "Valley;" but it can be had *without* the asking. Hospitality, the most liberal, kind, and genial, meets every visitor. He may be sure of a hearty welcome, and good cheer, go where he may within its borders, and it is his own fault if he does not feel at home.

While we know very well what *Nature* has done for our agricultural friends in that section, we are sorry that we do not know what they are *doing for themselves.* They have facilities

for going ahead of most farmers. The land is easily cultivated. Marl of good quality abounds; lime can be easily procured at a cheap rate, while all the crops grown in the State can be raised in remunerating quantities per acre.

Will some of our old friends occasionally let us know, at least, that they are not "lagging behind" in the race of improvement, while they possess so many and so great natural advantages for progress?

A New Book.

THESAURUS MUSICUS; *Or, the United States Collection of Church Music, containing the most complete variety of the New Psalm and Hymn Tunes, Sentences, Anthems, Chants, &c.*, for the use of the Choir, the Congregation, and the Singing-school, ever offered to the American people; Comprising, also, all the popular old Choir and Congregational Tunes in general use. By L. C. & Dr. A. B. Everett, Richmond, Virginia.

Such are the title and pretensions of a new work on church psalmody which has been laid on our table by Mr. J. W. Randolph, of this city. We confess to entire ignorance of the *science* of music, but we are not insensible to the pleasures of natural taste, when excited by good performances, whether vocal or instrumental. With the above avowal, our recommendation would avail but little, but seeing that its place of publication is *Richmond*, our "Southern feeling" was enlisted in its favour; we therefore consulted with some of our friends, on whose opinions and judgment we could rely—and feel happy to add, that they think the work is entitled to the merit claimed for it. We feel safe, then, in recommending it to our readers.

"Onions, and How to Raise Them."

We return our thanks to Orange B. Judd, Esq., the accomplished Editor of "*The American Agriculturist*," for a copy of the Pamphlet on this subject, which he has recently published. It contains full instructions as to the best mode of raising the onion, furnished by *seventeen* practical growers of the crop.

American Veterinary Journal.

We are very sorry to learn, from the annexed circular, that we are to loose the "American Veterinary Journal" from our exchange list, for even a short time. It deserves to be well kept, so as to be able to "go along" whenever called on.

Dr. Dadd has been industrious and useful, in disseminating knowledge of the veterinary art. We believe his Journal was the only one in the United States devoted to the scientific treatment of the diseases of horses and other domestic animals, and we hoped it might be the means of exploding many errors in the popular veterinary practice, as well as improve the condition and treatment of horses. We hope to see the Journal soon "enlarged and improved," and with a long list of paying subscribers. We will forward subscriptions for any of our friends free of charge.

"BOSTON, March 26, 1859.

"DEAR SIR:

"I take the liberty to inform you, that the publication of the 'AMERICAN VETERINARY JOURNAL' is suspended, with the March issue. The only explanation I have to offer is, that in consequence of remissness on the part of subscribers for the past two years, my pocket-book is now the seat of a very severe attack of dyspepsia, which threatens to confine me and my family to a diet of shorts.

"With many thanks for the favours bestowed on me through the pages of your valuable paper,

"I subscribe myself,

"Very Respectfully Yours,

"GEO. H. DADD."

Deep Sea Telegraph.

A friend has sent us a letter of our distinguished countryman, Lieut. M. F. Maury, (read before the Royal Dublin Society, Jan. 28th, 1859,) on the difficulties to be overcome in successfully laying the "Deep Sea Telegraph Line." We have been much interested in its perusal, and return our thanks for the pamphlet containing it.

Lieut. Maury entertains no doubt of the ultimate success of a telegraph across the Atlantic.

Our Agents.

The following gentlemen have kindly consented to act as our agents, who are authorized to give receipts in our names for payments due the "SOUTHERN PLANTER," by either old or new subscribers:

JNO. W. BURKE, Alexandria, Va.
MAJOR P. WILLIAMS, Washington City, D. C.
WM. F. CATLETT, Guiney's Depot, Va.
TURNER & ACREE, Walkerton, K. & Q., Va.
JOHN T. CHILDREY, Henrico.
JAMES N. GOLDSBOROUGH, Easton, Md.
GEO. C. REID, Norfolk.
BENJ. F. GRESHAM, Newtown, K. & Q., Va.
F. N. WATKINS, (at the Farmers' Bank,) Farmville, Va.
SAMUEL SANDS, Esq., Baltimore, Maryland.

University of Virginia.

This noble Institution—the pride and "crowning glory of Virginia"—which has outstripped even the power of imagination in its glorious career of progress and usefulness, finds itself (as we learn) under the imperative necessity—with some six hundred and thirty or forty matriculates now crowding its halls—of enlarging its accommodations for the reception of at least fifty additional students.

We enjoyed the gratification, last summer, of attending some of the commencement exercises of the Institution, and were gratified beyond our limited power of expression, with the matured fruits of high intellectual training and cultivation exhibited in the various performances of the young men, which it was our privilege to witness on the occasion.

All honor to the Great Masters, whose plastic hands are thus modeling the youth of the State on the high standard of moral and mental qualification, of which the Faculty themselves, we are proud to say, do constitute so eminent a type.

We have before us the fine address of Professor Venable, of Columbia College, S. C., delivered before his confreres of the Society of the Alumni, on the occasion above referred to. We could wish a copy of it were in the hands of every reading man in Virginia. We close this notice with a few extracts from it, which we endorse with unqualified approbation, and commend to our readers as worthy of their attentive consideration.

"Who can doubt that the loyalty of patriotism is heightened by the bestowal, on the part of the State, of the means of satisfying the highest and noblest aspirations of its sons? Who can doubt that a prosperous National University, under the control of the Federal authorities, and thronged by youths from all quarters of the Union, would be a most powerful and even dangerous element of centralization in a government constituted like our own? Or that a great State University, combining the qualifications which we have given, would accomplish more than any other means to preserve the spirit of loyalty to the State, its honour, its sovereignty and its institutions? Yes, though every spot of earth from the mountains to the seaboard may be sacred soil to our love for our dear old mother, is not that love strengthened, heightened, purified, when we think of this her noble creation to which her sons can come and receive the liberal gifts of learning at her hands.

"A comparison of our alma mater with the systems of which we have spoken, we leave to others to make. Says a distinguished and impartial traveller, Von Raumer, 'The University of Virginia would readily admit of such further improvements as the present age demands.' A modest compliment apparently, but still one which can be applied to very few of the great schools of the United States. Yes, it is a noble foundation on which to build a great cis-Atlantic University, second to none on either continent. The vigour of its intellectual life, the zeal for learning which it has spread among the youth of the State, its high standard of attainment, giving rank to its professional schools and to the training of its academic schools somewhat of that special professional character appropriate to University education, are all harbingers of a great future. The nucleus of endowed Professorships is here, around which it will not be difficult to gather in some form or other, young and vigorous talent, ambitious of distinction in the walks of philosophy and literature, and we see foreshadowed in this great institution, the crowning glory of Virginia—a greater still—the crowning glory of the South.

"In view of all these things, when so potent an intellectual seeptre seems to be within the grasp of your State, so fitted to bear it by her central position, glorious anteeedents, and conservative character, the heart of every patriotic son of the Old Dominion is sad and indignant to know that, in her legislative halls the rights of her youth are disregarded, their hopes and aspirations flouted as mere dreams of the fancy, and this corporation, which has accomplished more for her glory and power than all others within its limits, refused the pittance needed partially to supply the neeessities, which even her prosperity has entailed upon her. Gentlemen of the Society of Alumni, it is our duty to throw down the gauntlet to the rampant demagogueism which would stint and starve this noble foundation—would even with the cry of the people—the pretence of educating the people, strike a blow at the most important interest of the Commonwealth. Edueate the people! Is not your University the great edueator of the people? Whom must we thank for the reformation of the Colleges of the people and their elevation to a higher standard of attainment and greater usefulness? for the schools which have sprung up throughout your borders, shedding their benign influences upon every class of the people? Where must we look for the source of that energy which eharaeterizes all the educational movements of your State, but to this great central heart, sending its warm and healthful life-blood through all the ramifications of your educational system, incongruous as that system is. And eannot the humblest son of the people come up hither where no aristocracy is acknowledged, but that of talent and virtue, and carve out for himself a career of honour and usefulness?

"Let the people be educated, we will all say—and we will fervently wish that some of our statesmen would imitate the great men of other times and nations, and devote themselves to a thorough study of the subject of primary education and the best mode of performing the duty of the State in that regard.

"But away with that mockery of principle

which would make it any less the duty of the State to bestow that higher special instruction on her sons, which is to provide the people with well trained public servants; which affords to the magistrates, lawyers, legislators, physicians and teachers of the people, the opportunity of thorough studies in all the subjects relating to their professions; and in the words of Guizot, 'which developes those men of superior genius who extend the domain of intelligence; unveil the secrets of Nature; find in ancient monuments the traces of past events; found upon the observation of man, the art so difficult of governing him; and increase the glory and power of their country by bequeathing to it their labours and their name.' If primary instruction of the people is essential to the stability of our government, it is equally essential to its well-being and permanent prosperity, that the higher education be promoted. And in our present position before the world, a high scientific and literary cultivation is an imperative national necessity. It accomplishes little to defend our institutions and boast of them before the world. By their fruits let them be known.

"Nearly ten years have passed away since, at one of these anniversaries, I listened, while a distinguished Alumnus traced in a glowing and eloquent picture, the resemblance of our social organization to that of the nation of antiquity, whose intellectual supremacy all centuries acknowledge—and I saw Virginia, the goddess of my youthful adoration, equipped for the contest, as she stood with her foot upon the chariot ready to enter upon the course of emulation with the past. Since that time brilliant gems have been added to this, the brightest setting in her crown; noble additions have been made to our own alma mater. The tide of her prosperity has rolled on with an ever increasing flood. Even that short period must be a gratifying retrospect for us all. But how much more grateful the prospect, when, properly cherished by the State, not content or complacent with the contemplation of the sister institutions which she has outstripped, but aiming at the high mark of the most perfect systems of instruction which the exemplars of the past or models of the present afford us, she shall take high rank among the Universities of the world." * * * *

"Where will Virginia stand in this great national literature? Will she not be up and doing? Will she not make many glorious additions to the tower of learning and science, which, based upon eternal truth, obtains its fair proportions from all the realms of Nature and of thought? Let her then ever cherish here her youth in lofty cultivation, in thorough studies, in the admiration of the beautiful and great in the actions, the writings, and discoveries of man, of the sublime in the creation of God. Long may the sons of the Republic gather hither to worship in this temple of science and virtue, on whose portals let it ever be inscribed—*Deum timeto; patriam amato; virtutem colito; disciplinis bonis operam dato.*"

A fine coat may cover a fool, but never conceal one.

Nottoway-Club.

We are indebted to the Secretary of the model Agricultural Club of Nottoway, for the following valuable reports, which we hasten to lay before our readers. If all the Clubs scattered through the State, were to pursue the course of the one now under consideration, the Planter would become the medium of communicating to the farming public such a mass of valuable practical information, as would raise it at once to the dignity of a household necessity—a position to the attainment of which through our own unaided efforts, we dare not aspire.

Report on Rotation of Crops, by WILLIAM IRBY, ESQ.

MR. PRESIDENT:

An extended interval of time between hoe crops in connection with a judicious rotation of crops, including a more enlarged cultivation of clover and grass, is our only sure and practicable plan for the recuperation of our worn-out soil, and our only hope for a permanent and progressive state of improvement; as the neglect of attending to these important truths is the main cause of the impoverished condition of our country, so a strict attention to them, is our only remedy. I do not by any means intend to dissuade from a strict attention to the accumulation of domestic manures, and the use of foreign fertilizers; but I do wish to state, emphatically, that with the use of all these, though large crops may, for a time, be made, yet if hoe crops succeed each other at short intervals, and no regard be paid to rotation, it must prove a deteriorating system. We must, under a judicious system, depend on the native recuperative powers of our soil; for even if we had large quantities of our poor farm-pen manures and vegetable matter, we could not afford to haul them the distance we would often have to do, in order to apply them where they are needed. These thoughts are not of course intended to be applied to farms near cities, where rich stable manure may be obtained, but our section of country, where lime and plaster are inefficient, and where the farms are necessarily thrown on their own native resources for improvement.

In the early, and even down to a recent period of our history, the only system was to clear the forest, cultivate tobacco as long

as the land would grow it, then a wheat patch, (according to the old idiom,) then corn and oats, as long as the land would produce them,—and then stern necessity required that it should be thrown out as commons, with little or no hope that it would ever recover. But thanks to the despised old field pine, to which a large debt of gratitude is still due, for it sprung up spontaneously on land so exhausted, that neither corn nor oats, nor even grass suitable for cattle could grow; and by its long tap roots raised from the subsoil, and by its falling leaves, restored to the exhausted surface, those inorganic ingredients so necessary to profitable crops. Not only so, it affords vegetable matter for humus and shade, which, according to Baldwin, is the only thing necessary for making poor land rich. To this necessitated rotation, (viz: the old field pine,) I do not hesitate to say, we have derived more benefit than we have (up to this time) from the combined results of lime, plaster and clover. But this rotation, however beneficial it has been, is not now practicable, for we have not the virgin soil to clear, while the exhausted land is lying out in pine for forty or fifty years; nor, indeed, is this rotation desirable. The philosophy of a rotation of crops is based on the fact that while all plants live mostly on the atmosphere, yet all require inorganic or mineral ingredients, which they can obtain from the soil only. Some classes of plants derive more of their sustenance from the atmosphere than others, and some take up more of one or more of the mineral ingredients of the soil than others. A judicious system requires that dissimilar plants in the above respects, should follow each other.

Secondly It is known that particular species of destructive insects prey on particular plants. In order to prevent their increase, a change of plants is necessary.

Thirdly. Regard should be had to a suitable preparation of the soil by one crop for the subsequent one. But a long interval between hoe crops, giving time for the grasses to form a sod, thereby preventing the washing off of the soil, by which our lands have been more injured than by all other causes, is perhaps more important than any, or even than all of the above considerations.

When the forest land became scarce, and it became painfully evident that the constant cultivation of the land was ruinous, our fathers adopted the three-field system. This, in connection with nongrazing, was confidently expected to reclaim our wasted fields. It is true it had its ameliorating effects in comparison with the former scourging system, but it is not believed that the land, in our section of country at least, could ever have attained a high state of improvement under this system. So far from it, it is evident to every careful observer, that after going up to a certain state of improvement it gradually declined. Rather than adopt this system, I would prefer cultivating portions of the flat land on the farm two years in succession in hoe crops, and let the poorer portions of the upland be cultivated only once in four years.

Since discarding the three-field system, the four, five, and six-field sytems have all had their advocates. In making a selection of a system, the farmer should be guided by the quantity of arable land he has in proportion to his force, and the particular crop he designs as his money or staple crop. The one who intends making large crops of tobacco, and who, of course, will have no time to fallow for wheat, the four-field system is probably the best. The one who intends discarding the tobacco crop entirely, or greatly diminishing it, and making the wheat crop his money crop, should adopt the six-field system. The one who intends to decrease the tobacco crop, and to increase the wheat crop by fallowing, may adopt the five-field system; but if he has sufficient open land, the six-field system is to be preferred, as both the four and six-field systems are more ameliorating than the five-field.

When wheat was high and guano low, I adopted this variation of the five-field system, with which I was pleased,—viz: I grew wheat after tobacco on all my tobacco land, and on the best of my corn land; on the balance of the corn land I sowed oats, instead of permitting the field to remain idle. The third year I fallowed both wheat and oat land, and put the whole field in wheat. The advantages of this variation are, that the ditches which had been cleaned out for corn or tobacco, will not need cleaning out again during the rotation; and secondly, the grubbing and plowing are much lighter than when the land remains idle for a whole year; and lastly, the certainty of securing a fallow is greatly enhanced, as there is less

dependence on rains to soften the ground. All who have attempted making tobacco and fallowing for wheat, have found fallowing both difficult and uncertain, owing to the frequent droughts in August, and the short period that can be devoted to that operation. I have found clover, &c., to succeed pretty well on this system.

Although comparatively few will advocate a system by which the soil is annually impoverished, yet many are guilty of the practice. Tillers of the soil are perhaps more inclined to follow the beaten track, and less inclined to change than persons of any other avocation. Moreover, a change of system is frequently attended with loss, and always with trouble. I am ready to admit that for a long time after I saw the necessity of a change, I was deterred by these considerations. I will now state (I hope without being charged with egotism) for the encouragement of those who are halting, that I found the difficulties in a change of system less than I anticipated, and I do not know that I can put anything down on the score of loss.

Though the immediate improvement resulting from the adoption of a more ameliorating system, is at first scarcely perceptible, yet those who have adopted such a one, have the consolation of knowing that they have made the first and most difficult step, and should be encouraged to persevere, as its good effects are accumulative, for the more they improve, the more easily they may improve. They are also relieved from the unpleasant reflection, that after deducting the many annual necessary items of farm expenses from the gross proceeds, in order to ascertain the net profit, this ugly item has not to be added to the list,—viz: minus from amount invested in land on account of decreased value thereof.

We cannot for a moment suppose that the All-Wise so constituted the earth that man would have to exhaust the soil in order to obtain food from it. For our first parents, (and we in them,) were commanded "to replenish the earth," as well as "to subdue it." There is no doubt but what there is a system of so cultivating the earth, that both man and beast shall have ample sustenance, and it at the same time become capable of supporting a larger and larger population. Having in view these principles, the truth of which all must admit, it appears worse than unreasonable that any one should pursue a plan which he knows must reduce to sterility that portion of the earth entrusted to him. But the pursuing of a judicious system not only relieves one from these unpleasant thoughts, but brings about the pleasant reflection that such a course is in accordance with the designs of the Creator, and that this earth is physically, at least, if in no other way, made better by his having lived on it.

Respectfully submitted,

WM. IRBY.

Report of Experiments with Peruvian and Manipulated Guano, by WM. R. BLAND, ESQ.

To the Farmers' Club of Nottoway:

In compliance with the standing rule of our club, requiring each member to report, in writing, the result of some operation on the farm during the year, or an essay in writing, I regret that, from causes over which I had no control, I am unable to make any report which will tend to establish the correctness of any procedure in agriculture, or the relative value of either of the special manures with which I experimented during the last year; but I will report as far as observed, the results of those different experiments begun, with the intention of reporting them to the club.

1st. On both of my farms, I begun an experiment to test the relative value of Peruvian Guano and the Manipulated Guano, (a mixture of Peruvian and Phospatic Guano,) in the cultivation of tobacco. I used on a strip of land running through the whole length of a piece of pine land new ground, Peruvian Guano at the rate of 150 pounds to the acre, and on each side thereof, the Manipulated Guano at about the same cost per acre. Up to about the middle of July, the experiment on the farm on which I live, seemed to be decidedly in favor of the Manipulated Guano, the leaf and stalk of the tobacco were larger, broader and of a deeper green, and were observed by, I believe, every person who saw that tobacco. At that time the severe drought of the past summer set in, and the tobacco made no farther growth, so I concluded that the farther prosecution of the experiment by ascertaining the relative products in weight, of the different manures, could give no satisfactory information, and I therefore did not complete the

experiment as I had intended at the beginning. The land was prepared in all respects alike, and planted the same day, it is now in wheat, but I have as yet observed no difference in the growth of the wheat. The experiment at my Springfield farm resulted, if any thing, more disastrously than the first spoken of, for at no time could any difference be observed in the growth, and the product was anything but encouraging.

2nd. I endeavored to ascertain the difference in the products of drilled and broadcast wheat, both with and without Guano; the ravages of the joint worm and the rust, which attacked the wheat at an early stage, so blighted the prospect for the wheat crop, that I abandoned the prosecution of that experiment also.

3rd. I then began an experiment with turnips on cowpen-land, and dressed about one half with De Burg's super phosphate. They came up badly, and made scarcely any growth to sometime in October, when some of my cows threw down the fence and ate off the tops of what had come up, but the whole would not have furnished grazing for one hungry cow for an hour.

In regard to the wheat drill, I would state that according to my limited observation and experience, it is a much better implement for rich, than poor land, the water from rains running along the furrows made by the tines, seems to make the land bake, and the appearance of the wheat, as compared with broadcast wheat on similar land, is, I think, not so good as on rich land. Again, regretting the indefiniteness, and much more the unprofitableness of the foregoing attempted experiments, I respectfully submit the same in discharge of the duty imposed upon me. Wm. R. Bland.

April 14th, 1859.

Moral beauty, the reflection of the soul, is as superior to superficial comeliness as mind is to matter. It is a halo which will win worshippers, however unadorned the shrine whence it emanates; for she who looks good cannot fail to be good looking.

Great talkers are like modern banks; they issue ten times the amount of their capital.

The pleasure of doing good is the only one that never wears out.

From the Transactions of the Virginia State Agricultural Society.

An Essay

On the Use of Compost Manures in Seeding Wheat with the Drill, and on Draining Basins on Table Lands by Boring with the Post-hole Auger.

[A Premium of Twenty Dollars.]

Linden, Oct. 18th, 1858.

Edmund Ruffin, Esq., President Va. S. A. S.

My Dear Sir:

I have often reproached myself, because I have heretofore contributed so little to the annals of the Agricultural Society of Virginia. It has not been, as you know, from lack of zeal in the cause, but really because I have had nothing new, or that might not be found in books to communicate. I have lately, however, adopted several practises in sowing wheat, which if not entirely new, have at least not been generally pursued, which seem to me to be of public interest and not unworthy of permanent record. These practises are, 1st, Sowing wheat on corn land with the drill, without plowing; 2d, Sowing wheat with compost manures in large quantity, mixed with guano, through Seymour's drill with the attachment; and 3d, The use of the post-hole auger to bore holes to relieve the basins in our table lands from surplus rain water.

Last fall, for the first time, I adopted the plan of sowing wheat on corn land with the drill, without plowing. This was done at the suggestion of a gentlemen from Culpeper County, who told me he had successfully practised it. The season was very dry and the land somewhat baked, which rendered it necessary to precede the drill with a heavy harrow. I was somewhat discouraged by the opposition of my neighbors, yet nothing daunted I proceeded until I had put in the entire corn field on this place, and part of a field on another farm. The wheat came up beautifully and continued to grow in the most promising manner, until near harvest, when one field was entirely destroyed by hail, and the other so damaged by mildew and other diseases, that destroyed nearly the whole crop in this region, that the yield was greatly diminished. Yet I have no reason to be discouraged by the experiment. I had an abundance of straw, and should doubtless have had a satisfactory yield of wheat but from the disas-

ters alluded to. I am pursuing the same practice in the present sowing, and have already sowed the entire corn field on this farm, and shall proceed to use the drill on other farms to the end of the season. The wheat on the corn land here has already come up with great regularity, and I think promises well. The land this season being in fine order, the harrow has been in a great measure dispensed with. When the field in corn has been cultivated flat, and kept clean, there can be no preparation more neat or efficient than drilling. The advantages of this practise are 1st, that it encourages thorough preparation and the neatest cultivation of the corn land, thereby greatly increasing the crop of corn, 2d, it saves more than half the labor of putting in wheat on corn land, which as usually sown is a very tedious and perplexing operation, and 3d, the sowing is more perfect than it can be done in any other way without great labor. If the land is not clean, a hand should follow the drill to remove any briers, &c., that may infest the field, and to cover any grain that in such spots may be exposed. When the land is clean however, this is entirely unnecessary; the wheat will be much more effectually covered than it can be by the harrow or any other implement except the plough. I would not recommend this practice, however, except where the land has been well cultivated, and is soft and friable as upon good loams.

Two years ago I paid eighteen hundred dollars ($1,800) for guano. With short crops and falling prices I found it inconvenient and inexpedient to incur again this heavy tax, and I determined to look around for some cheap substitute for guano, and to use the drill to economise the guano that I might purchase. Accordingly last fall I bought but five tons of guano, and contracted in Alexandria for two thousand bushels of ashes, which I had heard had been used with success through the drill in Fauquier and King William. I ordered at the same time from Baltimore, Bickford & Huffman's Drill. Owing to the great demand my order could not be filled, and I was under the necessity of purchasing from Rollon & Eastham in Fredericksburg, Seymour's Drill, which turned out to be precisely the thing I wanted, and for my purpose seems to be a perfect implement. Only 600 bushels of the ashes contracted for could be supplied. With five tons of guano and six hundred bushels of ashes, I had to perform the almost impossible task of manuring for a large crop of wheat. The best portions of the fields were sowed broadcast without manure, and I set about with all diligence to procure materials for the drill to supply the place of the guano. The farm yards, quarters and every spot where fine manure could be collected, were explored and all the enriching materials that could be found, scraped together, and after being sifted well, mixed with guano and prepared for the drill. In this way I collected manure enough to dress about (175) one hundred and seventy-five acres. I applied about ten bushels of the compost to the acre, and found when I finished, that I had used an average of (56) fifty-six pounds of guano to the acre. The crop, as before stated, was extremely promising, and I have no doubt, but for the disasters of the last season the result would have been entirely satisfactory. A portion of the guano was applied broadcast.

In order to be better prepared for this season, I set about collecting materials for compost as soon as I had finished hauling out the spring manures. The yards were scraped, ditches scoured, and all the materials suitable for the purpose, were hauled together at odd times and put under shelter in a cow house in the stable yard, and as the pile increased from time to time, the liquid drainings from the stables, from the reservoir in the stable yard were poured on it, and ground plaster sprinkled over it. All the liquid manures from the laundry, kitchen and house were used in the same manner. The result was, that at seed time I had a bed of the richest compost containing more than a thousand cubic feet, and being very compact, when cut down with the spade and sifted, it furnished largely over a thousand bushels ready for the drill. With this compost and such additional materials as were collected from the quarters, &c., &c., I have this season drilled on this farm one hundred and twelve acres, using from 60 to 70 pounds of Kettlewell's Manipulated Guano, and from ten to fifteen bushels of the compost to the acre. I suppose about a quarter of a ton of the compost has been applied to the acre. The drill has put in up to this time one hundred and thirty acres, and will, during the season, put in more than two hundred. It is now at work on my farm on the Potomac, and for want of prepared com-

post, I am using finely decomposed salt marsh earth, from the banks of a large ditch dug through the marsh some years ago. I visited the farm yesterday, and found that this material, with the scrapings from the quarters and the usual proportion of guano, make a very rich looking compost for the drill. Farmers on tide-water have in this material an inexhaustible source for the manufacture of the richest compost. If my experiments should turn out successfully, I shall save in the cost of guano for two hundred acres, about eight hundred dollars, ($800,) and the labor saved in using the drill instead of broadcasting will, I think, be equivalent to the labor of preparing and applying the compost. The wheat drilled with ashes and guano did not produce as well as that dressed with guano and other manures, used with the drill last season. For that reason I purchased no ashes this year, but have relied entirely on my domestic compost. It is unnecessary to remark upon the great saving to the people of the commonwealth, which must be the result of this practise should it prove successful and become general. The compost requires a sieve somewhat coarser than that commonly used for guano. A cheap and admirable one may be made readily with a box of pine plank two feet square and six inches deep, the bottom to be checked with chalk in squares of an inch, and a hole bored with a half inch brace bit at each intersection—the hole to be smoothed with a heated iron rod. Seymour's drill is much the best for this purpose that I have seen. It sows the wheat with perfect accuracy in any desired quantity, and will distribute from one bushel to thirty of compost to the acre if it be fine and dry, and is so readily adjusted that the quantity distributed may be changed without appreciable loss of time even in the same row, so as to accommodate the manuring to the varying quality of the land. The tires are heavy, and do their work effectually even in rough land. I use four horses to give steadiness and power to the machine, though two would work it very well in a clean fallow.

I have four years observed that the wheat growing on the bottoms or basins of our table lands, although they seem dry, is frequently injured by surface water, and winter killed. These spots cannot be drained by ditches, and the deepest ploughing is only a partial remedy. It occurred to me that holes bored to the depth of several feet with the post-hole auger would enable the rain water to pass off through the sandy substratum. I accordingly procured one, and have caused all the low spots in my wheat fields here to be bored to the depth of about four feet. I found the first two or three feet exceedingly hard and impervious to water, but at between three and four feet below the surface, a porous sand is reached, through which the water will readily pass. The result is yet to be seen, but I have no doubt of the success of the operation. Such spots have been sometimes drained by sinking small wells and filling them with stones within a foot of the top. This involves labor, and in Eastern Virginia we have no stone to fill the wells. Elkington, in his system of draining, used boring extensively, but it was mainly for the purpose of tapping secret springs, and drawing off the water on the principle of the artesian well. I am not aware that boring with the post-hole auger to let off surplus rain water through a porous subsoil has heretofore been practised. The auger makes a clean hole about eight inches in diameter and four feet deep.

Please, my dear sir, present these suggestions to the Society for what they are worth. I shall be most happy if they should prove of any service to the agriculture of Virginia.

I remain with sincere respect and esteem,

Your friend,

WILLOUGHBY NEWTON.

Decoration for Houses.

The civilizing, softening influence of art is acknowledged by all who have studied their fellow-moral and mental development, and the accumulation of objects of interest and beauty in a house tends to knit more closely the bonds of family affection, and changes the four walls from a cold dwelling place into a sacred and holy home. All the feelings which spring up in every true man's or woman's breast at the utterance of that word, *home*, are feelings of association, and not of mere locality, and hence wherever we go, and at every stage of our lives, if the associations are pleasant ones, we look back with glowing emotion on the home of our childhood, and to the one we have curselves created. Dryden beautifully says:—

"Home is the sacred refuge of our life."

And it should be our endeavor to decorate this place, of all others, with lovely objects,

and nature's beauties or simple works of art. Unfortunately, there are many that cannot afford to buy these decorations, who still have the desire to possess them and the taste to appreciate; therefore, we will tell our readers how some very beautiful and interesting objects of art and nature may be made at little or no expense.

Green is a color that is ever suggestive of pleasure, and it is stimulating to the eye, and Nature's own tints may be obtained at any season of the year, combined with graceful vegetable forms, by either of the following ways:—Take a carrot, and having cut off the green, cut about the thickness of a cent off the top, let this float on a saucer of water in a warm room, and it will quickly begin to sprout, presenting an object of beauty not excelled by any artist, because it is the work of the laws established by the Grand Artificer of the Universe. Another beautiful decoration may be made from a pine cone. One should be procured that is dried and opened, and the different circles should have grass seed or mustard and cress sprinkled in them, and then placed in a wine glass of water; in a few days the warmth and moisture will give the burr or cone life, and the circles will close upon the seed, which, in its turn, shortly germinates, and, sprouting out all over the burr, makes an harmonious contrast of color between the lively green and sombre brown that has a truly pleasing and novel effect, actually refreshing all who look upon it.

The growing acorn is a very pretty and interesting object to study, and an ornament that teaches while it gives delight. It is thus prepared: Cut a circular piece of card to fit the top of a hyacinth-glass, so as to rest upon the ledge and exclude the air. Pierce a hole through the center of the card, and pass through it a strong thread, having a small piece of wood tied to one end, which resting transversely on the card, prevents its being drawn through. To the other end of the thread attach an acorn; and having half-filled the glass with water, suspend the acorn a short distance from the surface. The glass must be kept in a warm room; and in a few days the vapor from the water will hang from the acorn in a large drop. Shortly afterwards the acorn will burst, the root will protrude, and thrust itself into the water, and in a few days more the stem will shoot out at the other end, and rising upwards, will press against the card, in which an orifice must be made to allow it to pass through. From this stem small leaves will soon be observed to sprout, and in a few weeks there will be a handsome, though dwarf, oak plant.

The forms of crystals are very educative, in an artistic sense, their cold and distinct outlines cultivating an acquaintance with geometric forms, and they are capable of combinations that produce a broad and rugged effect. Alum is a good substance to crystalize. A piece of wire may be taken and bent to form any object that fancy may dictate, and then placed in a hot saturated solution of alum which, as it cools will deposit crystals upon the wire, thus producing a crystal ornament of great beauty. These crystals are translucent, may be colored to suit the fancy by the addition of coloring matter, tumeric making them yellow; litmus, red; logwood, purple; and common writing ink, black. A piece of coke may be made to assume the appearance of a new mineral by placing it in an alum solution, as the crystals will avoid the smooth portions, and deposit themselves only on the rough and broken parts. Sulphate of copper or blue vitrol may be substituted, for alum, but this is a positive blue, and the color cannot be changed.

We think we have for the present given a sufficient number of hints how each home may be made cheaply into a place of ornament as well as necessity, and these little things scattered about the rooms of a house decorate and soften the asperities of papered walls and rigid furniture, adding a look of comfort and a feeling of repose that is the very concentration of true home life. As a people we neglect *taste* in the surroundings of our lives, which should be cultivated; and such little things as we have been describing are important aids. and help the man, the woman and the child to better appreciate the truth of that line of Keats'—

"A thing of beauty is a joy forever."

From the Canadian Agriculturist.

Death of Professor Low.

We regret to learn from the last number of the *North British Agriculturist*, that David Low, Esq., late Professor of Agriculture in the University of Edinburgh, is no more. Three or four years since he resigned his chair in consequence of the declining state of his health, and was succeeded by John Wilson, Esq., who is personally known to many of our readers, and who, it will be recollected, visited Canada during our last Provincial Exhibition at Hamilton, and who has evinced, on more than one occasion, a desire to bring our productions under the favourable notice of the British public.

Mr. Low, it appears, was a native of Berwickshire, and his father was extensively engaged in the management of landed property, and enjoyed a high reputation. His son soon manifested a disposition to follow his father's pursuits, for

which he afterwards showed the highest qualifications. He likewise took an active part in the management of his father's extensive farms in Berwickshire, which was the means of greatly improving his knowledge of practical agriculture, for which he was afterwards so distinguished.

In the year 1817 appeared Mr. Low's first work, entitled, "Observations on the present state of landed Property, and on the Prosperity of the Landholder and Farmer." The termination of the war had greatly reduced prices, and great agricultural distress was consequently felt. The treaties was characterized by mature judgment and marked a sympathy with the position of the tenant farmer, and secured for the author an early and high reputation. In 1825, Mr. Low removed to Edinburgh, where he afterwards resided. In 1829 the *Quarterly Journal of Agriculture* was commenced, mainly at his suggestion; a work that has been since published in connection with the Transactions of the Highland Society, which has done good service to the cause of British agriculture generally, and to which Mr. Low was a regular and most valuable contributor. In 1831, he succeeded Mr. Coventry as Professor of Agriculture in the University; a post which he filled with distinguished honour and ability for near a quarter of a century.

In the Highland Society, Mr. Low always took a warm interest, and rendered it most important services during the greater portion of his life. He was successful in establishing an agricultural museum in connection with the University, towards which he enlisted the aid of the Government and several private individuals; contributing not a little himself.

The writings of Profsssor Low were numerous. Besides the treaties already mentioned, and his numerous contributions to the *Journal of Agriculture*, and the *Transactions of the Highland Society*, he published, in 1834, "*The Elements of Practical Agriculture*," a work of great original merit which has gone through several editions, and was soon translated both into French and German, and highly appreciated on the continent. His large and costly treatise on "*The Breeds of the Domesticated Animals of the British Islands*," in two large quarto volumes. appeared in 1842. It was illustrated with coloured portraits of the animals painted by Mr. Shiels for the museum, the portraits reduced by Nicholson; the price being necessarily high, 16 guineas. The French Government immediately ordered its translation. In 1845 appeared a fuller treatise on the Domestic Animals than was contained in the expensive illustrated edition, without plates, which is the best work on the subject in the English language. Another work soon followed, "On Landed Property and the Economy of Estates," a work which enters very fully into the principles and practices of territorial management. The first edition of an "Inquiry into the nature of the Simple Bodies of Chemistry," came out in 1844, containing many ingenious speculations, which excited considerable curiosity and attention, so that a third edition appeared in 1856.

Professor Low died in the 73d year of his age. His character was high-toned and unsullied, his manners gentle and unassuming, and his loss will be long felt by a very large circle of admiring friends and readers of his works. "So long as the man of integrity and high principle is esteemed and venerated, so long will the memory of David Low remain a bright example in the performance of duties which require a combination of such qualities as sound judgment and high moral rectitude."

Rotation and Deep Soil—A Corn Experiment.

Regular rotation of crops and deep plowing are working wonders upon some of the old and low-worn farms of New England. In the discussions before the Maine State Board of Agriculture, which met at the seat of Government in January, many of the delegates bore striking and uniform testimony to the value of both these practices, especially upon lands that had been cropped hard. One of the members mentioned a field of fifteen acres, "badly bound out," which was plowed three inches deeper than ever before, and after an application of three bushels of Plaster of Paris, produced a yield of 600 bushels of oats. This is forty bushels to the acre. Another reported a yield of 82 bushels shelled corn per acre—56 lbs., to the bushel, from a field similarly treated.

Results very like these could be obtained from many of the old fields in Kentucky, which now grow nothing but sedge and

briers, if deeply plowed, and the application of plaster were substituted by a generous quantity of barn-yard manure, or a compost of which the base should be stable dung and scrapings from the woods.

We have our mind's eye now upon an old field, twelve miles from Louisville, which was treated in this manner three years ago, and gave a yield of corn in return that much more than paid expenses. Without further preparation it was seeded to grass, sown upon the corn stubble, and will this coming season be more than fair pasture or meadow, for one or the other of which it is designed. The corn, in this experiment, was manured in the hill.

Our farmers complain of the great labour and heavy cost of such experiments. But such complaints are without reason. Every farmer who keeps merely two or three horses, four or five cattle, a half dozen sheep, and a dozen hogs, if he will only litter his stalls, pens, and barn-yard, with the cheap litter afforded by the woods a short distance from his dwelling house, in quantities enough to furnish his animals with comfortable bedding, he can have every year, by planting time in the spring, a mountain of compost, such as we have described, that will perfectly astonish his own eyes.

So much for the cost of that part of the experiment. It really costs nothing, for it will pay for itself in the increased comfort supplied to his stock, and the diminished quantity of food necessary to carry them through the winter. As for the labour and expense of hauling out, that is not very formidable, when you post up and look the thing right in the face.

In the instance to which we have referred, after the field was checked off for the seed, a two-horse wagon and three men manured four acres per day—giving to each hill a large shovelful of the compost. The actual expense in this case was probably two dollars per day, but in any case would not be over four dollars, or one dollar per acre. Without the manure, the old field might possibly have yielded 25 bushels to the acre; with it, it yielded about 40 bushels. Difference—15 bushels, which, at only 33½ cents per bushel, is $5.

All this is clear gain, for the cost of hauling out and applying the manure is fully repaid by the condition in which the crop left the ground for grass.

After this field has lain in grass two or three years, it will probably be turned over for another trial, and we will then speak of it again.—*Louisville Journal.*

Domestic Receipts.

Artificial Flowers.—The beauty of these imitations of the floral world depends upon the taste and skill of the makers. The delicate fingers of woman and her quick powers of imitation, combined with an exquisite taste for the beautiful in nature, enables her to excel in this branch of art, which at present is carried to the highest pitch of perfection in the French capital. Although all the finest qualities of our artificial flowers are imported, still great quantities of them are manufactured in New York City, and they may be imitated by many females as a domestic recreation affording much pleasure. The materials required for them are velvet and fine cambric for the petals, and taffety for the leaves, with thin whalebone or wire for the stems. These are cut into the proper forms and pasted together with a solution of gumarabic. The colors to produce the shades are put on with a fine hair pencil in the same manner as drawings are colored and shaded. Carmine is employed to produce the red and pink colors; the yellow is a tincture of turmeric; green of distilled verdigris; blue, neutralized sulphate of indigo; and purple a tincture of orchil or logwood and the oxyd of tin. Great care is necessary in the employment of these colors.

To Clean Gloves.—Lay them on a clean board, and first rub the surface gently with a clean sponge and some camphene, or a mixture of camphene and alcohol. Now dip each glove into a cup containing the camphene, lift it out, squeeze it in the hand, and again rub it gently with the sponge, to take out all the wrinkles. After this gather up the cuff in the hand, and blow into it to puff out the fingers, when it may be hung up with a thread to dry. This operation should not be conducted near to a fire, owing to the inflamable nature of the camphene vapor. The receipts given in all the printed books we have consulted for cleaning gloves are barbarous.

Mahogany Stain.—The color of mahogany may be imitated with a strong solution of logwood and fustic put on boiling hot with a brush. The color can be re-

duced to any depth of shade according to the strength of the liquor employed. After it is quite dry the wood should be varnished and afterwards polished. A varnish made with dragon's blood dissolved in alcohol, and applied in two or three coats will make a very good imitation of mahogany. When dry it should be rubbed down with rottenstone and oil.

Rosewood Stain.—This is made of a strong solution of logwood and red wood, commonly called *hypernic*. It is put on the wood, when hot, with a brush, the dark lines being produced by giving two or three coats, and the light shades one. By washing over the surface of this stain with a week solution of saleratus, it will receive a blueish tinge and appear of a darker shade. When dry, use any kind of varnish for the production of a polished surface.

Yellow Stain.—A decoction of turmerie and a little alum, or the grounds of beer and a little sulphurie acid, makes yellow stain on white wood. Diluted nitric acid brushed over white wood, then exposed to the heat of a stove, also makes a yellow stain; this is the most convenient one for imitating maple.

Browning Gun Barrels.—Mix one ounce of nitric acid and four ounces of the sulphate of copper in a pint of water, and apply this to the surface of the barrel, and set it aside to rust for two days. The barrel must now be rubbed with a stiff brush, washed with lime-water, dried, and afterwards varnished. It is sometimes necessary to apply two and three coats of the acid solution to obtain a proper coating of oxyd. The lime-water neutralizes any free acid that may be left on the iron.—*Scientific American.*

Edmund Burke's Idea of a Perfect Wife.

She is handsome, but it is not a beauty arising from the features, from complexion or from shape. She has all three in high degree, but it is not by these that she touches the heart—it is all that sweetness of temper, benevolence, innocence; it is all that sensibility which a face can express, that forms her beauty. She has a face that just aroused your attention at first sight; it grows upon you every moment, and you wonder it did not more than raise attention at first. Her eyes have a mild light, but they awe when she pleases, they command like a good man out of office, not by authority, but by virtue. Her stature is not tall, she is not made to an admiration of every one. She has the firmness that does not exclude delicacy—all the softness that does not imply weakness. Her voice is soft, low, music, not formed to rule in public assemblies, but to distinguish a company from a crowd it has its advantage, you must come close to hear it. To describe her body, describe her mind—one is the transcript of the other. Her understanding is not shown in the variety of matters it exerts itself upon, but the goodness of the choice she makes. Her politeness flows rather from a natural disposition to oblige, than any rules on that subject, and therefore never fails to strike those who understand good breeding, and those who do not.

What the Earth Gives Us.

Messrs. Editors:—Agriculture may be considered of great antiquity. It is probable, however, that it did not commence to exist with the first formation of society, for it is satisfactorily proved that mankind, in the early ages, derived their subsistence from hunting and fishing, and from the milk and flesh of such domestic animals as they possessed. It is hardly possible for any one, perhaps, to satisfy himself how long the period was from the formation of Adam to the time when agriculture began to exist. Scripture teaches us that Noah was acquainted with the art, and it is probable that his sons transmitted it to the world. History informs us that the ancient Egyptians were well acquainted with agriculture; and under the Roman government, the people of Italy, too, understood all the branches of husbandry nearly as well as the present inhabitants of that country. At the period of the Roman invasion of Great Britain, there is reason to presume that agriculture was but little known there, and very imperfectly practiced. The Romans, however, during the Augustan age, had become successful agriculturists, and at the time of the Roman invasion, the Roman soldiers showed conclusively that husbandry was well understood by them; and when they withdrew from the island, at a subsequent period, obvious marks of improvement in the agricultural art were plainly observable.

From the Conquest to the days of Henry VIII., husbandry had received but little improvement; and during the long period of five centuries, theoretical or scientific know-

ledge of the art was little sought after by the Britons. During the fifteenth century, books containing directions for plowing and tilling the land, began to make their appearance. From this time forward, to the present day, men of enlightened minds began to take an interest in the art, and have illustrated it in the most satisfactory manner.

Somebody has truthfully and appropriately said, that "Agriculture may be regarded as the breasts from which mankind derive their nourishment and support." On account of its usefulness, it is the senior of manufactures and commerce, both of which owe their existence to agriculture. To mankind it is of the first importance, because their temporal welfare and prosperity depend upon receiving a regular and sufficient supply of the various articles cultivated by the agriculturist, so essentially necessary to man's existence.

From the earth's surface, the navy is supplied with timber, cordage, and sails; while flax and wool, hides and tallow, madder, and other dye stuffs, are obtained for the world's consumption. By delving into the earth, the proper substances, such as limestone and marl, are obtained for the purpose of invigorating its surface and rendering it prolific. By penetrating into its bowels, we procure various minerals, such as iron, lead, tin, copper, and coal, which furnish employment to a portion of the community; and by cultivating the soil, man receives therefrom food, which enables him to live comfortably and prosecute energetically his various avocations.

If agriculture is neglected, mankind sooner or later become miserable; but if the common necessaries of life are plenty, society is happy, and the laboring man especially, is better remunerated and more comfortably situated for his toil. When provisions are scanty, other arts are at a stand, and science and mental improvements are neglected. Hence we see in our own favored America, where the means of subsistence are ample, and where labor is sufficient to provide food for us all, the unusual expansion of the mind, and the rapid strides we have made in other arts and sciences, and the dignified position we hold, at the present moment, among the nations of the globe.

Country Gent.

Paint to Endure.

Mr. Rivers says, that boiling coal tar with slacked lime, will make a shining surface on woodwork, and walls of any clay, or turf, which is as imperishable as stone: it is, therefore, better than all the plants in the world, for the outside work of these houses; and I have proved that rough surfaces may be made in this way, as durable and hard as cast iron, by using the dust from a smith's forge, over the tar, as soon as it is brushed on. I had six wooden spouts, each 18 feet long, 4 inches wide, and 6 inches deep, for a particular purpose, and the man who supplied them (God forgive him!) assured me that they would last three lifetimes, if they were kept painted. But they soon turned so leaky, that a painter, with nothing else to do, could not make them hold their parching jaws, for an hour together, in hot weather; so I took the painting of them into my own hands, and gave them three good thick coats of hot tar, and as much of the forge dust, everytime, as the tar could suck in. From that day day to this, these spouts have been as sound as a bell; and when I use tar for paint, I dust it immediately with that smithy dust, and brush off what is not fixed after the tar is quite dry.

[*Cottage Gardener.*

Analysis of the Sweet Potato.

TARBORO', N. C., 8th March, 1858.

Mr. Editor:—In your February number you request some of your subscribers to forward you an analysis of the potato.

The following analysis is by Dr. Emmons, our State geologist:

1000 lbs. of Roots.	Contain.	
Starch	184.23	
Albumen	54.47	
Coagulable Albumen	19.40	
Cassein	9.70	
Sugar and Extract	53.49	
Dextrisu and Gum	6.93	
Fiber	17.09	
Gum Resin	2.07	
Water	641.72	989.10
Silicie Acid	0.24	
Sulp. Acid	0.16	
Phos. Lime and Mag.	2.78	
Lime	08	
Magnes.	07	
Potash	6.37	
Soda	66	
Chlorine	54	10.90
		1000.

I have known one cow-pen lot to fail in producing potatoes. Affording the mineral ingredients on a soil not otherwise suitable, will not make a good crop of potatoes, for I have tried some such soils, &c.

Yours, J. L. B.

Cottage Song.

BY JOHN S. ADAMS.

We've a cottage clothed with roses,
Near a wood
Where the singing birds of summer
Nest and brood:
There in early spring the daisies
Gem the sod,
Looking up to heaven above them,
And to God.

There in holy calm we worship
One above,
Through his works that all around us
Speak his love;
Read we there his will in every
Rock and tree.
While his blessings fall upon us
Rich and free.

Beautiful the morning sunlight
Cometh there,
Crowning Nature at her early
Morning prayer;
And at evening, when the twilight
Closeth round,
Still, devoutly at her worship,
Is she found.

We are not alone, for angels
Come and go,
Walking often through our cottage
To and fro;
Promising to guide and guard us
With their love,
Till we go to live among them,
Up above.

Simple life is ours, we follow
Nature's way,
Learning of her truthful lessons
Day by day;
Striving to fulfill our mission,—
Doing good:
Living happy in our cottage
Near the wood.

Better Late than Never.

Life is a race where some succeed,
While others are beginning;
'Tis luck at times, at others speed,
That gives an early winning;—
But if you chance to fall behind,
Ne'er slacken your endeavor;
Just keep this wholesome truth in mind:
'Tis better late, than never.

If you can keep ahead, 'tis well,
But never trip your neighbor;
'Tis noble, when you can excel
By honest, patient labor;—
But if you are outstripped at last,
Press on as bold as ever,
Remember, though you are surpassed
'Tis better late than never!

Ne'er labor for an idle boast
Of victory o'er another;
But, while you strive your uttermost,
Deal fairly with a brother.
Whate'er your station, do your best,
And hold your purpose ever;
And if you fail to beat the rest,
'Tis better late than never!

Choose well the path in which you run,
Succeed by noble daring;
Then, though the last, when once 'tis won,
Your crown is worth the wearing,
Then never fret, if left behind,
Nor slacken your endeavor;
But ever keep this truth in mind,
'Tis better late than never.

The Child of James Melville.

One time—my soul was pierced as with a sword;
Contending still with men untaught and wild;
When He who to the prophet lent his gourd,
Gave me the solace of a pleasant child!

A summer gift—my precious flower was given—
A very summer fragrance was its life;
Its clear eyes soothed me as the blue of heaven,
When home I turned—a weary man of strife!

With unformed laughter—musically sweet—
How soon the wakening babe would meet my kiss;
With outstretched arms, its care-wrought father greet—
Oh! in the desert, what a spring was this!

A few short months it blossomed near my heart—
A few short months—else toilsome all, and sad;
But that home solace nerved me for my part,
And of the babe I was exceeding glad!

Alas! my pretty bud, scarce formed, was dying—
(The prophet's gourd—it withered in a night!)
And He who gave me all—my heart's pulse trying—
Took gently home the child of my delight!

Not rudely called—not suddenly it perished—
But gradual faded from our love away!
As if, still, secret dews, its life that cherished,
Were drop by drop withheld—and day by day

My blessed Master saved me from repining,
So tenderly he used me for His own—
So beautiful he made my babe's declining—
Its dying blessed me as its birth had done!

THE SOUTHERN PLANTER

Is published monthly, in sixty-four octavo pages, on the following *Terms:*

TWO DOLLARS AND FIFTY CENTS per annum, unless paid in *advance.*

Advance payments as follows:

One copy, one year,	$2
Six copies, do	10
Thirteen copies, one year,	20
Twenty do do	30
One copy, three years,	5

And one copy free to persons sending us the NAMES and MONEY for thirteen or more new subscribers.

All money remitted to us will be considered at our risk *only*, when the letter containing the same shall have been *registered*. This rule is adopted not for our protection, but for the protection of our correspondents. And we wish it distinctly understood that we take the risk only when this condition is complied with.

Mr. Lefebvre's School

Corner of Grace and Foushee Streets, RICHMOND, VA.

The next SESSION of this INSTITUTION will open on the FIRST DAY OF OCTOBER, 185 and close on the First Day of July, 1859.

TERMS FOR THE SCHOLASTIC YEAR.

For Board,	$200	For two lessons (of an hour) a week,	
For Washing,	20	For three lessons (of an hour) a week,	1
For Lights,	6	For four lessons (of an hour) a week,	1
For English Tuition,	40	For the use of Piano,	
For Modern Languages, (each,)	20	For Drawing, from Models,	
For French, when studied exclusively of the English branches,	40	For Drawing, from Nature,	
For Latin,	20	For Painting in Water Colors,	
For Music on Piano, Harp, Guitar, Organ or Singing:		For Oil Painting,	
For one lesson (of an hour) a week,	40	Primary Department—for Children under 11 years of age,	

REFERENCES:

The Patrons of the School.—Right Rev. Bishop Meade, Right Rev. Bishop Johns, Right Re Bishop Elliott of Georgia, Right Rev. Bishop Cobbs of Alabama, Rev. Moses D. Hoge, D., Rev. Charles H. Read, D. D., Rev. T. V. Moore, D. D., Rev. B. Gildersleve. The Clerg of the Episcopal Church in Virginia.

FACULTY.

HUBERT P. LEFEBVRE, A. M., Principal.

REV. H. S. KEPPLER,	JOHN A. CALYO,	MISS E. BARTLETT,
WILLIAM G. WILLIAMS, A. M.	C. W. THILOW,	MRS. M. TAYLOR,
JOHN P. LITTLE, M. D.	W. F. GRABAU,	MAD'ME M. ESTVAN,
R. A. LEWIS, M. D.	MRS. A. E. J. GIBSON,	MAD'ELLE LACY,
ELIODORO CAMPS,	MISS MARY GORDON,	CHARLES H. ROSEEN,

MAD'ELLE L. VILLEMET, FRENCH GOVERNESS.

All letters to be directed to HUBERT P. LEFEBVRE, *Richmond, Va.* [July '58—1y

PAINTS. PAINTS. PAINTS.

PURCELL, LADD & CO.,

DRUGGISTS,

No. 122 Main Street, corner 13th, **RICHMOND, VIRGINIA,**

Offer at low prices, a large and well assorted stock of articles in their line—embracing

PAINTS, COLORS, VARNISHES, OILS, &C.

LEWIS' WHITE LEAD,
NEW J. WHITE ZINC, Horsehead brand,
CHROME GREEN,
VERDIGRIS.
TERRA DI SIENNA,
LINSEED OIL,
MACHINE OIL.
PARIS GREEN,
CHROME YELLOW,
TURKEY UMBRE,
LAMP OILS,
SPTS. TURPENTINE.

All Colors for Painters, Coach Makers, and others, Dry and in Oil. Paint Brushes, Sand Paper, and a ve large stock of best

WINDOW GLASS,

omprising nearly every size made. We are also prepared to take orders for Imported

Polished Plate, Sky Light and Ornamental Glass.

☞ Particular attention to packing and forwarding all goods—and the quality warranted.

June 1858.

PURCELL, LADD & CO, *Druggists*,
122 Main Street, Richmond.