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.

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Liebig's Letters on Modern Agriculture.

LETTER IV.

Up to a few years ago, scientific agriculture taught, and all practical men firmly believed, that the productiveness of a soil was dependent on the quantity of humus, or carbonaceous remains of a preceding vegetation, contained in it. Without raising doubts on the efficacy in certain cases of the organic matter in farm-yard manure, it may be asserted that nobody who possesses any knowledge of the matter, now believes that the produce of a field in carbonaceous substances bears any proportion to the amount of humus in the soil, and that its fertility can in reality be estimated, as was formerly supposed, by this humus.

We have now obtained more exact information on the part played by humus in vegetation, and can predict in what cases its presence will be beneficial or hurtful. We know that it is only useful when the soil contains in sufficient quantity the fixed mineral constituents serviceable to plants; and that it is without action when these are wanting. By its decomposition in the soil, humus forms a source of carbonic acid, by which the fixed elements of food are rendered soluble, and capable of being distributed in all directions.

In his remarkable experiments on the action of the salts of ammonia, Lawes obtained in twelve years from an acre of the same field, by the use of mineral substances and salts of ammonia, produce in wheat and straw, amounting to 51,995 lbs. From a second acre manured in the same way, the return reached 53,182 lbs. By the use of pure mineral manures, there was obtained from these two fields a greater amount of produce, to the extent of 18,525 lbs. in one case, and 19,713 in the other, than from an unmanured field of similar size. It is quite certain that by the employment of farm-yard manure, a similar, if not higher, return would have been obtained from both fields. There can, however, be no doubt that in both cases the salts of ammonia had taken the place, and produced the effect of the decaying organic matter of this manure; and it is not improbable that the same cause was in operation in augmenting the produce.

It has been abundantly proved by facts, that the action of the salts of ammonia is no way proportional to the amount of nitrogen in them; hence it is evident that the salts as such, or the acids of the salts, must take part in the effect produced. The precise nature of this co-operation is, however, not yet distinctly made out; and from this cause has arisen the great discordance in the

views of the peculiar action of the salts of ammonia. Whilst some hold that the action can only be referred to the nitrogen, because the acid can be changed without, thereby materially altering the effect; others assert that the soil already contains so much ammonia, that the increase of produce cannot be attributed to the small quantity of nitrogen added in the salts of ammonia. They maintain that an acre of ground which contains in its upper ten inches of soil 10,000 lbs. of ammonia or nitrogen, could not have its fertility increased two-fold by the addition of 30 to 60 lbs. of ammonia. As in such a soil there was no want of nitrogen, the cause of the increased fertility must be sought for in something else.

The case is much the same with the action of nitrates as with that of the salts of ammonia. Nitrate of soda exercises a powerful effect, in certain cases, on the increase of grain and straw, and in others it is valueless. The experiments of Kuhlmann have shown that the bases also of these salts play some part in the action. From a meadow manured with 220 pounds* of nitrate of soda, an increase of crop to the amount of 1807 pounds per acre was obtained; whilst from another portion of the same meadow, to which was applied the same quantity of nitrate of lime (containing 1¼ per cent. more nitric acid), there was an increase of only 609 pounds. Consequently the produce from nitrate of lime was ⅔ less than from the soda salt. If we ascribe the increase in the crop to the nitric acid, then the effect of the two salts is quite incomprehensible.

The action of common salt appears in many cases equally incomprehensible.—In 1846, Kuhlmann obtained from 100 pounds of sulphate of ammonia an increase of hay, amounting to 2228 pounds per acre; a similar quantity of sulphate of ammonia, with the addition of 116 pounds of common salt, gave an increase of 2792 pounds of hay. There were consequently 564 pounds more hay obtained (per acre) by the addition of the common salt, than from the employment of the sulphate of ammonia alone.

It might be supposed, that the want of a chlorine compound, which is contained in not inconsiderable quantity in meadow plants, was the reason, in the case of the common salt, of the increase of produce; but a similar difference, as in the above cases, was found in two other experiments, which Kuhlmann made, in 1845 and 1846, with sal-ammoniac alone, and with sal-ammoniac and common salt. The piece of meadow manured with 100 pounds of sal ammoniac gave in the two years 3256 pounds per acre more hay than a piece of the same extent which was unmanured. From another portion, to which were applied 100 pounds of sal-ammoniac and 100 pounds of common salt, 5004 pounds of hay were obtained. Hence, by the use of common salt, there was an increase of a half more than from the sal-ammoniac alone. 100 pounds of common salt alone, without sal-ammoniac, produced an increase of 1748 pounds of hay, the difference between the two numbers 3256 and 5004 is not great enough to exclude the idea, that each salt has acted, just as if the other had not been present. or, in other words, that each salt has a special action of its own.

In the summer of 1857, the effect of salts of ammonia by themselves, and mixed with common salt, on summer barley, was tried by the General Committee of the Agricultural Society of Bavaria, in a series of experiments made at Bogenhausen, in the neighbourhood of Munich. For this purpose, 18 plots, each of 1914 square feet in extent, were marked off in a field which had gone through the usual rotation of crops, having been, three years previously, manured with common farm-yard manure, and having borne rye, and then two crops of oats. Four of these plots were manured with salts of ammonia; one remained unmanured; to four others were applied the same quantity of ammonia salts, and at the same time, to each 6½ lbs. of common salt. Each plot received the *same amount of nitrogen* in the ammonia salts.

In estimating the quantity of manuring matter to be employed, it was assumed that 440 lbs. of guano per English acre, corresponded to the full measure of farm-yard manure usually applied; this gives twenty pounds of guano for one of the plots. A good sample of guano was selected for the experiments, and on being submitted to analysis, was found to consist of 14.53 water, 33.38 ash, and 52.10 organic matter, of which 15.39 was ammonia. Twenty pounds of this guano, therefore, contained 3.07 lbs.

* We drop the foreign denominations of weights and measures.—[ED. SO. PLANTER.

of ammonia. In the ammonia salts used, analysis gave in

Carbonate of Ammonia	29.84	per ct.	Ammonia.
Phosphate "	21.96	"	"
Nitrate "	19.11	"	"

In correspondence with this percentage of ammonia, there were applied to two of the plots, I. and V., 13 lbs. of carbonate of ammonia; to two others, II. and VI., 9 lbs. of nitrate of ammonia; to two others, III. and VII., 14⅜ lbs. phosphate of ammonia. Two plots, IV. and VIII., received each 14⅜ lbs. of crystallized sulphate of ammonia; another, 24⅜ lbs. of the analysed guano. The plots, V., VI., VII., VIII., received each at the same time 6⅜ lbs. of common salt. I will here communicate these experiments in full, as they offer other points of interest, in addition to the action which must be ascribed to the common salt.

Produce of Barley (grain and straw), from the four plots manured with *ammonia salts* alone:—

	Grain.	Straw.
I.	14.0 lbs.	35.6 lbs.
II.	18.6	36.8
IV.	15.2	40.2
The unmanured plot gave	15.0	40.4

Produce of barley (grain and straw) from four plots manured with *ammonia salts* and *common salt*:—

	Grain.	Straw.
V.	32.0 lbs.	59.5 lbs.
VI.	36.3	80.6
VII.	21.7	54.6
VIII.	24.5	61.5

Increase of produce in plots V. to VIII., manured with common salt and salts of ammonia, above that of plots I. to IV., manured with salts of ammonia alone:—

	Grain.	Straw.
V.	18.2 lbs.	23.8 lbs.
VI.	17.0	43.8
VII.	5.7	15.2
VIII.	9.3	21.5

In instituting experiments in practical agriculture with manures, the increase of crop is generally the only object kept in view. If this object be attained, the experiments are said to be successful. In this sense, the above experiments, both with and without common salt, are unsuccessful; for the returns scarcely reach average crops. The object with which they were made was not however, to obtain a greater crop than the average, but to investigate the action of the salts of ammonia alone, and with the addition of common salt. In this respect they agree sufficiently to banish all doubt as to the physiological importance of common salt to the Bogenhausen fields. In every case the crop was increased by the addition of common salt. Common salt when used with carbonate of ammonia, doubled the produce of grain; and with nitrate of ammonia, it raised the return of corn 90 per cent.,—and of straw 120 per cent.

As the mixture of nitrate of ammonia and common salt contains the elements of nitrate of soda, a counter experiment with the latter salt on a plot of the same field, made at the same time, is of much interest. The plot manured with 19⅜ lbs. of nitrate of soda, gave 27 lbs. grain, and 71½ lbs. straw; and by the addition of 6⅜ lbs. of common salt, the grain increased to 39½ lbs. and the straw to 78⅜ lbs. Common salt had, therefore, also increased the action of Chili saltpetre. A mixture of these two salts produced a still higher yield of grain, than a mixture of common salt and nitrate of ammonia, which contained the same proportion of nitrogen The experiment with 24⅜ lbs. of guano, on a plot of the same size, gave 38 lbs. grain, and 73⅛ lbs. straw.

It is quite certain, that in the action of the guano, which produced the crop next highest after the Chili saltpetre, an unmistakable part was played by the ammonia contained in it. On the other hand, however, the experiments with carbonate and nitrate of ammonia show, that a quantity of ammonia, or nitrogen, equivalent to that in 20 lbs. of guano, and employed under the same conditions, was almost without effect.

I will not, by further pursuing this subject, weaken the significance of the most important fact brought out by these experiments with the salts of ammonia, viz., that common salt, in reality, exercises a favourable action on the growth of straw plants in the Bogenhausen fields, and increases the mass of vegetable matter in them.

The fact is indeed not new in agriculture; but in a number of cases, in which common salt has been shown to be a useful addition to other manures, its action has not been sufficiently distinct and decided; and it is a rule in natural inquiries that a fact must first of all be firmly established, before we proceed to seek its explanation.

The action of common salt is evidently

very similar to that of the salts of ammonia and nitrate of soda; but if we refer the effect of these last two substances to their nitrogen, because ammonia and nitric acid are food for plants, then this explanation will not hold good for common salt. For neither this salt nor chlorine enters as an element into the structure of plants, and it cannot be asserted that either of them is necessary, although both are frequently met with as constituents of the ashes of plants.

The most recent observations on the comportment of the soil towards the food of plants show how slight is the knowledge we possess of their mode of nourishment, and of the part which the soil, by its physical condition, plays in it. The comportment of the salts of ammonia, of chloride of sodium, and of nitrate of soda, towards the earthy phosphates in the soil, may perhaps assist us in throwing some light on their action, or on one of their actions, on the growth of plants.

Like carbonic acid water, the sulphate, as well as other soluble salts of ammonia, possesses the property of rendering the earthy phosphates soluble in water.

We know of no other way in which the earthy phosphates are dispersed through the soil than by means of carbonic acid water. If it is true that one of the chief effects of humus, or the decaying remains of plants in soils or in manures, consists in its forming a source of carbonic acid, with which the air and water in the ground is enriched; if it is also true that this carbonic acid water renders the earthy phosphates soluble, and thus contributes to their distribution in the soil, then there can be no doubt that the salts of ammonia, which possess the same solvent property, can in this respect replace the organic matters, and thus exert an equally favourable influence on the growth of plants.

The same solvent property is also possessed among the salts of soda by Chili saltpetre and common salt. It has been recently shown that these two salts, even in the most dilute solutions, dissolve earthy phosphates to a very appreciable extent, and that consequently they must play a part in the process of the nutrition of plants, similar to that which is ascribed to carbonic acid water (to the humus) and to the salts of ammonia.

From direct experiments it appears, that 220 lbs. of sulphate of ammonia in solution in 9,900 galls. of water can dissolve 7.9 lbs. of bibasic phosphate of lime (PO_5, 2CaO, aq.) such as exists in bones that have been acted on by sulphuric acid; or, in other words, 100 lbs. of sulphate of ammonia in 4,500 gallons of water—dissolve nearly 4 lbs. of phosphate of lime. In like manner 123 lbs. of common salt, in 11,000 galls. of water, dissolve $7\frac{1}{2}$ lbs. of bibasic phosphate of lime; and 220 lbs. of nitrate of soda, in 7,348 galls. of water, dissolve $5\frac{3}{4}$ lbs. of the same phosphate.

Tribasic phosphate of lime (PO_5, 3CaO) is much less soluble in these fluids.

220 lbs. of	In solution in water in	Dissolve of tribasic phosphate of lime, PO_5, 3 CaO.
Sulphate of ammonia,	11,880 galls.	$7\frac{1}{2}$ lbs.
Common salt, -	11,000 "	$3\frac{1}{3}$ "
Nitrate of soda, -	7,326 "	2.6 "

The seeds of the cereals, particularly wheat, contain phosphate of lime, and in preponderating quantity phosphate of magnesia. In many kinds of wheat the quantity of phosphate of magnesia is four times, often ten times, greater than that of the phosphate of lime; and in like manner in the grain of rye, oats, and barley, the magnesia salt exceeds very greatly the phosphate of lime. These proportions are so constant that they cannot be ignored in the cultivation of these plants. The comportment of the salts above-mentioned towards phosphate of magnesia and ammonia, and phosphate of magnesia, appears, therefore of special interest.

220 lbs. of	In solution in water, in	Dissolve of phosphate of Magnesia, PO_5 3 MgO.
Nitrate of soda, -	73,260 lbs.	$4\frac{3}{4}$ lbs.
Common salt, -	110,000 "	$8\frac{1}{3}$ "

The solubility in the same fluids of phosphate of magnesia and ammonia is still greater.

220 lbs. of	In solution in water, in	Dissolve of phosphate of magnesia and ammonia, PO_5, 2 MgO, NH_4O.
Sulphate of ammonia,	7326 galls.	9 lbs.
Common salt,	11,000 "	13¼ "
Nitrate of soda,	7326 "	10¼ "

The quantity of the earthy phosphates taken up by the above fluids does not rise in proportion with the amount of salts in solution, but rather on the contrary with the dilution of these fluids.

It is quite conclusive from these facts, that water containing a very small quantity of common salt, nitrate of soda, or a salt of ammonia, acquires thereby the power, (which alone it does not possess, or only in a slight degree) of dissolving phosphoric acid, in the form of earthy phosphates. These feeble solutions, therefore, react towards earthy phosphates like solutions of carbonic acid in water. 220 lbs., for example, of sulphate of ammonia produce the same solvent effect on phosphate of lime as 1038½ galls. of carbonic acid in solution in water; and 220 lbs. of common salt dissolve as much phosphate of magnesia and ammonia as a watery solution of 760¼ galls. of carbonic acid.

Direct experiments prove, that a very dilute solution of the same salts, take up phosphoric acid from a soil which contains earthy phosphates in *excess*, and that this dissolved acid is again given up by this solution to a similar soil which is *not* already saturated with phosphoric acid.

If we submit to a close scrutiny the comportment of the salts of ammonia, nitrate of soda, and common salt towards soils, we find that not one of these salts acts in the same form in which it has been added to the ground.

The salts of ammonia are immediately decomposed by the soil; the ammonia is retained, whilst the acid enters into combination with lime, magnesia, alkalies, or, in short, with any basic substance in immediate contact and capable of combining with it.

The action of these salts is therefore of a two-fold nature. On the one hand, they enrich the soil with ammonia; on the other, their acid gives rise to new compounds which come into operation. The alkalies and alkaline earths which combine with the acid acquire thereby a greater degree of solubility, and are more readily diffused through the soil. If the ground is rich in magnesia or lime, the salts of these bases are formed; but their influence, with the exception of that of gypsum, on certain plants cannot be estimated very high. The use of sal-ammoniac, instead of sulphate of ammonia, gives rise to chloride of magnesium, and chloride of calcium, which act rather unfavourably than otherwise on vegetation. That salts of these bases are generated by the action of soils on salts of ammonia, and that the new salts exert no particularly favourable influence on the increase of produce, are facts on which no doubt can rest.

If, however, portions of the soil containing in some places phosphate of lime or of magnesia in the form of coarse grain, or powder, or bone earth, come in contact with these ammoniacal fluids, then there follows solution of these earthy phosphates, and their consequent diffusion through the soil.

Potash salts resemble those of ammonia in the rapidity of their decomposition in contact with soils; but the comportment of soda salts is quite different.

On slowly filtering a solution of nitrate of soda (containing one-fifth per cent. of salt) through an equal volume of Bogenhausen loam, half of the salt passes through unabsorbed, whilst the other half is converted into nitrate of lime and nitrate of magnesia. Under the same circumstances three-fourths of a solution of chloride of sodium remain undecomposed.

If, therefore, a field is manured with nitrate of soda or common salt, and the soil becomes saturated with a dilute solution of these salts formed by rain, a great portion of them will remain unchanged in the ground, and must exercise on the moist soil an action which, though in itself feeble, becomes powerful by its continuance.

Like the salts of ammonia, or a watery solution of carbonic acid produced by the decay of organic matter in manures, a solution of these salts, wherever they come in contact with spots containing accumulations

of earthy phosphates not fixed by the soil, must become saturated with these phosphates, and thus convert them into a condition in which they can be diffused through the ground. If the earthy phosphates, when thus diffused in solution, come in contact with other portions of soil not yet saturated with these salts, those portions absorb and fix these earthy phosphates, and the chloride of sodium or nitrate of soda retains, a second time, or more frequently, the power of exercising the same solvent and distributing action over the earthy phosphates until the ultimate and complete conversion of the chloride and nitrate into a lime or magnesia salt.

When we consider how much the fertilising effect of bone earth is increased by the greater solubility and capability of distribution in the soil communicated by the action of sulphuric acid, we cannot too highly estimate the significance of the properties, just described, of the salts of ammonia, chloride of sodium, and Chili saltpetre.

The most abundant application of earthy phosphates in coarse powder, can in its effects bear no comparison with a much smaller quantity which, in an infinite state of division, is dispersed through every portion of soil. A rootlet requires at the spot where it touches the soil a most minute amount of food; but it is necessary to its functions and its very existence, that this minimum be found exactly at this spot. For if the food of plants be not soluble in water, then is any excess at any other spot as valueless to the function of nutrition of this rootlet as if it did not exist at all in the soil. Now, the salts of which we have been speaking, possess the property of conveying these elements of food from the spot in which they exist in superabundance to others in which there is a deficiency; and even though their elements contributed in no way directly to the process of nutrition, yet, these salts must nevertheless exercise a marked influence on the increase of produce.

When the sulphate of ammonia and Chili saltpetre have been completely transformed into lime and magnesia salts, and the chloride of sodium into chloride of calcium and chloride of magnesium, this action then ceases; and a second dose of these salts is then necessary to reproduce the action.

If the effect of the salts of ammonia depends on the ammonia, we can scarcely comprehend why, after a large application of them, that portion which has not acted during the first year should not in the second come into operation, since this latter portion is presented in the soil to plants in the same form as the portion which produced its effect during the first year.

Sulphate of ammonia produces on alkaline silicates a reaction similar to that on earthy phosphates If this salt, in very dilute solution, is brought in contact with soil saturated with silicate of potash, and which does not give up a trace of its potash to water alone, it instantly dissolves a certain quantity of this alkali, which may be easily detected by the ordinary re-agents.

It is evident that the agriculturist, by the proper application of the chemical action of common salt, Chili saltpetre and ammonia salts, accomplishes the same object as by the mechanical operation of ploughing, and by the action of the atmosphere in fallow.

We should be committing an error, if, judging from similarity of solvent properties, we concluded that common salt must have the same effect as a corresponding quantity of nitrate of soda. We know that, as a rule, in these cases, the common salt is converted into chloride of calcium, and the Chili saltpetre into nitrate of lime; and the experiments of Kuhlmann have taught us, that chloride of calcium by itself is absolutely ineffective, or rather is hurtful in the cultivation of plants, whilst nitrate of lime contributes materially to the increase of a hay crop. Nitrate of soda, consequently, acts favourably in two ways; chloride of sodium only in one. Further, land plants can bear a considerable quantity of nitrates of soda in the soil, whilst chlorine compounds, beyond a certain very narrow limit, are decidedly hurtful.

We designate as manures all substances which increase the produce of our fields, without knowing whether many of these may not simply act, by rendering the food already existing in the soil more capable of absorption and assimilation. The simple fact of their favourable influence on vegetation, is not yet a proof that they have acted directly as food. We compare the work which the plough performs, to the mastication of food, for which nature has provided animals with a particular instrument; and, as may be seen from the experiments described above, many substances, such as common salt, nitrate of soda, and ammonia salts, independently of the action which is due to

their own elements, play a peculiar part, which may be compared to the digesting action of the stomach, and in which they can partly replace each other; and inasmuch then as they prepare the food existing in the soil for the process of nutrition, and render it more fit for assimilation, they must necessarily exert a powerful influence on the growth of plants.

We can now understand why these salts exercise a favourable action in the cultivation only on certain soils, and why on a second or third application of them, the same effect is only partially, or not at all reproduced.

An agriculturist in possession of fields containing abundance of phosphates, but unequally distributed through them, would, were all other conditions the same, undoubtedly increase the activity of these phosphates, and thereby augment the produce of his fields, if he possessed the means of withdrawing the basic phosphates from the soil and restoring them in the form of superphosphate. These means he actually employs, when he manures his fields with Chili saltpetre, ammonia salts, or chloride of sodium.

For the Southern Planter.

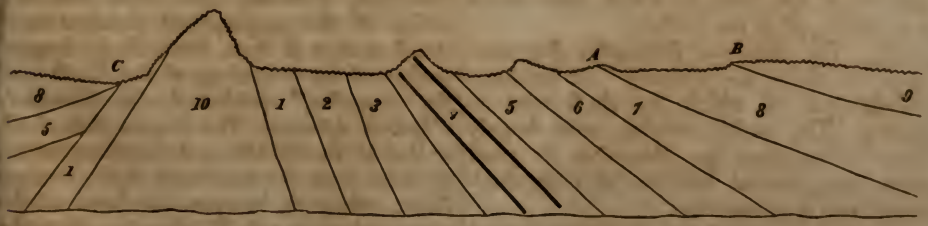
Agricultural Geology.

(*Continued from the May number.*)

BY PROF. J. L. CAMPBELL.

It has been already stated, that the stratified rocks of the earth have been classified by geologists into several distinct groups, called "Formations." Of these we can give but a brief and very general view. If the reader could be favored with a view of the neat lithographic cut, forming the frontispiece of the work on Agriculture, from which the substance of this article is taken, it would greatly aid the memory in retaining a knowledge of the relative position, and of the names of the several formations. But, as the original figure is not within our reach at present, the ingenuity of the printer has contrived the figure given below, which may serve our present purposes as a temporary substitute. It is designed to represent an *ideal* section the earth's crust, made at some point where all the formations are found. But the reader must beware of falling into the mistake of supposing that each one of these classes of rocks may be found everywhere, as a constituent of the earth's crust; or that any one of them ever enveloped the whole globe; or that one of them cannot occur without being accompanied by the others; or that, when found, they uniformly all succeed each other in the order here given.

By examining the surface of the earth, as represented by the top of the figure, it will be seen that one formation alone may give character to the rocks and soil for a distance of many miles together, as in the space between *a* and *b*, where the Tertiary formation (8) crops out from beneath the Drift (9). Again, the Primary Rocks (1), on the left of the figure, may have been deposited over a very wide section of ocean-bottom; a portion of them may have been subsequently elevated above the sea-level, and have again subsided at the period when the New-Red Sandstone (5) was being deposited. A second upheaval may have brought this formation above the water, where it remained until the Tertiary period (8) when sinking beneath the ocean, it formed the bed upon which this newest of the regularly stratified formations was deposited. Thus rocks widely separated in the regular series where all the formations are represented, as on the right side of the figure, are brought, under some circumstances, into close poximity, as at *c*. Taking the stratified rocks in their ascending order, we shall give the most prominent characteristics of each formation.



1, Primary Stratified Rock; 2, Silurian; 3, Old Red Sandstone; 4, Carboniferous or Coal; 5, New Red Sandstone; 6, Oolitic and Lias; 7, Cretaceous; 8, Tertiary; 9, Alluvium and Drift; 10, An Unstratified Mass of Igneous Rock.

(1). *Primary Rocks.* These are the lowest in the series, and rest upon unstratified masses beneath, as at (10). They consist chiefly of—(1) *Gneiss*, which has been heretofore described. (2) *Mica-slate*, composed mostly of quartz and mica, the latter being in such quantity and form as to give a slaty structure to the mass. (3) *Talcose-slate*, similar to the last, but having *talc* in the place of mica. The same rock often contains portions of both mica and feldspar. The suface of this slate has a glistening appearance and generally feels somewhat greasy when rubbed with the fingers, but not to the same degree as pure talc or soapstone. (4) *Hornblende-slate*, a compound mineral in which hornblende is mingled with quartz, clay and feldspar. (5) *Clay-slate*, which has been described as a finely granular rock in thin layers. Its structure is frequently such in this formation, that it can be split into tiles for covering houses; and when dressed off and framed it forms the "slates" used in schools. (6) *Sandstones* of various shades of color abound amongst the primary rocks. (7) *Limestones* are very often found interstratified with the slates and sandstones of this formation. The Primary stratified rocks, are also called "Metamorphic Rocks," in reference to the *changes of structure* through which they have passed, under the influence of heat from the igneous rocks upon which they rest. The term "Hypozoic" is also applied to them, in allusion to their position in the geologic series being *below* all the rocks containing the relics of *animal life.* They contain no fossils.

We have an example of the class of rocks just described, covering a large part of the slope of country commencing on the eastern side of the Blue Ridge and extending nearly to the head of tide-water. Richmond, Petersburg and Fredericksburg, are each situated near the eastern margin of that section of the State, in which these strata are developed at the surface.

(2). *The Silurian Formation* lies next in order above the Primary. It has some subdivisions of which we shall take no notice. The rocks entering most largely into its structure are *limestones* in great abundance, several varieties of *slate, sandstones* and *conglomerates.*

Fossil shells, coral and encrinites abound in some parts of this formation; but we cannot enter into any description of these—nor do they have any direct relation to agriculture, except so far as their presence in the rocks has had an influence upon the quality of soils.

The Silurian rocks are largely developed on the west side of the Blue Ridge, occupying the whole Valley from New York to Alabama, and embracing several mountain ridges and smaller valleys lying along the western margin of the great valley.

(3). *The Old-Red Sandstone*, or *Devonian*, is the next formation in regular order. It rests upon the upper part of the Silurian, and dips westward beneath the coal-bearing strata, which occupy so large a portion of Western Virginia. *Sandstones, slates* and *conglomerates*,* are the prevailing rocks of this formation.

(4). *The carboniferous formation* lying above the Devonian, is distinguished chiefly by the immense beds of *mineral coal* found in it. The coal is found in seams or strata of various degrees of thickness, with intervening stata of slates and sandstones. The lower part of this formation, in some places, contains large quantities of limestone extending beneath the coal, and cropping out, sometimes very largely, around the margins of the coal fields. The extensive limestone formation of Greenbrier county, running northward into Pocahontas, and southward, with varying width, entirely across Tennessee and into Alabama, is of the character just alluded to. On the western side of the same coal-field, this limestone is extensively developed in Tennessee and Kentucky.

(5). Passing still further upward through the series of fossilliferous rocks, we come next to the *New-Red Sandstone*, which, in some countries, forms the boundary of the Coal Formation above, as the Old Red forms its boundary below. It is a singular fact, however, that this class of rocks is not found covering any part of our great Western coal-fields. We shall not stop to trace out its subdivisions into Upper and Lower New-Red, Permian, &c. The following notice of the geographical distribution of this formation is from Prof. H. D. Rogers' outline of the "Geology of the U. S. and Br. America," published in *Johnston's Physical Atlas:*—"The largest belt of all, or that of the Middle and Southern States, stretches from the west bank of the Hudson River, where it is upon the level of the ocean, inland in a S. W. direction along the

* *Conglomerates* are rocks formed by rounded pebbles cemented firmly together, making very firm and strong masses.

S. E. side of the South mountain and Blue Ridge, gradually contracting in breadth, and ascending in level, through the States of New Jersey, Pennsylvania, Maryland, and Virginia, to near the centre of the latter, where it terminates.

"Another narrow strip of the same rock runs from a little north of the Roanoke River south-westward almost to the Yadkin in North Carolina; and between the main belt and this one, there occurs a small patch on the James River, in a position which indicates that originally they were all three connected." These rocks belong to that subdivision known under the name, "Triassic."

(6). Oolite and Lias.—"In many of the rocks of this series, small calcareous globules are imbedded, which resemble the roe of a fish; and, hence, such a rock is called *roestone*, or *oolite*. But this structure extends through only a small part of this formation, and it occurs also in other rocks.

"The oolite series consists of inter-stratified layers of clay, sandstone, marl, and limestone. The upper portion, or that which is oolite proper, is divided into three systems or groups, called the upper, middle, and lower, separated by clay or marl deposits.

"In this country no genuine oolite has been found. But the remarkable coal-field in Eastern Virginia, near Richmond, is most probably of the age of the oolite and lias, as has been shown by Prof. W. B. Rogers.

"Lias is a rock usually of a blueish color, like common clay; and it is, indeed, highly argillaceous, but at the same time generally calcareous. Bands of true argillaceous limestone do, indeed, occur in it, as well as of calcareous sand. It has been usual to describe it as a member of the oolite series. But it is widely diffused, and very marked in its characters, and contains peculiar and very interesting organic remains."—*Hitchcock.*

Fossil coral and fish are abundant in this formation, but its most striking peculiarity consists in the number and the immense size of its *reptiles.*

(7). The Cretaceous Formation takes its name from the chalk (*creta*) in which it abounds in some countries, especially in Europe. In this formation the *green sand*, so successfully employed as a fertilizer in some parts of our country, is found. Green sand is also found in the higher strata.

(8). The Tertiary Formation is the highest division of the stratified rocks. The strata in it are generally more nearly horizontal than in any of the lower formations. It is composed of clay, limestone, marl, and sand, with occasional beds of gypsum and rock-salt.

Many of the fossils of this period are the remains of plants and animals closely resembling those now living upon the earth. But in the rocks of lower formations, the fossils indicate that our earth was formerly inhabited by beings differing widely from any now known to man. The most remarkable feature of the tertiary period, is seen in the number and size of its mammalia.

The Tertiary rocks have been classed by geologists into *Eocene*, *Meiocene*, and *Pleiocene;* the Eocene being the lowest in position. Nearly the whole tide-water region of the United States, extending from New Jersey to the Rio Grande, is covered with this formation. In the States lying along the Gulf of Mexico, this class of rocks extends, in some localities, inland considerably beyond the limits of tide-water. The western boundary of the Tertiary, in Virginia, may be nearly defined by a line passing through Fredericksburg, Richmond and Petersburg. This line extends a little west of Raleigh, N. C., to Columbia, S. C., and Augusta, Ga., would mark its western limit still further South.

(9). Alluvium and Drift.—Above all the stratified rocks we discover, everywhere, quantities of loose material, broken down and worn off from rocks of every kind, and scattered over the surface. When this material is carried by water, and deposited along the valleys and in the bottoms of ponds and lakes, it forms what is called "Alluvium," and soils thus formed are *alluvial.* The material of which they are formed, is generally collected from a considerable variety of rocks, and hence they have all the mineral elements necessary to render them fertile.

In many places vast currents of water, accompanied most probably by masses of ice, have swept over extensive regions, carrying with them the abraded material from the various rocks, and hills, and mountains over which they have passed, and again depositing it, as a mixed mass of sand and clay, full of pebbles and boulders of almost every conceivable size and shape. This constitutes the "Drift formation."

The Drift forms a very important feature in the geology of some of our Eastern States, and also at many points in the Northern and North-western States; but it rarely occurs farther south than the Ohio

River, except as local drift. It differs, of course, from the rocks beneath; and frequently gives a fertile soil, immediately over rocks which would have produced only a barren desert.

(10). Beneath the stratified rocks, in many places rising up through and often over-lying them, we find the *unstratified* rocks. These bear no marks of having been deposited by water, but seem to be of *volcanic* origin.

The most prominent minerals which enter into the composition of these rocks are Feldspar, Hornblende, Epidote, Quartz, and Mica. These combining, give us Trap rocks, Granite (including Syenite), and many less abundant varieties, of which we have not room to give a description.

ORIGIN OF SOILS.—Whenever the rocks, whether stratified or unstratified, are long exposed to the influence of air, rain, and frost, or even of air and rain alone, they are gradually broken down, as heretofore stated, into small fragments. These undergo many subdivisions, until the little separated particles of sand and clay, mingled with such organic matter as previously existed in the rock, or has meanwhile been growing among the fragments of its half-formed soil, become one mixed mass, and at the same time pass through such chemical changes as adapt them to the great end for which they were designed.

The original quality of the soil must, then, be greatly dependent upon the character of the rocks out of which it has been formed. It is not difference in the mineral composition of rocks alone, that causes differences in the nature of soils; the organic, fossil matter, deposited when the rocks were formed, seems often to have had a most striking influence. Any one may observe for himself, in traversing a hilly or mountainous region, how suddenly he sometimes passes from one quality of soil to another, even in the same field. And in uncultivated lands, he may frequently meet not only with abrupt changes in the rocks and soil, but changes just as abrupt in the *trees*, *shrubs*, and *weeds*, which nature seems to have adapted to the varying quality of their mineral food.

Pure *granitic* soils contain the disintegrated particles of quartz, feldspar, and mica, from the granite rock. The feldspar is soon decomposed, by the action of carbonic acid, into carbonate of potash and fine clay. The little crystals of quartz are but slightly modified, forming, when set free, *sand* of various degrees of fineness. From hilly lands the fine clay is gradually carried down into the low grounds, and a covering of sand, generally with clay beneath it, is left to form the poor, barren soils of the surrounding hills. But even where all the material of the granite is retained, the soil is generally deficient in *lime*, *magnesia*, and *oxide of iron*.

When granite contains *hornblende*,* as it often does, this furnishes *lime*, *magnesia*, and *iron*, and such a soil is generally productive. Or, if granite and trap rocks occur on the same hill, the soils from both may become mingled by the action of rain and frost, or by tillage, and thus form a better soil than either would form alone.

Trap rocks, being composed, as we have learned, of feldspar and hornblende, are acted upon by air and water, both mechanically and chemically. The result is a finely divided soil, to which the feldspar furnishes an abundance of clay and potassa, with some soda; while the hornblende yields lime, magnesia, and oxide of iron abundantly; hence such soils are generally fertile. Some of the best soils of Eastern Virginia are formed from Trap.

The primary stratified rocks differ widely in composition and, as a consequence, give a great variety of soil. We have a most extensive illustration of this in the greater part of the wide area, extending from the eastern side of the Blue Ridge, on the one hand, to the slope over which the rivers flowing into the Atlantic fall, before they reach tidewater, on the other; then, extending northward, it becomes narrower as it passes into Maryland, and extending Southward into North and South Carolina, it spreads out to a still greater width than it has in Virginia. In this region there are some belts of fine soil, formed from rocks composed largely of feldspar and hornblende. There are other sections, in which the soils are composed of the ruins of gneiss and granite. These soils are sandy, and less valuable. Again, there are localities in which the soil has originated from rocks composed chiefly of quartz, with small quantities of mica or feldspar, or both. Such regions are hopelessly deficient in

* Granite, containing a considerable amount of hornblende, is called "syenite."

some most important elements of mineral fertility.

The Great Valley of Virginia is an example of the Silurian formation. The western slope of the Blue Ridge belongs to this. The rocks here, and on the spurs, which often extend out some distance into the valley, are chiefly slate and hard sandstone. These form light, unproductive soils; and where the rocks are hard sandstones, they disintegrate very slowly, break off in large fragments under the influence of frost, and form rough, unmanageable soils. As we descend into the open valley, we find the formation consisting of a great variety of limestones, with vast beds of interstratified slates and shales,* all containing fossil shells and coral. By their disintegration, these rocks generally give soils of fine quality. In most parts of this valley, the rocks have been very much tilted and warped at the time of their upheaval, thus giving rise to a peculiar and interesting variety of landscape. In many places we meet with abrupt precipices, such as are common along the banks of water-courses; in other places we find deep gorges, like that spanned by the Natural Bridge; while the less sublime but no less beautiful hills, with their gently undulating slopes and rounded tops, are found to cover the greater part of the surface throughout the whole length and breadth of this delightful section of our State.

As century after century has passed away, the solid rocks, as well as the more brittle shales, have been gradually broken down into minute fragments by rain and frost, while the carbonic acid brought down by the rain-water has dissolved out much of the carbonate of lime, and left the clay to form soils varying in depth from less than an inch to many feet. The depth of these clay deposits depends partly upon the steepness of the land, but still more upon the structure and composition of the rock. If the surface is steep, the greater part of the liberated clay may have been washed down into some neighbouring valley, forming there a deep, rich soil, and leaving the rocky hill-side almost naked. If the rocks were pure carbonate of lime, there could be no residuum of clay and sand to produce soil; but the truth of the case is, that nearly all the compact limestones contain a considerable amount of these impurities, while some contain not more than fifty per cent. of carbonate of lime; and many of the beds of calcareous shale have but a small quantity of the carbonate, combined with a large quantity of clay. These last not only disintegrate more rapidly, but also leave a much larger amount of residuary matter than any of the more solid rocks. Hence we generally find them underlying deep beds of clay.

The soils resulting from limestone formations are generally productive, and remarkably well adapted to the culture of grass and grain crops, and also produce good tobacco. Where the ancient coral reefs are found among the limestones of this formation, the clay which they leave after their decay, as well as that formed from the adjacent shales, is rich in *organic* matter, as well as the mineral elements required in soils of the best quality. The author has detected ammonia in very perceptible qualities, in clay found in a quarry of coraline limestone, at a considerable distance beneath the surface of the ground. If we suppose this ammonia to have been produced in the rock by the decay of the coral, by which it was built up, and then retained by the clay after the rock has been disintegrated, and has had its carbonate of lime dissolved out, it affords us a striking illustration of the tenacity with which ammonia is held by clay.

The mountain ridges lying along the western side of the valley, belong also to what we have called the Silurian formation. Here slate and sandstone prevail. The slate forms a soil capable of considerable improvement; but the sandstone is too hard to form a soil suitable for tillage, except along the lower slopes of the ridges and in the valleys, where the abraded material has been collecting for many centuries.

When clay from one ridge is carried down by water, and mingled with the sand brought down from some neighbouring ridge, and deposited along the banks of streams, plants, insects, fresh-water shells, etc., being mingled with it, very fertile bottom lands are often formed, running in long narrow strips through extensive sections of almost barren mountains.—(*Rodgers.*)

The soils of the Old Red Sandstone are extremely variable in our country. Where marl and limestone are found in this forma-

* Shale is a brittle, imperfect form of slate.

tion, the soil is generally productive; but where the sandstones prevail, as they do extensively in the mountainous parts of Western Virginia, lying along the eastern side of the coal regions, the soil is generally poor.

In the Carboniferous or coal formation, many of the slates and sandstones form soils of no great value; but belts of limestone and calcareous shale sometimes give corresponding belts of good soil. We find an interesting example of such limestone soils in the belt which runs through Greenbrier and adjoining counties, and around the base of the coal-bearing strata in our great Western coal field. The accumulations of detritus in the valleys, and along the streams, also afford good soils. Where the slaty lands of this, or any other formation, lie in a horizontal position, they are impervious to water, and hence are cold and wet. These must generally be drained before they can be successfully cultivated.

What has been said of the influence of the various kinds of rock upon the soils overlying the formations already mentioned, will lead us to the general conclusion that the quality of the land upon all the higher formations, must be as variable as the character of the rocks themselves. The sandstones generally give light, infertile soils, while those produced slates and shales are better; and, when free from bituminous matter, and supplied with lime, are often very productive.

Some of the formations have the elements of their own improvement treasured up within themselves. A striking example of this is seen in the *marl beds*, so abundantly deposited in the tertiary strata lying along our eastern coast. Many farms in the tide-water sections of Virginia, Maryland, and other States, have been most successfully and profitably reclaimed from almost hopeless exhaustion, by the judicious application of these tertiary marls. Besides the marl proper, little mineral nodules of a dark colour are found in the same beds, or in contiguous deposits; and on being analyzed, they are found to contain a large per cent. of *phosphate of lime*. Prof. Johnston, of England, says: "This crag [a tertiary deposit] is chiefly interesting to the agriculturist from its containing hard, rounded, flinty nodules—often spoken of as *coprolites*—in which as much as 50 per cent. of phosphate of lime (bone earth) has been found. These nodules are scattered through the body of the marls, and through the subsoils of the fields far inland; and are collected for sale to the manufacturers of super-phosphate of lime, and other artificial manures." (*Ag. Chem.* p. 94.) Similar black pebbles occur in the Olive Earths and Marls of the tertiary strata of Eastern Virginia. Mr. Ruffin, the venerable and distinguished President of the Virginia State Agricultural Society, first brought these to the notice of Prof. Gilham, of the Military Institute, by whom some specimens were analyzed. "After being crushed and thoroughly mixed, they were found to contain 56 per cent. of phosphate of lime!"—(*Southern Planter*, Dec. 1858.)

The experience of the agricultural world has established a conclusion of great practical importance in the selection of lands for tillage. It is this—*that, among the upland soils, none are so uniformly and permanently fertile, as those formed from calcareous rocks.* And next to these, *the soils from the lime-bearing trap-rocks and syenites occupy the first place.* Alluvial and drift soils, of course, are exceptions.

STRUCTURE OF THE SOIL.

In examining any soil which has been left undisturbed to pass through its natural stages of formation, we find the surface portions differing considerably from those nearer the original rocks. They differ not simply in appearance, but also in composition, and consequently in fertility.

It is both interesting and instructive to trace out the various changes which have taken place, in reducing the original rocks of the earth to the condition of arable soil. Let us take, for example, a calcareous formation, made up of limestones and calcareous shales, which have just been upheaved by volcanic agency, and for the first time exposed to the disintegrating influence of the weather. The shales are rapidly crumbled down to the condition of clay, from which the rain gradually dissolves out much of the carbonate of lime, carrying it off to form "limestone springs." The more solid rocks are worn down more slowly, but not less surely, by the operation of the same causes. In this way a soil is gradually formed, supplied with all the mineral ingredients of the rocks. But such a soil, produced by such a process alone, would still lack one important class of its elements

of fertility: it would still want the organic matter which we shall hereafter find performing most important offices in the production of plants. If the rocks have been highly fossiliferous, more or less organic matter may be already present; but the supply soon begins to be collected from another source. The new soil is soon provided with the seeds of grasses, herbs, and trees of various kinds, from older lands; and such of them as find here their appropriate mineral food, soon germinate, take root, and send out their blades and leaves to collect carbonic acid from the air while the roots themselves drink in the same kind of nourishment from rain-water, together with ammonia and mineral matter. Many of the roots soon penetrate the lower parts of the soil for many feet, whence they draw up mineral substances, and send them out in the sap, to be incorporated with the organic food from the air, in the body, and branches, and leaves of the growing plants. As the grass, the weeds, and the leaves of trees fall and decay upon the surface, they leave a dark rich deposit of humus, to serve as food for the same or other kinds of growth. In this way great quantities of organic matter are often accumulated, forming with the clay a deep, rich vegetable mould.

The mineral matter which once fed the decayed leaves and grass, has not only been increased in quantity near the surface, but has also been so elaborated in the plants through which it has passed, as to be now in the best possible condition to afford nourishment to subsequent crops growing upon the same soil.

The portion of soil which has thus become enriched with organic and mineral substances, is called the "surface-soil," and is the part usually cultivated. The "sub-soil" is the layer upon which the surface-soil rests. It generally has but little organic matter in it; and, in the majority of fields in our Southern and Western States, it has never been disturbed by the plow. On rolling lands which have been long under cultivation, the surface-soil on different parts of the same hill is generally more uniform in its character than the sub-soil; because the loose material on the surface becomes mingled, by the mechanical action of the plow, rains, and frost; while the sub-soil, having been less frequently disturbed, lies nearer to the rock from which it originated, and more nearly resembles it.

The Poor Customer.

A good lesson is taught in the following sketch from the Boston Olive Branch:

"How much butter?"

"One half pound, if you please."

"And sugar?"

"Half a pound."

"And these oranges?"

"Half a dozen, sir."

"You go by the halves to-day. Well, what else? Be speedy, ma'am, you're keeping better customers waiting."

"Half a peck of Indian meal, and one fine French roll," said the woman; but her lip quivered and she turned to wipe away a trickling tear.

I looked at her straw bonnet, all broken, at her faded shawl, her thin, stooping form, her coarse garments, and I read poverty on all—extreme poverty. And the pallid, pinched features, the mournful, but once beautiful face, told me that luxuries were not for her. An invalid looked out from his narrow window, whose pale lips long for the cool, fresh oranges, for whose comfort the tea and butter, and the fine French roll were bought, with much sacrifice. And I saw him sip the tea, and taste the dainty bread, and praise the flavour of the sweet butter, and turn with brightening eye to the golden fruit. And I heard him ask her, kneeling by the smoky hearth, to taste them with him. And as she set the broken pan on the edge to bake her coarse loaf, I heard her say:

"By and by, when I am hungry."

And "by and by," when the white lids of the sufferer were closed in sleep, I saw her bend over him with a blessing in her heart. And she laid the remnant of the feast carefully by, and eat her bread unmolested.

I started from my reverie; the grocer's hard eye was upon me.

"You're keeping better customers waiting."

Oh, I wanted to tell him how poverty and persecution, contempt and scorn could not dim the hearts of fine gold, purified by many a trial, and that woman with her little wants and holy sacrifice, was better in the sight of God than many a trumpet-tongued Dives, who gave that he might be known of men.

From the Scientific Artisan.

House Warming and Ventilation.

Those who have made experiments for the purpose of determining the quantity of pure air required per minute by each individual, vary in their conclusions. They publish from 3 to 10 cubic feet, but when physiological facts in relation to size of lungs, health of persons, and various circumstances are considered, we conceed the accuracy of either amount.

We learn by science that the laws of nature do not long permit the enjoyment of health where pure air is not; and also when health is lost there can be no possible recovery of it without the aid of pure air. When we breathe, although the air in the lungs is on one side of a membrane and the blood on the other, a reciprocal action takes place between them. The blood receives through the membrane oxygen from the air, and at the same time the air receives from the blood carbonic acid gas and watery vapor. The amount of oxygen and carbonic acid gas thus exchanged are said to be equal—that is, pure air taken into the lungs is expelled with about 85 per cent. carbonic acid gas and an equal amount of oxygen has been taken from it by the blood.

It appears that a middle sized man, aged about 38 years, and whose pulse is 70 on an average, gives off 302 cubic inches of carbonic acid gas from his lungs in 11 minutes, and supposing the production uniform for 24 hours, the total quantity in that period would be 39,534 cubic inches, (agreeing almost exactly with Dr. Thompson's estimate), weighing 18,683 grains, the carbonic acid in which is 5,363 grains, or rather more than 11 ounces Troy. The oxygen consumed in the same time will be equal in volume to the carbonic acid gas. See respiration under Physiology in the Encyclopædia Brittanica.

It has been shown by experiment that pure air once breathed contains 85 per cent. of carbonic acid, and that the same air by continued respirations would not take more than 10 per cent.. Hence the necessity in the preservation of health of breathing air but once as it enters and departs from a room. Proper ventilation permits the air to pass away after having been once breathed, for in respiration the air expelled from the lungs being warmed ascends and is not where it may be received by their next expansion. But if by insufficient ventilation air is breathed more than once, it gives less oxygen to the blood and takes less carbonic acid and watery vapor from it than is necessary for the preservation of health. The efficacious action of the blood ceases because of the deleterious presence of carbonic acid in the blood and in the air. Carbonic acid gas has a little more specific gravity than atmospheric air, but the difference is so slight that when in a current of air it is carried upward, or where there is no current it tends downward. When a multitude meet in a room which has not been planned to admit fresh air, the carbonic acid gas descends to the floor and from thence it accumulates upward. When it enters the nostrils of the assembly the faces of all become pale, most of them think impatiently of the pleasure of breathing out-door air, and some, perhaps, faint. I am persuaded that the germs of painful sickness and early death are thus often fixed in the human system.

We reflect with astonishment upon the sad consequences of bad ventilation—the great loss of cheerfulness and success in the attainments of intellectual power. A healthy circulation of air is often disapproved by the untutored. As needful medicine which is unpleasant to the taker may be rejected, so a healthy circulation of air by a morbid sensibility may be prevented. Because of bad ventilation children in school may dread their task. For want of pure air perhaps their digestion is impeded. They then feel as if a heavy burden was upon them. If they try to learn they seldom succeed. If they succeed in committing a paragraph to memory it is soon forgotten. Being ignorant of themselves and the causes of their maladies, they judge themselves incapacitated for intellectual pursuits.

It is from the same cause, very frequently, that religious congregations have many members who spend in church an hour of sleepy thoughtlessness, and return home without being able to tell the points of the speaker's discourse, though they had been where one of the most instructive and interesting sermons was preached. It is doubtless because of bad ventilation that the power of the advocate of the gospel in the pulpit is much less than it otherwise would be. Houses of worship are mostly so constructed that the impure air is driven, by opening the door, upon the preacher. He, in the

act of speaking, inhales it more injuriously than others. As a victim he may be marked for an early death. The sympathy and defense which he would have if a wild beast of the forest should assail him in the pulpit does not appear to defend him from the consequences of bad ventilation, which fact is a proof of the absence of knowledge in relation to the subject.

A MECHANIC.

Buffalo, N. Y., May 3, 1860.

From the Southern Rural Gentleman.

The Lord's Prayer.

We lay before our readers the Lord's Prayer, beautifully paraphrased into an acrostic, by Thomas Sturtevant, Jr., a soldier in the 26th regiment United States Infantry.

Our Lord and King, who reign'st enthroned on high,
Father of light! mysterious Deity;
Who art the great I AM, the last, the first,
Art righteous, holy, merciful and just,
In realms of glory, scenes where angels sing,
Heaven is the dwelling place of God our King,
Hallowed thy name, which doth all names transcend.
Be thou adored, our great Almighty Friend,
Thy glory shines beyond creation's space,
Named in the book of justice and of grace.
Thy kingdom towers beyond the starry skies;
Kingdom satanic falls, but thine shall rise.
Come let thine empire, O thou Holy one,
Thy great everlasting will be done!
Will God make known His will, His power display?
Be it the work of mortals to obey.
Done is the great, the wondrous work of love,
On Calvary's cross He died, but reigns above.
Earth bears the record in thy holy word,
As Heaven adores thy love, let earth, O Lord;
It shines transcendent in th' eternal skies.
Is praised in Heaven—for man the Saviour dies.
In songs immortal angels land His name,
Heaven shouts with joy, and saints his love proclaim.
Give us, O Lord, our food, nor cease to give
Us that food on which our souls may live!
This be our boon to-day, and days to come,
Day without end in our eternal home:
Our needy souls supply from day to day,
Daily assist and aid us when we pray.
Bread though we ask, yet, Lord thy blessings lend,
And make us grateful when thy gifts descend;
Forgive our sins, which in destruction place
Us the vile rebels of a rebel race,
Our follies, fruits and trespasses forgive.
Debts which we ne'er can pay, or thou receive:
As we, O Lord, our neighbor's faults o'erlook.
We beg thou'dst blot ours from thy memory's book.
Forgive our enemies, extend thy grace,
Our souls to save, e'en Adam's guilty race.
Debtors to thee in gratitude and love,
And in that duty paid by saints above.
Lead us from sin, and in thy Mercy raise
Us from the tempter and his hellish ways,
Not in our own, but in his name who bled,
Into thine ear we pour our every need.
Temptation's fatal charms help us to shun,
But may we conquer through thy conquering Son!
Deliver us from all which can annoy
Us in this world, and may our souls destroy.
From all calamities which men betide,
Evil and death, O turn our feet aside;
For we are mortal worms, and cleave to clay:
Thine 'tis to rule, and mortals to obey.
Is not thy mercy, Lord, forever free?
The whole creation knows no God but thee.
Kingdom and empire in thy presence fall:
The King eternal reigns the King of all.
Power is with thee—to thee be glory given,
And be thy name adored by earth and Heaven,
The praise of saints and angels is thy own:
Glory to thee, the everlasting One,
Forever be thy trinne name adored;
Amen! Hosanna! blessed be the Lord!

Poverty Not So Great a Curse.

If there is anything in the world that a young man should be more thankful for than another, it is the poverty which necessitates his starting in life under very great disadvantages. Poverty is one of the best tests of human quality in existence. A triumph over it is like graduating with honor from West Point It demonstrates stuff and stamina. It is a certificate of worthy labor creditably performed. A young man who cannot stand the test is not worth anything. He can never rise above a drudge or a pauper. A young man who cannot feel his will harden as the yoke of poverty presses upon him, and his pluck rise with every difficulty poverty throws in his way, may as well retire into some corner and hide himself. Poverty saves a thousand times more men than it ruins; for it only ruins those who are not particularly worth saving, while it saves multitudes of those whom wealth would have ruined. If any young man who reads this is so unfortunate as to be rich, I give him my pity. I pity you, my rich young friend, because you are in danger. You lack one stimulus to effort and excellence, which your poor companion possesses. You will be very apt, if you have a soft spot in your head, to think yourself above him, and that sort of thing makes you mean, and injures you. With full pockets and full stomach, and fine linen and broadcloth on your back, your heart and soul plethoric, in the race of your life you

will find yourself surpassed by all the poor boys around you before you know it.

No, my boy, if you are poor, thank God and take courage; for He intends to give you a chance to make something of yourself. If you had plenty of money, ten chances to one it would spoil you for all useful purposes. Do you lack education? Have you been cut short in the text book? Remember that education, like some other thing, does not consist in the multitude of things a man possesses. What can you do? That is the question that settles the business for you. Do you know your business? Do you know men and how to deal with them? Has your mind, by any means whatsoever, received that discipline which gives to its action, power and faculty? If so, then you are more of a man and a thousand times better educated than the fellow who graduates from college with his brains full of stuff that he cannot apply to the practical business of life—stuff, the acquisition of which has been in no sense a disciplinary process as far as he is concerned. There are very few men in this world less than thirty years of age, unmarried, who can afford to be rich. One of the greatest benefits to be reaped from great financial disasters, is the saving a large crop of young men.—TIMOTHY TITCOMB.

Light.

Light is essential to physical health and spiritual development. Many physicians and nurses fail (partially at least) in their ministrations to the sick. All persons should breathe pure air freely and be exposed to natural light, during the day, and this is especially true of feeble, unhealthy or sick persons; and yet the rooms of these latter are too often darkened, and consequently the patient languishes for want of light. This may be illustrated by placing a plant in the cellar, or other dark place. How eagerly it will chase the struggling rays of the sun, that may chance to find access to the place, and it will soon become pale and sickly for want of light and heat from his genial rays. We may have another evidence of the efficacy of the air and light upon our own systems, by going out in the morning before the sun has reached his meridian. We return with buoyant spirits and a healthy glow upon our cheeks; but otherwise, if we go forth into the evening air after sunset, there will be a heaviness about the brain and a loss of vitality. Our physical systems draw refined electricity from the air filled with the sun's rays, giving us health and vigor of body and buoyancy of spirits; hence the necessity of having those rays emitted into the apartments of the sick.

Picked up Proverbs.

I send you a few proverbs, which I have picked up. I fancy they are all of the coinage of this century. Some I have seen in print, others I have heard.

"Fierce foes make firm friends."

"Half the glory crowns we see, are only gilded crowns of thorns."

"Trust not always to the brightest:
"Know the winter-moon's the lightest."

"God sometimes cut his flowers with a very rough knife."

"A first class youth brings a third class age."

"The wild oats of youth, change into the briers of manhood."

"Life is company, Death is solitude."

"Popularity is not love."

"The heart is often better than the head."

"Admiration without love, is sunshine without rain."

"Grey hairs are the frostwork of age."

"The skies won't go into mourning for our sorrows."

"The sad colored cloak of silence often covers the spotted clothes of ignorance."

"Pleasant lies, once sown, come up prickles."—*Rockingham Register.*

COMFORTS FOR CATTLE.—Reverend Sydney Smith, of England, was something of a farmer, and used to visit his cattle daily, and feed and pat them, until they knew his voice and welcomed his coming. He used to do all in his power to make them comfortable. He has been heard to say; "I am for all cheap luxuries, even for animals; now all animals have a passion for scratching their back-bones, they break down your gates and paling to effect this. Look! this is my universal scratcher, a sharp edged pole, resting on a high and low post, adapted to every height, from a horse to a lamb. Even the Edinburgh Reviewer can take his turn; you have no idea how popular it is. I have not had a gate broken since I put it up. I have it in all my fields."

An Address

On the Opposite Results of Exhausting and Fertilizing Systems of Agriculture, Read Before the South Carolina Institute, at its Fourth Annual Fair, November 18th, 1852.

BY EDMUND RUFFIN, ESQ.

[We omit the introductory part of this admirable address as mainly applicable to the time, place and circumstances of its delivery, but the subject discussed is one of general and permanent interest to all intelligent improvers of the soil. We, therefore, desire to rescue it from the oblivion to which it might be destined, if not committed to some more enduring form of publication than the fugitive pages of the merely occasional pamphlet in which we find it.—Ed. Southern Planter.]

The particular object of the address which will now be read, is to exhibit in full, and place in contrast, the opposite results on a country and people, of *exhausting and improving systems of Agriculture.*

In every feeling and opinion there is no more true and zealous Southerner than myself. I have long studied the domestic life and institutions, and social and moral condition of the people of the slave-holding States, and in every important respect, I may truly say, that I concur with, approve, and sympathize with yourselves on these subjects. Yet it is my present design and business not to treat of our many points of perfect agreement of opinion, but of the few of difference; not to speak of your laudable works, but your errors; and to apply to the planters of South Carolina, censure where deserved, as readily as I would applaud them in other respects, which have no relation to my present general subject. Even in the general system of southern agriculture, in which there is so much to condemn, I cannot but admire the energy and intelligence exercised by the cultivators to attain the object usually sought—which is to draw from the land the greatest *immediate* production and profit. If their object were instead, as it ought to be, the greatest *continued* products and profits, and that object were pursued with as much ability, the people of South Carolina would soon stand in as exalted a position of agricultural success, as now and heretofore, for social and moral qualities, as men and citizens. Even for the few years which have passed since I investigated and reported upon your abundant resources for fertilization, and urged their use, if these means had been properly applied, already the agricultural production of half the arrable lands of the State might have been increased full fifty per cent. I may dare to express this opinion, inasmuch as on a newly purchased farm, I have myself more than tripled that amount of increase by the means recommended, and within the same short time since uttering the precepts for the like improvement here.

The great error of southern agriculture is the general practice of exhausting culture—the almost universal deterioration of the productive power of the soil—which power is the main and essential foundation of all agricultural wealth. The merchant, or manufacturer, who was using (without replacing) any part of his capital to swell his yearly income—or the ship-owner, who used as profit all his receipts from freight, allowing nothing for repairs, or deterioration of capital—would be accounted by all as in the sure road to bankruptcy. The joint-stock company that should (in good faith, as many have done by designed fraud,) annually pay out something of what ought to be its reserved fund, or of its actual capital, to add so much to the dividends, would soon reach the point of being obliged to reduce the dividends below the original fair rate, and, in enough time, all the capital would be so absorbed. Yet this unprofitable procedure, which would be deemed the most m rvellous folly in regard to any other kind of capital invested, is precisely that which is still generally pursued by the cultivators of the soil in all the cotton producing States, and which prevailed as generally, and much longer in my own country, and which, even now, is more usual there than the opposite course of fertilizing culture. The recuperative powers of nature are indeed continually operating, and to great effect, to repair the waste of fertility caused by the destructive industry of man, and but for this natural and imperfect remedy, all these Southern States, and most of the Northern likewise, would be already barren deserts, in which agricultural labours would be hopeless of reward, and civilized men could not exist.

Let me not be understood as extending censure to all southern agriculture, and charging this great defect as being universal.

It is truly very general—but there are numerous exceptions, of which it is not my purpose to treat. My present business is with the errors and defects of southern agriculture, and not with its points of admitted excellenee—as, for example, the elaborate system of riee eulture, and, for other tillage, the very general and eommendable attention paid to the eolleetion of materials for putreseent manures. Nothing has appeared to me more remarkable in the agriculture of this region, than the elose neighbourhood, (often, indeed, seen on the same property,) of the best husbandry, in some respects, and almost the worst in most others.

The great error of exhausting the fertility of the soil is not peculiar to eotton eulture, or to the Southern States It belongs, from necessity, to the agriculture of every newly settled country, and especially where the land before being brought under tillage, was in the forest state. When first settled upon, forest land eosts almost nothing, and labour is scarce and dear. Even if labour is more abundant, it still will be long before enough land can be cleared to allow changes of culture and rest to the fields; and for some years after eaeh new clearing, it would be even beneficial to continue the tillage of corn, tobacco or cotton, so as effectually to kill all remains of the forest growth. But as soon as enough land can be brought under culture, and has been put in clean condition, so as to allow space for change of erops and due respite from continued tillage, the previous exhausting eourse will no longer be best even for early profit. Even in a new eountry, while land is yet fertile, it is eheaper to preserve that fertility from any exhaustion, than it is to reduce it eonsiderably. And in an older agricultural country, like South Carolina, having abundant resources in marl and lime for improving fertility, it would be mueh eheaper, and more profitable, to improve an aere of before exhausted land, than it is to clear and bring under culture an aere of ordinary land from the forest state, allowing that both pieees are to be brought to the same power and rate of production.

New settlers are not eensurable for beginning this exhausting eulture. But they and their suceessors are not the less eondemnable for continuing it after the eireumstanees whieh justified it have ceased. The system was first begun in Eastern Virginia, beeause it was the first settled part of the present United States, and it continued to prevail almost universally, until since the eourse of my adult life began, and only has partially eeased since, beeause the eountry was nearly reduced to barrenness and the proprietors to ruin. From this erroneous poliey, so long pursued in Virginia, and the manifest and well known disastrous results in the general and seemingly desperate sterility of the older settled portion of the State, the younger Southern States might have taken warning, and have learned to profit by the woful and costly experienee of others. But it seems that every agricultural eommunity must and will run the same raee of exhausting eulture, and impoverishment of land and its eultivators, before being eonvineed of the propriety of eommeneing an opposite course—after the best means and facilities for making that beneficial change have been greatly impaired by the lapse of time, and progress of waste of fertility—if, indeed, these means are not then irretrievably forfeited.

If, at this time, the work of improvement, with the aid of marl and lime, were properly begun and proseeuted, there would be found here inealulable advantages over those of the pioneers in the like work in Virginia. These advantages would be—first, a tenfold better supply of far rieher and eheaper marl than is found in Virginia; second, much more remaining organie matter, or original fertility of the soil, as yet unexhausted; third, full information to be obtained of the operations and opinions of thousands of experienced and suceessful marlers to refer to, of whieh advantage there was almost nothing existing thirty years ago. In South Carolina more marling could now be done in a year, and in a proper manner, than was done in Virginia for the first twenty years; and, though judging merely by analogy, I infer that the benefit would be fully as great in this region as in my own.

And now I will state, from unquestionable offieial documents, something of what has been effected in Virginia, not merely in cases of particular farms, and those entirely marled, which might show tripled or quadrupled products and market returns, and tenfold *intrinsic* value, compared to their former low condition, but eases showing the bearing of the eomparatively few marled and limed farms on the aggregate assessed value of all the lands in lower Virginia, and upon the reeeipts of land tax from the same,

although not one-twentieth part of the whole tide-water district has yet been improved in fertility, or is in the least degree better (and, probably, the great remainder is much poorer) than when the marling of other lands first began to raise the general average of assessed values throughout this whole district.

It appears, from the latest state assessment of lands in Virginia, for 1850, that the actual increase of value in the tide-water district only, since 1838, the previous assessment, was more than seventeen millions of dollars. On this increase of valuation, and at the same rate of taxation, there is more than $17,000 increase of land tax alone accruing annually to the state treasury. It is obvious that any increased value of lands, caused by their increased production, would necessarily require an increase of labour and of farming stock, and would produce proportional increase of general wealth of the improvers, and would add other receipts from taxes in proportion—all serving still more to augment the public revenue.

The recent addition to the aggregate value of lands in Eastern Virginia, is admitted to be the effect of agricultural improvements; and that more than all the nett increase is due to marling and liming only, would be equally evident, if I could here adduce the proofs, as I have done elsewhere.* Further; though 1838 was the date of the earliest assessment made after marling and liming had begun to increase aggregate production and value of lands, it is an unquestionable fact that the general impoverishment had been greater, and values much lower, about 1828. And if this earlier time and greatest depression had been marked by an assessment then made, the full increased value of lands from that time, would have appeared at least $30,000,000 in 1850, instead of seventeen and a quarter millions, counting from the already partially advanced improvement and enhanced values of 1838. However, even if these, my deductions and estimates, go for nothing, there will still remain the proof, by official documents, of the actual increase of the value of lands in twelve years, of seventeen and a quarter millions, or nearly one and a half millions yearly.

Now, bear in mind that these are not the results of the improving of all the tide-water region, nor all of its much smaller arable portion, but, probably, of not more than one-twentieth of the cultivated land. All the remainder, if uncultivated, is stationary; and if cultivated, is generally in a continued course of exhaustion; and the small quantity of enriched land had first to make up for all deficiencies of the impoverished, and lessenings of production throughout the whole tide-water district, and after all such deductions, still exhibited a clear surplus of seventeen and a quarter millions of increased aggregate value. This is the result of but the beginning, and a very recent beginning of measures for improvement, executed in every case imperfectly, often injudiciously, and sometimes injuriously, altogether on less than one-twentieth of the space on which calcareous manures are available. The great omitted space will hereafter be fertilized in the same manner. Then the actual increase of value of lands, founded on increased production, will be counted by hundreds of millions of dollars. And this anticipated enormous amount of fertility and capital to be created, might have been even now in possession, if our improvements by calcareous manures had been begun thirty years earlier, instead of there having been continued through all that time, the progress of wasting and destroying the remaining powers of the soil. South Carolina began exhausting culture much later, and is now full fifty years less advanced towards the lowest depth of that descent which we had nearly completed. If that future of fifty years of continued exhaustion could now be cut off, and the improvement of lower South Carolina by calcareous manures could be at once begun and continued, the loss of at least one hundred millions of dollars of now remaining value would be saved, and a gain of three hundred millions from improvement would be reached sooner by the same fifty years.

This would be better, by all the great value, than even the following out precisely the first sinking and now rising course of lower Virginia. In that region, the cultivators waited until the fertility of the land had so nearly expired, that it was supposed to be in *articulo mortis*—at the last gasp—

* In a communication recently made to the State Agricultural Society of Virginia, on "Some of the Results of the Improvement of lands, by Calcareous Manures, on Public Interests in Virginia, in the increase of Production, Population, General Wealth and Revenue to the Treasury."

before the work of resuscitation was begun.

The comparative results of the opposite systems of improving and exhausting cultivation may be thus illustrated. Suppose a certain investment of capital will yield twenty per cent. of present annual interest, or nett products, and two persons invest equal amounts in the business. The more provident one draws and spends but fifteen per cent. annually of his income, and leaves the remaining five per cent. to accumulate and to be added to his interest bearing capital. The other proprietor draws each year, and spends all of the certain and annual average returns of his capital, and five per cent. more of the capital stock itself. He reasons (may I say it?) like many cotton planters, and infers that so small a detraction from his capital will do no harm, as he will have so much the more of quick returns for immediate use or re-investment. In less than twenty years, one of these individuals will have doubled his original capital, and also his twenty per cent. income, and the other will have exhausted his entire fund.

But it may be said, (as alleged in regard to the squanderers of fertility,) that as the latter person had received so much more of annual returns at first, he might have re-invested and thus have retained his over-draughts of annual products. If a planter —and, of course, his over-draughts had been from the fertility of his land—he might have bought another plantation, to work and to wear out in like manner. But even if so, wherein would be the gain? He would have had the disadvantages of a change of investment, of removal, and making a new settlement. But where one man would so save and re-invest his over-draughts from his capital, two others would use, or, perhaps, spend theirs, as if so much actual clear profit or permanent income. When the land is utterly worn out, and the total capital of fertility wasted, (or the small remnant is incapable of paying the expenses of farther cultivation,) it will most generally be found that the channels into which the early full streams of income flowed, are then as dry as the sources.

I do not mean that it necessarily follows that the planter who exhausts his land, also lessens his general wealth. Would that it were so. For, then, such certain and immediate retribution would speedily stop the whole course of wrong doing, and prevent all the consequent evils. It may be rarely, and it might be never the case, that the exhauster of land becomes absolutely poorer during the operation. He will have helped to impoverish his country, and to ruin it finally, (by the same general policy being continued,) he will have destroyed as much of God's bounties as the wasted fertility, if remaining, would have supplied forever, and as many human beings as those supplies would have supported, will be prevented from existing. And yet the mighty destroyer may have increased his own wealth. Nevertheless, he does not escape his own, and even the largest share of the general loss he has caused. While thus destroying, say $20,000 worth of fertility, the planter, by the exercise of industry, economy and talent in other departments of his business, or from other resources, may have grown richer by $10,000. But if, as I believe is always true, it is as cheap and profitable to save as to waste fertility, in the whole term of culture, then the planter, in this case, might have gained in all $30,000 of capital, if he had saved, instead of wasting, the original productive power of his land.

Even if admitting the common fallacy which prevails in every newly settled country, that it is profitable to each individual cultivator to wear out his land, still, by his doing so, and all his fellow-proprietors doing the like, while each one might be adding to his individual wealth, the joint labours of all would be exhausting the common stock of wealth, and greatly impairing the common welfare and interest of all. The average life of a man is long enough to reduce the fertility of his cultivated land to one-half, or less. Thus, one generation of exhausting cultivators, if working together, would reduce their country to one-half of its former production, and, in proportion, would be reduced the general income, wealth and means of living, population and the products of taxation, and, in time, would as much decline the measure of moral, intellectual and social advantages, the political power and military strength of the commonwealth. The destructive operations of the exhausting cultivator have most important influence far beyond his own lands and his own personal interests. He reduces the wealth and population of his country and the world, and obstructs the progress and benefits of education, the social virtues, and even moral and religious culture. For upon the productions of the earth depends more

or less the measure to be obtained, by the people of any country, of these and all other blessings which a community can enjoy. There is, however, one very numerous class of exceptions to this general rule, which is, when an agricultural people, or interest, is tributary to some other people or interest, whether foreign or at home. Such exceptions are presented in different modes, by the agriculture of Cuba being tributary to Spain, of many other countries to their own despotic and oppressive home governments; and of the southern states of this confederacy, to greater or less extent, to different pauper and plundering interests of the northern states, which, through legislative enactments, have been mainly fostered and supported by levying tribute upon southern agriculture and industry.

The reason why such woful results of impoverishment of lands, as have been stated, are not seen to follow the causes, and speedily, is that the causes are not all in action at once and in equal progress. The labours of exhausting culture, also, are necessarily suspended, as each of the cultivators' fields is successively worn out. And when tillage so ceases, and any space is thus left at rest, Nature immediately goes to work to recruit and replace as much as possible of the wasted fertility, until another destroyer, after many years, shall return again to waste, and in much shorter time than before, the smaller stock of fertility so renewed. Thus, the whole territory so scourged, is not destroyed at one operation. But though these changes and partial recoveries are continually, to some extent, counteracting the labours for destruction, still the latter work is in general progress. It may require (as it did in my native region) more than two hundred years from the first settlement, to reach the lowest degradation. But that final result is not the less certainly to be produced by the continued action of the causes. I have witnessed at home, nearly the last stage of decline. But I have also witnessed, subsequently, and over large spaces, more than the complete resuscitation of the land, and great improvement in almost every respect, not only to individual, but to public interests; not only in regard to fertility and wealth, but also in mental, moral and social improvement.

Inasmuch as my remarks would seem to ascribe the most exhausting system of cultivation especially to the slave-holding states, the enemies of the institution of slavery might cite my opinions, if without the explanation which will now be offered, as indicating that slave labour and exhausting tillage were necessarily connected as cause and effect. I readily admit that our slave labour has served greatly to facilitate our exhausting cultivation; but only because it is a great facility—far superior to any found in the non-slave-holding states—for all agricultural operations. Of course, if our operations are exhausting of fertility, then certainly our command of cheaper and more abundant labour enables us to do the work of exhaustion, as well as all other work, more rapidly and effectually. But if directed to improving, instead of destroying fertility, then this great and valuable aid of slave-labour will as much more advance improvement, as it has generally heretofore advanced exhaustion. The enunciation of this proposition is perhaps enough. But if any, from prejudice, should deny or doubt its truth, they may see the practical proofs on all the most improved and profitable farms of Lower and Middle Virginia. On the lands of our best improvers and farmers, such as Richard Sampson, Hill Carter, John A. Selden, William B. Harrison, Willoughby Newton, and many others, slave-labour is used not only exclusively and in larger than usual proportion, (because more required on very productive land,) but is deemed indispensable to the greatest profits, and operating to produce more increase of fertility, and more agricultural profit, than can be exhibited from any purely agricultural labours and capital north of Mason and Dixon's line.

There is another and stronger reason for the greater exhausting effects of Southern agriculture, and, therefore, of tillage by slave-labour. The great crops of all the slave-holding States, and especially of the more Southern—corn, tobacco, and cotton—are all tilled crops. The frequent turning and loosening of the earth by the plow and hoe—and far more, when continued without intermission year after year—advance the decomposition and waste of all organic matter, and expose the soil of all but the most level surfaces to destructive washing by rains—and rains the more heavy and destructive in power, in proportion as approaching the South. The Northern farmer is guarded from the worst of these results, not because he uses free-labour, but because his labour is so scarce

and dear that he uses as little as possible for his purposes. Besides this consideration, his climate is more suitable to grass than to grain, and his other large crops are much more generally broad-cast than tilled. These are sufficient causes why, in general, the culture of land in the Northern States should be less exhausting than in the Southern, without detracting anything from the superior advantages which we of the South enjoy, in the use of African slave-labour.

At the risk of uttering what may be deemed trite or superfluous to many of those who now honour me by their attention I beg leave to state concisely, the fundamental laws, as I conceive them to be, of supply and exhaustion of fertilizing matters to soils, and aliment to plants.

All vegetable growth is supported, for a small part, by the alimentary principles in the soil, (or by what we understand as its fertility,) and partly, and for much the larger portion, by matters supplied, either directly or indirectly, from the atmosphere. More than nine-tenths usually of the substance of every plant is composed of the same four elements, three of which, oxygen, nitrogen, and carbon, compose the whole atmosphere. The fourth, hydrogen, is one of the constituent parts of water; and, also, as a part of the dissolved water, hydrogen is always present in the atmosphere, and in great quantity. Thus, all these principal elements of plants are superabundant, and always surrounding every growing plant; and from the atmosphere, (or through water in the soil,) very much the larger portion of these joint supplies is furnished to plants; and so it is of each particular element, except nitrogen; much the smallest ingredient, and yet the richest and most important of all organic manuring substances, and of all plants. This, for the greater part, if not all its small share in plants, it seems is not generally derived even partially from the air, though so abundant therein, but from the soil, or from organic manures given to the soil.

But though bountiful nature has offered these chief alimentary principles and ingredients of vegetable growth in as inexhaustible profusion as the atmosphere itself, which they compose, still their availability and beneficial use for plants are limited, in some measure, to man's labours and care to secure their benefits. Thus, for illustration, suppose the natural supplies of food for plants furnished by the atmosphere to be three-fourths of all received, and that one-fourth only of the growth of any crop is derived from the soil and its fertility. Still, a strict proportion between the amount of supplies from these two different sources, does not the less exist. If the cultivator's land, at any one time, from its natural or acquired fertility, affords to the growing crop alimentary principles of value to be designated as five, there will be added thereto other alimentary parts, equal to fifteen in value, from the atmosphere. The crop will be made up of, and will contain, the whole twenty parts, of which five only were derived from, and served to reduce, by so much, the fertility of the soil. These proportions are stated merely for illustration, and, of course, are inaccurate. But the theory or principle is correct; and the law of fertilization and exhaustion, thence deduced, is as certainly sound.

Then, upon these premises, there is taken from the land, for the support of the crop, but one-fourth of the aliment derived from all sources for that purpose. And, if no other causes of destruction of fertility were in operation, one green or manuring crop, (wholly given to the land, and wholly used as manure,) would supply to the field as much of alimentary or fertilizing matter as would be drawn thence by three other crops, removed for consumption or sale. But in practice there *are* usually at work important agencies for destruction of fertility, besides the mere supply of aliment to growing crops. Such agencies are, the washing off of soluble parts, and even the soil itself, by heavy rains, the hastening of decomposition and waste of organic matter, by frequent tillage processes and changes of exposure—and plowing or other working of land when too wet, either from rain or want of drainage. Also, a cover of weeds left to rot on the surface, or any crop plowed under, green or dry, as manure, is subject to more or less waste of its alimentary principles, in the course of the ensuing decomposition. Therefore it is nearer the facts, that two years' crops or culture, for market or removal, would require one year's growth of some manuring crop to replace and to maintain undiminished, or increasing, the productive power of the field. The poorest and also the cheapest of such manuring crops, will be the natural or "volunteer" growth of weeds on land left

uncultivated, and not grazed; and the best of all will be furnished in the whole product of a broad-cast sown and entire crop of your own most fertilizing and valuable field peas.

Thus, of each manuring crop, (as of all others,) or of the fertilizing matter thus given to the land, the cultivator has contributed but five parts from the land, or its previous manuring, and the atmosphere has supplied fifteen parts. If, then, the cultivator by still more increasing his own contributions, will give ten parts of alimentary matter to the land and crop, there will be added thereto from the atmosphere in the same two-fold proportion, or thirty parts, and the whole new productive power will be equal to forty. And if the soil is fitted by its natural constitution, or the artificial change induced by calcareous applications, to fix and retain this double supply of organic matter, the land will not only be made, but will remain, as of much increased fertility, under the subsequent like course of receiving one year's product for manure, for every two other crops removed. But, on the other hand, if more exhausting culture had been allowed, instead of either increased or maintained production—or if the crops take away more organic matter than nature's three-fold contributions will replace—then a downward progress must begin, and will proceed, whether slowly or quickly, to extreme poverty of the land, its profitless cultivation, and final abandonment. In this, the more usual case, the cultivator's contributions of aliment, (obtained from the soil,) are reduced from the former value, designated as five, first to four, and next successively to three, two, and finally less than one; and nature keeps equal pace in reducing her proportional supplies, from fifteen, first to twelve, and so on to nine and six, and less than three parts. So the strongest inducement is offered to enrich, rather than exhaust the soil. For whatever amount of fertility the cultivator shall bestow, or whatever abstraction from a previous rate of supply he shall make, either the gain or the loss will be tripled in the account of supplies from the atmosphere, furnished or withheld by nature.

In another and more practical point of view, the loss incurred by exhausting culture, may be plainly exhibited. According to my views, (elsewhere fully stated,*) soils supposed to be properly constituted as to mineral ingredients, do not demand for the maintaining and increasing of their rate of production, more than the resting or the growth of two years in every five, mainly to be left on the land as manure. These are the proportions of the five-field rotation, now extensively used on the most improving parts of Virginia. And one of these two years the field is grazed, so that parts of its growth of grass is consumed, instead of remaining on the field for manure. To meet the same demands, the more Southern planter might leave his field to be covered by its growth of weeds, or natural grasses, one year, (and also to be grazed,) and a broad-cast crop of pea-vines to be plowed under in another for every three crops of grain and cotton. But the ready answer to this, (and I have heard it many times,) is, "What! lose two crops in every five years? I cannot afford to lose even one." It may be that the planter is so diligent and careful in collecting materials for prepared manure, that he can extend a thin and poor application, and in the drills only, over nearly half his cotton field; and perhaps he persuades himself that this application will obviate the necessity for rest and manuring crops to the land. The result will not fulfil this expectation. But even if it could, the manuring thus given directly by the labour of the planter, is more costly than if he would allow time and opportunity for nature to help to manure for him—whether alone, or still better if aided by preparing for and sowing the native pea, to the production of which your climate is so eminently favourable. All the accumulations of leaves raked from the poor pine forest, with the slight additional value which may be derived from the otherwise profitless maintenance of poor cattle, will supply less of food to plants, and at greater cost, than would be furnished by an unmixed growth of peas, all left to serve as manure.

The native or Southern pea, (as it ought

* In a recent communication to the Virginia State Agricultural Society, entitled "New Views of the Theory and Laws of Rotation of Crops, and their practical application." These views I deem especially applicable to the agricultural condition of South-Carolina, and of importance next to the main subject of the present address.

to be called,) of such general and extensive culture in this and other Southern States, is the most valuable of manuring crops, and also offers great and peculiar advantages as a rotation crop. The seeds, (in common with other peas and beans,) are more nutritious as food, for man and beast, than any of the cereal grains. The other parts of the plant furnish the best and most palatable provender for beasts. The crop may be so well made, in your climate, as a secondary growth under corn, that it is never allowed to be a primary crop, or to have entire possession of the land. It will grow well broad-cast, and either in that way, and still better if tilled, is an admirable cleansing growth. It is even better than clover as a preparing and manuring crop for wheat. In one or other of the various modes in which the pea-crop may be produced, it may be made to suit well in a rotation with any other crops. Though for a long time I had believed in some of the great advantages of the pea crop, and had even commenced its culture as a manuring crop, and on a large scale, it was not until I afterwards saw the culture, growth and uses in South-Carolina, that I learned to estimate its value properly, and perhaps more fully than is done by any who, in this State avail themselves so largely of some of its benefits. Since then, I have made the crop a most important member of my rotation; and its culture, as a manuring crop has now become general in my neighbourhood, and is rapidly extending to more distant places. If all the advantages offered by this crop were fully appreciated and availed of, the possession of this plant in your climate would be one of the greatest agricultural blessings of this and more Southern States. For my individual share of this benefit, stinted as it is by our colder climate, I estimate it as adding, at least, one thousand bushels of wheat annually to my crop.

(TO BE CONTINUED.)

It is better to love a person you cannot marry, than marry a person you cannot love. This is a short text for a long sermon, which human experience will continue to preach "until the last syllable of recorded time."

It is not always the raggedest man that is the shabbiest fellow.

Gleanings for the Curious.

KICKING THE BUCKET.

The tradition among the slang fraternity as to the origin of this phrase is, that "One Bolsover, having hung himself to a beam while standing on the bottom of a pail or bucket, kicked the vessel away in order to pry into futurity, and it was all over with him from that moment—*Finis!*"

BUMPER.

When the Roman Catholic religion was in the ascendant in England, the health of the Pope was usually drunk in a full glass immediately after dinner—*au bon pere:* hence the word "Bumper."

ROYAL SAYING.

It was Alphonsus, surnamed the Wise, King of Aragon, who used to say, "That among so many things as are by men possessed or pursued in the course of their lives, all the rest are baubles, besides old wood to burn, old wine to drink, old friends to converse with, and old books to read.

DUN.

This word, generally supposed to be derived from the French *Donnez*, owes its origin, according to the British Apollo of September, 1708, to one *Joe Dun*, a famous bailiff of Lincoln in the time of Henry VII. He is said to have been so extremely shrewd in the management of his rough business, and so dexterous in the collection of dues, that his name became proverbial; and whenever a man refused to pay his debts, it grew into a prevalent custom to say, "Why don't you *Dun* him?"

OLD ENGLISH CHRISTMAS PUDDING.—To make what is termed a pound pudding, take of raisins well stoned, currants thoroughly washed, one pound each, chop a pound of suet very finely and mix with them; add a quarter of a pound of flour, or bread very finely crumbled, three ounces of sugar, one ounce of grated lemon peel, a blade of mace, half a small nutmeg, one tea-spoonful of ginger, half a dozen eggs well beaten; work it well together, put it into a cloth, tie it firmly, allow room to swell, and boil, not be suffered to stop boiling.—*Harrisburg Telegraph.*

If you wish to have fine stock, feed them well.

Mistake of Young Men.

It is a great mistake into which many American youth fall, that manual labour is not honourable. To be a merchant, a lawyer, a doctor, an engineer, a military or naval officer, or a shipmaster, is, in their esteem, much more honourable than it is to be a mechanic or farmer. It cannot be denied that all these other occupations require exertion. The doctor is often quite as weary when his day's work is done, as the farmer or blacksmith can be, but he is not half so sure of a quiet night's sleep as they are; and we all know to what hardships engineers are exposed, as well as persons who follow the seas.

We often see vigorous young men seeking places as clerks in stores. They all hope, and generally expect, some favourable tide in the affairs of life, which "will lead them on to fortune." Other men have accumulated vast sums in buying and selling goods, why not I? is the language they use. They rarely consider that but a small number of these who embark, ever complete their voyage. Where fifty succeed, perhaps a hundred fail.

But an industrious, thrifty farmer, seldom fails to secure for himself and family the comforts of life. The skilful and practical mechanic, too, is generally sure of a remuneration for his labour, and with common prudence he can provide a competence for the future. That a princely fortune can be heaped up by the plow, the jack-plane, or the sledge, we do not say; nor is it pretended that men are as likely to acquire fame on a farm, as at the bar.

But the history of the world will show, that the men who have done most for the welfare of the race, and whose memories are cherished with the most respect, came from the hard-working ranks. Princely fortunes are more easily wasted than won, and while the moderate possessions of the farmer or mechanic supply all the comforts of life, they are attended with few temptations to luxury, or extravagance, and still fewer risks from the folly or fraud of others.

There can be no doubt that agricultural employments are the most natural to man, and there is no country on the globe in which the facilities for pursuing these employments are so great as in the United States, requiring but a very small outlay of money to obtain a respectable farm to begin with. A good knowledge of the methods of husbandry can be easily acquired. The implements of labour are as good and cheap as can be found the world over. The title of land is well secured; the large monopolies, such as some of the countries of the Old World are burthened with, can never exist here. What greater encouragement could be asked by one who only desires to live comfortably and independently? The farmer, that honest, goodly farmer, is one of the most independent men in the wide world. He has the promise that seed time and harvest will not fail. He may always plow in hope, and reap with joy. To till the earth, then, is really an honourable calling.

But it does not require that a man should be enslaved to the plow, nor that he should make companions of his sheep and oxen. The shrewdest and most intelligent men, who sit on our juries and help make our laws, come from their farms and return to them as soon as their duties terminate. The good sense, sobriety, contentment, industry, and love of order which characterize our American farmers, are among the most important safeguards of public peace and prosperity.

American Banner and Leader.

The Law of Life.

"There is," says Guyot, "a law of life and growth, which, if taken in its most general formula, in its *rhythm*, is applicable to all that undergoes the process of development.

"All life, as we have said, in its most simple formula, may be defined in a *mutual exchange of relations*.

"An exchange supposes at least two elements, two bodies, two individuals, a *duality* and a difference, an equality between them, in virtue of which the exchange is established.

"There is, then, at the foundation of all the phenomena of life, a difference between two or more individuals, calling out an action and reaction of one upon another, the incessant alternation of which constitutes the movement we call life, and which gives birth to all the phenomena we consider as its manifestation.

"Let us endeavor, first, to detect this law in inorganic nature.

"The lamp that gives us light, the gas that burns before our eyes, what else is it

than one of those phenomena of inorganic life, the result of the mutual and repeated action of two heterogeneous bodies upon each other? We have, on the one side, the hydrogen gas, conducted by the pipe, and brought into the presence of oxygen contained in the air. These are two bodies considered as simple, but having different properties. Place them in contact, under suitable conditions of temperature, and the mutual action immediately commences; they combine with an activity which becomes visible to the senses by the rapid development of heat and light; and in this continuous, vital movement, their differences are extinguished, or rather combine and harmonize in a new body, a product, the end of all this activity, in which the antagonism of the primitive elements has ceased. This new body is water; it is a liqnid, and no longer a gas; it is a body, all the physical properties of which are different from those which compose it, which, as you know, play very different parts throughout nature. The same gas that serves to light us, contains also carbon; this also combines with oxygen to form a new body of carbonic acid gas, the properties of which are all special in it.

"Each of these new products may, in turn, enter into relations of exchange with others, and pass as an elementary body into a new combination, the result of which will be a body composed of four simple elements, but endowed, as such, with entirely different qualities, belonging to it alone. It may, in turn, become one of the elements composing a multitude of bodies; and it is thus that the sixty elements our chemical means have not enabled us to decompose, which chemists call simple bodies, supply nature with materials sufficient for the immeasurable variety of all the compound bodies that exist.

"What do we see, finally, in all this physical and chemical process? A primitive difference between two substances, an action and reaction of one upon the other, and their combination in a new body, which may, in its turn perform the same part." * * *

"Without coming into combination, a difference between two bodies excites none the less a vital movement. Place near each other a plate of zinc and a plate of copper; these two enter immediately into an interchange of positive and negative electricity, and give birth to these powerful electrical and magnetic currents which modern industry puts to such admirable use. I say, further, place side by side two plates of the same metal, but unequally heated, and there is established between them an interchange of temperature, and of electrical currents of the same nature. Thus every where a simple difference, be it of matter, be it of condition, be it of position, excites a manifestation of vital forces, a mutual exchange between the bodies, each giving to the other what the other does not possess. To multiply these differences, to increase their variety, is to render the actions and reactions more frequent, is to extend and to intensify life.

"But let us pass to organized nature. It would be easy to demonstrate that the law we have just recognized is also that which governs the growth of the vegetable; but I would rather trace it in the animal world, wherein it is expressed still more clearly.

"Let us see, first, how nature proceeds in the formation of the organic individual, the animal. No one has shown this better than my learned friend,* whom I need not name in this place. Thanks to him, these facts have become familiar, I shall need only to recall them to mind.

"I begin with the animal considered in itself as an individual. In a liquid animal matter, without precise form, homogeneous, at least in appearance, a mass is outlined which takes determinate contours, and is distinguished from the rest; it is the egg. Soon, in the interior of the egg, the elements separate, diverging tendencies are established; the matter accumulates and concentrates itself upon certain points; these accumulations assume more distinct forms and more specific characters; we see organs traced, a head, an eye, a heart, an alimentary canal. But this diversification does not go on indefinitely. Under the influence of a special force, all these diverse tendencies are drawn together towards a single end; these distinct organs are united and coördinated in one whole, and perform their functions in the interest and for the service of the individual commanding them.

"What, then, has been the course pursued here by nature?

"The point of departure is a unit, but a *homogeneous unit*, without internal differences; a chaotic unit, if I may venture to say so; for what is a chaos but this absence of organization in a mass, all the parts of which are alike?

* Professor Agazziz.

"The progress; it is *diversity*, the establishment of differences, the giving to forms and functions their special characters.

"The end; it is a new unit, the *organic or harmonic unit*, if you please; for all the individual organs are not fortuitously assembled, but have each of them their plan and functions marked out. The totality of these evolutions is what is ordinarily called *development.*

"The progress, we say, is *diversification;* it is the variety of organs and of functions. What, then, is the condition of a greater amount of life, of a richer life, of a completer growth for the animal? Is it not the multiplicity and the variety of the special organs, which are so many different means whereby the individual may place himself in relation with the external world, may receive the most varied impressions from it; and, so to speak, may *taste* it in all its forms, and may act upon it in turn? What an immense distance between the life of the polype, which is only a digestive tube, and that of the superior animals; above all, of man, endowed with so many exquisite senses, for whom the world of nature, as well as the world of ideas, is open on all sides, awaking and drawing forth in a thousand various ways, all the living forces wherewith God has endowed him!

"And what we here say of organic individuals—is it not true of societies of individuals, and particularly of human societies? Is it evident that the same law of development is applicable to them? Here, again, homogeneousness, uniformity, is the elementary state,—the savage state. Diversity, variety of elements, which call for and multiply exchanges; and almost infinite *specialization* of the functions corresponding to the various talents bestowed on every man by Providence, and only called into action and brought to light by the thousand wants of a society as complicated as ours,—these have, in all times, been the sign of a social state arrived at a high degree of improvement.

"Could we, indeed, conceive the possibility of this multitude of industrial talents that have their birth in the wants of luxury, and are revealed by the thousand elegant nothings displayed in our drawing-rooms, among the Indians of the Rocky Mountains, sheltered by the few branches which form their wretched huts? The commercial life, which creates the prosperity of the foremost nations of the globe—is it possible among a people whose ambition is limited to hunting in the neighbouring wild the animal that is to furnish food for the day? Could we hope to see the wonders of architecture unfolded among a people who have no public edifices but the overhanging foliage of their forests? Had Raphael been born among them, would he ever have given his admirable masterpieces to the world? And the precious treasures of intelligence and of lofty thoughts contained in our libraries,—where would they be, if human societies had preserved the simplicity a false philosophy has called the simplicity of nature, but in reality the most opposed to the true nature of man?

"No, it is the exchange of products by the commerce of the world, that makes the material life and prosperity of the nations. It is the exchange of thoughts, by the pen and by speech, that sets in motion the progress of intelligence. It is the interchange of the sentiments and affections, that makes the moral life and secures the happiness of man.

"Thus, all life is mutual,—is exchange. In individuals, as well as in societies, that which excites life, that which is the condition of life, is *difference.* The progress of development is diversity; the end is the *harmonious unity* allowing all differences, all individuals to exist, but coördinating and subjecting them to a superior aim.

"Every being, every individual, necessarily forms a part of a greater organism than itself, out of which we can not conceive its existence, and in which it has a special part to act. By performing these functions, it rises to the highest degree of perfection its own nature is capable of attaining. Unhappy he who isolates himself, and refuses to enter into those relations of intercourse with others which assure to him superior life. He deprives himself voluntarily of the nutritive sap intended to give him vigor, and, like a branch torn from the vine, dries up and perishes in his egoism.

"All is order, all is harmony in the universe, because the whole universe is a thought of God; and it appears as a combination of organisms, each of which is only an integral part of one still more sublime. God alone contains them all, without making a part of any.

"Pay all necessary regard to filial and fraternal duties, so that you may give due importance to the various relations of life."

Humane Treatment of the Horse.

"A merciful man is merciful to his beast."

The above proverb is worthy the attention of all who own or use a horse; and more particularly during inclement seasons of the year.

It is said that in no country, according to the population, are there as many horses as in the United States; and we may add, that in no other country on the face of the earth, is that animal so badly used as here.

The cause of this bad treatment is mainly owing to the fact, that the American people have less sympathy for the sufferings of the brute creation than those of other countries. Even the sufferings of our fellow men excite far less pity in the breasts of Americans, than is manifested by the citizens of foreign countries. So great are the abuses of horses in our cities, that the authorities of New York, Boston, Philadelphia, and other large places, are almost daily arraigning cartmen and cabmen, and fining them for cruelties that they practice on their overtasked horses.

So insensible are the public to such barbarities, that a man may be seen to knock down his horse, out of sheer anger towards his poor brute; because, perhaps, he is unable to perform impossibilities, and scarcely the least notice is taken of the act, unless it be a low jeer, or "horse laugh" at the sufferings of the prostrate beast. Scarcely ever do we hear a rebuke given to such wretches, unless it be so weak as to fail to convey any merited reproof.

These things augur a seared, blunted, and brutalized state of the human mind, which is to be found in a lamentable degree in the people of the United States. Stage drivers have but a faint sympathy for the sufferings of horses under their charge, and generally the only care that is taken of them is caused from a desire to retain their situations, rather than from any innate feelings of pity for the overworked animals in their charge.

The same may be said of hired farm hands, with occasional exceptions; and when a farmer finds that he has a man in his employ devoid of all kindness for the domestic animals which he is required to feed or drive, he had better say to him, "John, we'll settle to-day, and you can find employ elsewhere." It is dangerous to have such a man upon the farm, and the sooner he is got rid of the better.

The half-civilized Arab is a model of kindness to his horse, in comparison with the deeds of the unfeeling human brutes of the western hemisphere. He admits his favorite mare to all the rights and privileges of the social circle. The Russian serf makes a companion of his horse, and talks to him with gentleness, as though he were possessed of reasoning powers. The wandering Tartar, though scarcely half-civilized, instructs his horse with more care than he teaches his children, while in enlightened, christianized America, the horse is abused, and made to perform much more labor than can be done, without endangering his health and shortening his life many years.

It is a cruel neglect of horses during cold, stormy weather, to leave them standing, tied in front of some stone wall or house, with no blankets to protect them, while their owners are sitting unfeelingly by a good fire, for hours at a time, without a thought on the uncomfortable condition of their beasts, which stand shivering in the wind or storm.

In other cases, horses are driven into town —Jehu-like—and tied to posts, with, perhaps, their feet in cold water, and after shivering for hours, are driven home again, and left in their stables without any attention being paid to them that their condition demands.

It is said that our horses are short lived; but is it any wonder that they are so? Is it not rather a wonder that they live as long as they do, considering the usage that many receive?

The horse has a similar constitution to man. He will take cold by exposure as man does, and he will be subject to disease, produced by exposure, in a like manner. How important, then, it is that we should look well to his condition while in the harness, as well as when in the stable, that he may avoid contracting diseases which may render him unsound for life, and also impair his ability in a great degree, to perform the amount of labour that he could do, if he were sound.

Southern Rural Gentleman.

YELLOW WASH.—As the time for whitewashing draws near, I would recommend the following for rooms that are not intended to be papered, viz:—Prepare whitewash in the usual way, as for whitewashing; then take horse-radish leaves, as soon as they are grown enough, boil them as if for greens, pour the juice into the whitewash, and you have a beautiful bright yellow.—A. WILLSON, Marcellus, N. Y., 1860.—*New Yorker.*

Perseverance.

There is something noble in any man who breasts difficulties, with the firm determination to conquer them, in spite of the barriers which oppose his onward progress. We would not go as far as a celebrated poet went, when he broadly asserted that a man might do any thing he chose, because God had given him arms long enough, if he would but take the trouble to extend them; but we do most emphatically say that success is nearer to the grasp of most men than is generally supposed. Indeed, obstacles are but the dykes which prevent the pure water of knowledge from flowing for a time—the inquiring mind, like a sinuous river swells, and presses against the obstructing barrier between it and the wide sea of intellect, hour after hour, day after day it increases, and fed and swollen by numerous tributary streams, it at length sweeps over the now feeble but once formidable impediment, and rejoicing in its self-acquired strength, sweeps onward in triumph. The mind of man was never intended by its great Creator to be inactive. Onward! is the cry of every one. Alas! there are some who, thinking themselves wise, become fools; they travel onward, but like a wanderer in a dark morass, see only flitting and uncertain lights which lure them on to perilous paths. There are others who scorning false gleams seek for the true rays —men who lift their eyes from earth and overlooking the glow-worm behold the stars of Hope and Truth shining in the clear sky Such as these tread their daily paths in full assurance that the seeds they sow as they travel along life's highway will spring up and bear fruit. They faint not, nor fall by the way; and though torn by thorns and briers, they at last receive the reward of their patient endurance and unremitted perseverance—Success.—*Bedford Sentinel.*

Protection of Brickwork.

The penetration of moisture through the surface of brickwork may be obviated by the following simple remedy:

Three quarters of a pound of mottled soap are to be dissolved in one gallon of boiling water, and the hot solution spread steadily with a flat brush over the outer surface of the brickwork, taking care that it does not lather; this is to be allowed to dry for twenty-four hours, when a solution formed of a quarter of a pound of alum, dissolved in two gallons of water, is to be applied in a similar manner over the coating of soap. The operation should be performed in dry settled weather. The soap and alum mutually decompose each other, and form an insoluble varnish which the rain is unable to penetrate, and this cause of dampness is thus said to be effectually removed. Another method was some time since described (as, by the way, the previous one was) at the Royal Institute of Architects. It consists of sulphurizing oil as a varnish or paint, and is said to improve the color of brick and stone, as well as preserve them. It is prepared by subjecting eight parts of linseed oil and one part of sulphur to a temperature of 278° in an iron vessel. It is said to keep out both air and moisture, and prevent deposits of soot and dirt, when applied with a brush to the surface of a building of brick or stone, or even of woodwork.—*London Builder.*

From the Horticulturist.

Love of Nature—Birds—The Chick-a-Dee.

BY C. N. BEMENT.

It is impossible that we should be other than an admirer of Nature. In all our solitary rambles, whether upon the wild and lonely hill-side, or in the heart of the pastoral valley; at the edge of the mirror-like lake, the bank of the babbling brook, or along the border of the mountain rivulet—our eye is always filled with beautiful and picturesque objects. Our ear soon becomes familiar with the light carol of every bird which inhabits the thicket or the forest; and our eye is soon made acquainted with the whole lovely family of flowers, which enamel the earth, and enrich the air with their perfume. There is not a wild flower that nods to us from the top of the verdant bank, or the vine-covered precipice, or a bird that salutes us with its voluble overture from its leafy dome, that we cannot recognize and call by name.

We have ever been lovers of birds, the denizens of the air. They have ever appeared to us almost too fair and pure for this grovelling, sensual world. In our boyhood we were taught that it was wrong to harm some kinds of birds; but there was a large class that were proscribed as doing injury to the farmer, (while they were innocently employed in seeking their daily food,) and he

that killed the most was the best fellow. For many years past we have supposed that the birds were rapidly decreasing, for their numbers in the fields and groves were few. A few years ago we moved on to Springside, our present habitation, where the cottage is surrounded with beautiful trees, and we soon found the birds made it their home, as they arrived from their southern journey. They were not allowed to be disturbed, and they built their nests and reared their young in the immediate vicinity of the cottage. In the month of June more than twenty varieties of birds made their homes on the premises, to whose songs we could listen in the lawn and surrounding fields. No birds are allowed to be killed on the place, not even the saucy and impudent Cherry-bird that steals our fruit, or the Sparrow that robs us of our strawberries; the consequence is, their numbers have greatly increased.

Treat the birds kindly, and they will become almost domesticated—follow the plow and pick up every straggling worm or grub that is turned up from his dark dwelling.—For doing so they deserve well of the farmer, and no honest man will cheat them out of their part of the crop, much less kill them for trying to get it.

There is no reason to believe, that although most birds live on a variety of food, yet each particular species of birds has a greater partiality or fondness for some particular kinds of insects or reptiles. This evinces *a plan*. Many species of birds follow civilization. The same may be said of several kinds of insects; or, at least, they multiply under its influence. Hence the birds follow, in order to reduce the number of insects. This also evinces *a plan*. Let us then study and observe. No man can study "Nature's works and ways," without becoming wiser and better.

"Birds," says an elegant writer, "are the best of entomologists. No ornithologist ever hunted specimen birds with more industry and perseverance than is exhibited by birds themselves in their researches. They disport in the air, penetrate every nook and corner of thicket, hedge and shrubbery; they search the bark, pierce the dead wood, glean the surface of the soil; watch for the spade-trench, and follow the plowman after worms and larvæ. A single bird in one season destroys millions of insects for its own food and for that of its own nest. No computation can be made of the insects which birds devour.

"Birds are the best of scavengers, the nimblest hunters and adroitest butchers. They have no Grahamite scruples to agitate this worm and bug-loving tribe. They do not show their teeth to prove that they were ever designed for meat. They eat what they like, wipe their mouth on a limb, return thanks in a song, and wing their way to a quiet nook to dose or meditate, snug from the hawk that sails about in the air above. To be sure, birds, like men, have a relish for variety. They are the best of pomologists. We charge every man and boy with positive cruelty and dishonesty who drives the birds from the garden in fruit time. On investigation it has been discovered that they never disturb sound cherries, and none but those that have worms in them." (?) We say, therefore, *spare the birds*, and they will destroy millions of your worst enemies—the worms.

We are not writing the history of birds; we are not writing methodically; we aim at no order. Ours is the humble task of recording a few observations called forth by the phases of the months; we may therefore be pardoned for introducing the little birds, our favorites, whose visits to our section appear to be irregular.

Look up into that branch whose beauteous spray sweeps to and fro, responsive to every breathing of the wind. See you that merry, lively little Chick-a-dee, hopping about from branch to branch in the ecstasy of joyous freedom—now pecking pertly at the dun-colored cuticle of the tree; now seizing coyly in its beak some grub or aphide? Most varied are the attitudes which they now assume; not an instant of repose do they know; restless, creeping, calling, pendent, but ever in progress, advancing with the cautious watcher. Beautiful birds are the Chick-a-dees, whose actions we now stop for a moment to contemplate, and who are now displaying their characteristic restlessness and vivacity in rose bush and fruit-tree, to obtain a supply of hibernating insects. Most graceful and easy are their actions. Hovering on the wing, ever and anon lightly darting away and as lightly returning.

Oh! it is not the deed of a noble heart which can ruthlessly slaughter the little feathered songsters of our lawns and groves—those brilliant Psalmists of Nature, who are ever reiterating their jubilant songs of

praise, and thanksgiving and love—whose sweet melodious voices come wafted like incense to us upon the summer zephyrs, and, floating onward and upward through the grand old woods, are caught and re-echoed with new power and new beauty, and varying tones, by myriad tuneful choristers, until the air seems filled with the very essence of harmony, and the embowered branches of the overspreading trees are converted into a grand orchestral temple.

We love little birds. We delight, when suffering, and care, and sorrow have left their impress upon our mind, or some dark shadow of Evil or Spirit of Gloom has crossed the brightest path of life, dimming our faculties, destroying our perception of enjoyment, and filling our very soul with the impress of Melancholy, to stroll into the woods, leaving the artificial world behind us, turning our backs upon our fellow-men, and shutting ourselves up in a close communion with the mysteries, and wonders, and beauties of Nature.

From the Home Journal.

N. P. Willis' Visit to the Watch Factory of the American Watch Company.

* * * * *

Novelties in mechanism having always been most interesting to me—seeming as it were, supernatural and sudden apparitions of things hitherto deemed impossible—I accepted very gladly an invitation to go where I might see watches made by machinery. How a watch should be made at all, is mystery enough; but that this ultimatum of human ingenuity in hand-labour should be reduced to mechanism, so that a hundred watches can be made with the thought and labour hitherto expended upon one, was a marvel worth making sure of having seen on this planet—being very likely to be "a dropped stitch" (like an antediluvian lost art) in a world to come. If asked, therefore, at some scientific party in the Evening Star (our next planet, the poets tell us,) whether I have been to WALTHAM, I am happy to have it to say that I visited the Watch Factory, there, in one of the last years of my previous existence. I may add for a *side ear* (a fact about which there is likely to be a *sidereal* curiosity, I think,) that Governor Banks comes from the same place.

From Boston to Waltham, by railroad, is but the taking of a seat for a few minutes; and our guide, Mr. Robbins (one of the Company of Proprietors, to whose courageous faith and persevering make-work-ativeness, much of the success of the enterprise is attributed,) soon opened the door for us at the shop of the Time-smiths. Three of our party were brother artificers, Mr. Stuart, Mr. Tilton, and myself, being "manufacturers of public opinion," and the fourth was a lady of an unsympathetic profession, Miss Booth, the lady-historian of the "City of New York." To the worth-while-ativeness of so intelligent a group of companions, I owed the obliging particularity with which the riddles of mechanism were unravelled to us.

It is a curious necessity of a watch factory that it should form a part of a beautiful landscape—a secluded place, a moist soil, or the bank of a river, being requisite to its operations. The original site of the factory at Roxbury, was abandoned, because the light and dusty character of the soil and the degree to which the atmosphere was charged with dust by the winds and the industrial movements of the neighbourhood, interfered with the nicety of the work. Hence was chosen the present beautiful hillside on a bend of the Charles river, where the hundred or two of male and female operatives, as they sit at their benches, regulating the different movements of the machinery, can look out of the widows before them, upon bits of river scenery that would enchant an artist.

It is another poetic peculiarity of watch-making, at Waltham, at least, that the more delicate fingering of *woman* is found to work best at it. Of the large number of persons employed in the factory, more than half, if I observed rightly, were of the sisterhood left idle by the sewing machine—a happy compensation of Providence! Gradually, in this way, probably, the in-door employment of all trades and vocations that do not require masculine strength, will be given over to woman.

The Watch Factory is of brick, two stories in height, and enclosing a quadrangular court, and, along the closely-placed inner and outer windows, stand the work-benches at which are seated the successions of operatives—each of the one hundred and twenty parts of the watch requiring separate manufacture, and adjustment. What impressed me particularly, as I walked

through these long galleries of seated and patient artificers, was the exceeding delicacy and minuteness of it all—the inevitable machinery accomplishing, with such powerful exactness, the almost invisible wonders of transformation and construction, and human aid seeming only needed to supply the material and measure the work, with movements of hand scarce perceptible. The successions of minute instruments were like ranges of little fairies, each weaving its cobweb miracles, under a careful sentinel's superintending eye. It is the novelty of the Waltham Factory that this is so—machinery doing the hundred little dexterities which have hitherto been done only by the variable hand of the workman. With the machinery once regulated, therefore, any number of watches of the same size and pattern are made with invariable exactness—all equally sure to keep time, whereas, formerly, each watch was only a probability by itself.

The minuteness of very essential parts of the watch astonishes the visitor. A small heap of grains was shown to us, looking like iron-filings, or grains of pepper from a pepper-caster—apparently the mere dust of the machine which turned them out—and these, when examined with a microscope, were seen to be perfect screws, each to be driven to its place with a screw-driver. It is one of the Waltham statistics which is worth remembering, that "a single pound of steel, costing but fifty cents, is thus manufactured into one hundred thousand screws which are worth eleven hundred dollars."

The poetic part of a watch, of course, is what the truth in a woman's heart has been so often compared to—the jewel upon which all its movements are pivoted, and which knows no wearing away or variation—and to see these precious truth-jewels and their adjustment was one of my main points of curiosity. The aid of the microscope was again to be called in, to see these—the precious stones, as we first saw them in the glass phial, resembling grains of brilliant sand. They are rubies, sapphires or chrysolites, inferior only to the diamond in hardness and to be drilled by the diamond's point into pivoted reliances. The process is thus described in the article to which I am indebted for my statistics:

"The jewels are first drilled with a diamond, and then opened out with diamond-dust, on a soft hair-like iron wire, their perforations having certain microscopic differences. In like manner the pivots of steel that are to run in these jewels, without wearing out in the least, must be exquisitely polished. By this operation their size is slightly reduced. The jewels and pivots, after being thus finished, are classified by means of a gauge, so delicately graduated as to detect a difference of the *ten thousandth part of an inch!* the jewels are classified by means of the pivots, the jewels and pivots of the same number fitting each other exactly. The sizes of the several pivots and jewels in each watch are carefully recorded under its number, so that if any one of either should fail in any part of the world, by sending the number of the watch to Waltham, the part desired may be readily and cheaply replaced with unerring certainty."

Of this, and all the other operations, too minute for detailed description—the first cutting of the stamps and dies from sheets of brass, hardened and forming the barrels and chambers, coiling and fastening the main springs, gearing wheels and cutting their teeth, shaping of pinions and axles, cutting of escape-wheels, burning and marking the porcelain dials, and final putting together and adjusting of the various parts—the superintendent, Mr. Denison, discoursed to us most interestingly. I could not but think, as I listened to this philosopher of mechanic art, telling us these beautiful secrets with his concentrativeness of voice and eye, and his brief expressive language, how much better it was than the "seeing of a play," or the reading of a novel. My two hours, of following him and listening to his "discourse with illustrations" were like the passing of a dream.

* * * * * *

N. P. W.

CURE FOR FOUNDER.—A speedy, safe, and certain remedy for founder in the feet of horses, is contributed to the *Cotton Planter*, by a writer who testifies to its value. He says: "Clean out the frog of the foot; let it be well cleansed by scraping off all the dirt. Raise the foot so as to be level—pour spirits of turpentine, a sufficient quantity, so as not to run over the hoof; then set the turpentine on fire, and let it be entirely consumed."

VIRGINIA STATE AGRICULTURAL SOCIETY'S EIGHTH

AND THE

CENTRAL AGRICULTURAL SOCIETY OF VIRGINIA'S THIRD

ANNUAL EXHIBITIONS UNITED,

AND TO BE HELD AT THE

HERMITAGE FAIR GROUNDS, RICHMOND,

OCTOBER 22nd, 23rd, 24th, 25th, 26th, and 27th, 1860.

Schedule of Premiums.

ESSAYS OR WRITTEN COMMUNICATIONS.

Class 1.

1. For the best Essay on the practical management of a farm of not less than 300 acres, devoted to the cultivation of corn and wheat as staple crops. The necessary farm buildings to be described; the proper division of the farm into fields; the force in teams and farm hands necessary for its cultivation; the rotation of crops pursued; the artificial grasses cultivated; the green crops plowed in for manure; the quantity and kinds of stock which may be usefully and profitably kept upon it; and all other matters deemed necessary by the writer for its profitable and economical management to be distinctly stated. Also the proper preparation of land for corn and wheat, the best times in the opinion of the writer for planting and sowing these crops, the method pursued in the management and disposal of the shucks, stalks, and fodder of the corn, and in harvesting, preserving and threshing the wheat crop, and preparing it for market—

A Gold Medal of the value of $100

—

Class 2.

2. For the best Essay on the cultivation and management of Tobacco, including the preparation of the plant-bed, and the rearing of plants; the preparation and manuring of the land; the number and proper construction of tobacco barns; the mode of curing, assorting, ordering, and prizing for market; and the force to every thousand hills necessary to cultivate the crop successfully—

A Gold Medal of the value of $50

—

Class 3.

3. For the largest product per acre, of corn, wheat, Irish potatoes, sweet potatoes, and turnips on one farm, provided that not less than 10 adjoining acres be cultivated in wheat, and 10 adjoining acres in corn, and not less than one entire acre in each of the other crops. Specimens of the crops to be exhibited with a written description of the mode of cultivation, and the force employed—

A Silver Cornucopia of the value of $100

—

Class 4.

4. For the best Essay on Manures, including lime, and the mode and time of applying them, with a statement of the quantity proper to be applied per acre, for each of the several crops embraced in the rotation of the principal staple or farm crops.

A set of Silver Table Castors, worth $75

—

Class 5.

5. For the best Essay on Grasses, adapted to Virginia, with a statement of the proper mode of preparing the land; the time of sowing; and the quantity of seed sown to the acre. Also, the manner of curing each crop.

A Silver Bowl, of the value of $50

Class 6.

6. Best Essay on Swine, including a short history of the most approved breeds or varieties, and the best mode of breeding, rearing and fattening them.

A Silver Waiter, of the value of $50

Class 7.

7. For the best Essay on Cattle and Sheep, and their breeds or varieties, including the principles of breeding and the best mode of rearing and fattening them.

A Silver Pitcher, of the value of $50

Class 8.

8. For the best Essay on Poultry, their varieties, and the most profitable mode of rearing them, distinguishing the game fowls and their treatment from others, and stating the comparative value of each bird.

A Silver Basket, of the value of $20

Class 9.

9. For the best Essay on Fruit Trees, describing the varieties best adapted to Virginia; the most desirable kinds to constitute an orchard; the time and mode of grafting, budding and planting, and the pruning and after cultivation.

A Silver Goblet, of the value of $20

Judges:

N. Frances Cabell, Nelson.
Wm. B. Harrison, Prince George.
John R. Bryan, Gloucester.
John C. Rutherford, Goochland.
J. Roy Baylor, Caroline.
Julian C. Ruffin, Prince George.

Class 10.

10. *For the best experiments with Peruvian Guano, and other mixed or manipulated Guanos, or other artificial fertilizers, for three consecutive years, both in Autumn and Spring crops, reports of results to be made at each annual Fair, and the premiums,* $500 *for the former, and* $250 *for the latter, to be awarded at the Fair of* 1863.

☞ Specifications and Committee to be announced in the next, or August number of the Southern Planter.

CATTLE DEPARTMENT.

Class 11.—*Durham Bulls of Native Stock.*

11. Best Bull 3 years old or upwards, $75
12. Second best, 35
13. Best Bull 2 years old and under three, 35
14. Second best, 15
15. Best Bull 1 year old and under two, 20
16. Second best, 10

Class 12.—*Durham Cows and Heifers of Native Stock.*

17. Best Cow 3 years old or upwards, $40
18. Second best, 20
19. Best Cow or Heifer 2 years old and under 3, 20
20. Second best, 10
21. Best Heifer 1 year old and under 2, 15
22. Second best, 8

Class 13.—*Hereford Bulls of Native Stock.*

23. Best Bull 3 years old or over, $75
24. Second best, 35
25. Best Bull 2 years old and under three, 35
26. Second best, 15
27. Best Bull 1 year old and under 2, 20
28. Second best, 10

Class 14.—*Hereford Cows and Heifers of Native Stock.*

29. Best Cow 3 years old or upwards, $40
30. Second best, 20
31. Best Cow or Heifer 2 years old and under 3, 20
32. Second best, 10
33. Best Heifer 1 year old and under 2, 15
34. Second best, 8

☞ Best Imported *Durhams* and *Herefords* same premiums as the above, but the *Imported* breeds shall compete only in their own class, and must be superior to the natives of the same breeds to be entitled to receive a premium.

☞ *No second premiums to be awarded to imported stock.*

Judges:

Wm. B. Preston, Montgomery.
Thomas L. Farish, Albemarle.
J. A. Carter, Prince William.
Dr. W. T. Walker, Goochland.
Geo. M. Green, Fauquier.

Class 15.—*Devon Bulls of Native Stock.*

35. Best Bull 3 years old or over, $75
36. Second best, 35
37. Best Bull 2 years old and under three, 35
38. Second best, 15
39. Best Bull 1 year old and under two, 20
40. Second best, 10

Class 16.—*Devon Cows and Heifers of Native Stock.*

41. Best Cow 3 years old or over, $40
42. Second best, 20
43. Best Cow or Heifer 2 years old and under 3, 20
44. Second best, 10
45. Best Heifer 1 year old and under 2, 15
46. Second best, 8

☞ Best Imported *Devons* same premiums as the above, but the *Imported* breed shall compete only in its own class, and must be superior to the natives of the same breed to be entitled to receive a premium.

☞ *No second premiums to be awarded to imported stock.*

Judges:
James Newman, Orange.
Dr. John R. Woods, Albemarle.
Robert L. Wright, Loudoun.
John Wickham, Henrico.
S. T. Stuart, Fairfax.

Class 17.—*Ayrshire Bulls of Native Stock.*

47. Best Bull 3 years old or upwards, $75
48. Second best, 35
49. Best Bull 2 years old and under three, 35
50. Second best, 15
51. Best Bull 1 year old and under two, 20
52. Second best, 10

Class 18.—*Ayrshire Cows and Heifers of Native Stock.*

53. Best Cow 3 years old or upwards, $40
54. Second best, 20
55. Best Cow or Heifer 2 years old and under 3, 20
56. Second best, 10
57. Best Heifer 1 year old and under 2, 15
58. Second best, 8

☞ Best Imported *Ayrshires* same premiums as the above, but the *Imported* breed shall compete only in its own class, and must be superior to the natives of the same breed to be entitled to receive a premium.

☞ *No second premiums to be awarded to imported stock.*

Judges:
John Willis, Orange.
Alex. S. Jones, Warren, N. C.
L. Bruce, Orange.
Chesley Kinney, Augusta.
L. B. McClintic, Greenbrier.

Class 19.—*Alderney Bulls of Native Stock.*

59. Best Bull 3 years old or upwards, $50
60. Second best, 20
61. Best Bull 2 years old and under three, 25
62. Second best, 10
63. Best Bull 1 year old and under two, 15
64. Second best, 8

Class 20.—*Alderney Cows and Heifers of Native Stock.*

65. Best Cow 3 years old or upwards, $25
66. Second best, 10
67. Best Cow or Heifer 2 years old and under 3, 15
68. Second best, 8
69. Best Heifer 1 year old and under 2, 8
70. Second best, 5

☞ Best Imported *Alderneys* same premiums as the above, but the *Imported* breed shall compete only with its own class, and must be superior to the natives of the same breed to be entitled to receive a premium.

☞ *No second premiums to be awarded to imported stock.*

Judges:
William Allen, Surry.
George Fowle, Alexandria.
Edmund Berkeley, Prince William.
Dr. R. H. Stuart, King George.
Thomas S. Pleasants, Henrico.

Class 21.—*Grade Cows and Heifers.*

71. Best Cow 3 years old or upwards, $20
72. Second best, 10
73. Best Cow 2 years old and under three, 15
74. Second best, 8

☞ This class includes the native stock or crosses of any of the foregoing breeds with native stock.

Judges:

John A. Washington, Fauquier.
Dr. P. B. Pendleton, Louisa.
Chas. H. Rhodes, Chesterfield.
Edward Sydnor, Hanover.
John G. Jefferson, Amelia.

Class 22.—*Dairy Cows.*

75. Best Cow for the dairy, 40
76. Second best, 20

☞ Satisfactory proof of the quantity of milk given for two weeks previous to exhibition, and the quantity of butter made from a given quantity of her milk, will be required.

Judges:

Wm. B. Sydnor, Hanover.
Hugh A. Watt, Henrico.
Wm. H. Brander, Chesterfield.
J. R. Gates, Powhatan.
Thomas P. Mitchell, Bedford.

Class 23.—*Yoked Working Oxen.*

To be truly working oxen, in working condition, their qualities to be tested in any manner the Judges may prescribe.

77. Best Pair 4 years old or upwards, $40
78. Second best, 20
79. Best Pair 2 years old and under four, 20
80. Second best, 10
81. Best Driver, (servants' premium) 5

Judges:

S. W. Ficklen, Albemarle.
William D. Blanton, Cumberland.
Col. John F. Wiley, Amelia.
John L. Nicholas, Buckingham.
Edmund T. Morris, Caroline.

FAT STOCK.

Class 24.—*Fat Bullocks.*

82. Best pair 5 years old or over, $50
83. Best pair 3 years old and under five, 50
84. Best single fat bullock of any age, 30

Class 25.—*Fat Cows and Heifers.*

86. Best single fat Cow 5 years old or over, $30
87. Best single fat Cow or Heifer 3 years old and under 5, 20

☞ Fat Cattle exhibited for premiums must have been owned twelve months by the exhibitor.

Class 26.—*Fat Sheep.*

88. Best pen fat Sheep, 4 or more, $20
89. Second best, 10
90. For the best slaughtered Mutton, 10
91. Second best, 5

Class 27.—*Fat Hogs.*

92. Best pen fat Hogs, 4 or more, $20
93. Second best, 10

Judges:

Philip B. Jones, Orange.
William Wayne, Henrico.
George Howard, Richmond.
John Lindsey, Richmond.
James Bowen, Albemarle.

HORSE AND MULE DEPARTMENT.

Class 28.—*Thorough-bred Stallions and Colts.*

94. Best Stallion 4 years old or upwards, $100
95. Second best, 50
96. Best entire Colt 3 years old and under 4, 50
97. Second best, 25
98. Best entire Colt 2 years old and under 3, 30
99. Second best, 15
100. Best entire Colt 1 year old and under 2, 20
101. Second best, 10
102. Best entire Colt under 1 year old, 10

Class 29.—*Thorough-bred Mares and Fillies.*

103. Best Brood Mare 4 years old or upwards, $50
104. Second best, 25
105. Best Filly 3 years old and under 4, 30
106. Second best, 15
107. Best Filly 2 years old and under 3, 20

108. Second best, 10
109. Best Filly 1 year old and under 2, 15
110. Second best, 10
111. Best Filly under 1 year old, 10

☞ No premium to be awarded to an unsound animal in the above class.

Judges:

Judge Wm. W. Crump, Richmond.
Col. Wm. Townes, Mecklenburg.
George Booker, Hampton.
Jefferson Peyton, Amelia.
T. J. Deane, Richmond.

Class 30.—*Roadster Stallions and Colts. Adapted to Quick Light Draught.*

112. Best Stallion 4 years old or upwards, $100
113. Second best, 50
114. Best entire Colt 3 years old and under 4, 50
115. Second best, 25
116. Best entire Colt 2 years old and under 3, 30
117. Second best, 15
118. Best entire Colt 1 year old and under 2, 20
119. Second best, 10
120. Best entire Colt under 1 year old, 10

Class 31.—*Roadster Mares and Fillies.—Adapted to Quick Light Draught.*

121. Best Brood Mare 4 years old or over, $50
122. Second best, 25
123. Best Filly 3 years old and under 4, 30
124. Second best, 15
125. Best Filly 2 years old and under 3, 20
126. Second best, 10
127. Best Filly 1 year old and under 2, 15
128. Second best, 10
129. Best Filly under 1 year old, 10

☞ Form and action to be considered as well as speed. No premium to be awarded to an unsound animal in the above class.

Judges:

D. W. Haxall, Charles City.
Wm. H. Clarke, Halifax.
Robert Carter, Fauquier.
Wm. Berkely, Loudoun.
Gray Boulware, Caroline.

Class 32.—*Roadster Stallions and Colts. Adapted to Quick Coach Draught.*

130. Best Stallion 4 years old or upwards, $100
131. Second best, 50
132. Best entire Colt 3 years old and under 4, 50
133. Second best, 25
134. Best entire Colt 2 years old and under 3, 30
135. Second best, 15
136. Best entire Colt 1 year old and under 2, 20
137. Second best, 10
138. Best entire Colt under 1 year old, 10

Class 33.—*Roadster Mares and Fillies.—Adapted to Quick Coach Draught.*

139. Best Brood Mare 4 years old or over, $50
140. Second best, 25
141. Best Filly 3 years old and under 4, 30
142. Second best, 15
143. Best Filly 2 years old and under 3, 20
144. Second best, 10
145. Best Filly 1 year old and under 2, 15
146. Second best, 10
147. Best Filly under 1 year old, 10

☞ Form and action to be considered more than speed. No premium to be awarded to an unsound animal in this class.

Judges:

J. W. Ware, Clarke.
Thomas Branch, Petersburg.
Burwell Whiting, Clarke.
B. W. L. Blanton, Prince Edward.
Major T. Doswell, Hanover.

Class 34.—*Saddle Stallions and Colts.—Adapted to the breeding of improved Riding Horses.*

148. Best Stallion 4 years old or over, $100
149. Second best, 50
150. Best entire Colt 3 years old and under 4, 50
151. Second best, 25
152. Best entire Colt 2 years old and under 3, 30

153. Second best, $15
154. Best entire Colt 1 year old and under 2, 20
155. Second best, 10
156. Best entire Colt under 1 year old, 10

Class 35.—*Saddle Mares and Fillies.—Adapted to the breeding of improved Riding Horses.*

157. Best Brood Mare 4 years old or over, $50
158. Second best, 25
159. Best Filly 3 years old and under 4, 30
160. Second best, 15
161. Best Filly 2 years old and under 3, 20
162. Second best, 10
163. Best Filly 1 year old and under 2, 15
164. Second best, 10
165. Best Filly under 1 year old, 10

☞ No premium to be awarded in this class to an unsound animal.

Judges:

John A. Selden, Charles City.
Sam'l B. Finley, Augusta.
Dr. Cochran, Loudoun.
Albert Aiken, Henrico.
Nathaniel Burwell, Clarke.

Class 36.—*Heavy Draught Stallions and Colts.*

166. Best Stallion 4 years old or over, $50
167. Second best, 25
168. Best entire Colt 3 years old and under 4, 30
169. Second best, 15
170. Best entire Colt 2 years old and under 3, 20
171. Second best, 10
172. Best entire Colt 1 year old and under 2, 10
173. Best entire Colt under 1 year old, 8

Class 37.—*Heavy Draught Mares and Fillies.*

174. Best Brood Mare 4 years old or over, $25
175. Second best, 15
176. Best Filly 3 years old and under 4, $20
177. Second best, 10
178. Best Filly 2 years old and under 3, 15
179. Second best, 8
180. Best Filly 1 year old and under 2, 8
181. Best Filly under 1 year old, 5

☞ No premium to be awarded in this class to an unsound animal.

Judges:

John M. Harrison, Loudoun.
George W. Mowry, Augusta.
Wm. C. Scott, Powhatan.
Sam'l C. Ludington, Greenbrier.
John F. Lewis, Rockingham.

Class 38.—*Trials of Speed.*

182. Stallion in harness, 4 years old or over, for best time, not exceeding 3 minutes, first premium of $100
183. Second premium, do. do. 50
184. Entire Colt, 3 years old and under 4 years old, for best time, not exceeding 3m. 30sec., first premium, 75
185. Second premium, do. do. 40
186. Mare or gelding in harness, 4 years old or over, for best time, not exceeding 2m. 50sec., first premium, 100
187. Second premium, 50
188. Mare or gelding, 3 years old and under 4, for best time, not exceeding 3m. 15sec., first premium, 75
189. Second premium, do. do. 40

☞ No premium to be awarded in this class to any unsound animal.

Judges:

Ths. W. Doswell, Hanover.
Dr. Richard Woods, Goochland.
Thomas Bruce, Halifax.
Dr. Prosser Tabb, Gloucester.
Dr. Wm. P. Braxton, King William.

Class 39.—*Matched Horses in Harness—accustomed to be used together as such in pairs, for Quick Light Draught.*

190. Best pair Mares or Geldings, $50

Class 40.—*Matched Horses in Harness—accustomed to be used together as such in pairs, for Quick Coach Draught.*

191. Best pair Mares or Geldings, $50

Class 41.—*Saddle Horses under the Saddle.*

192. Best Mare or Gelding, $40
193. Second best, 20

Form and action to be considered.

Class 42.—*Ponies and Horsemanship.*

194. Best Pony ridden by a lad under 14 years of age, the horsemanship also to be considered, $20
195. Second best, 10

Judges:

Col. Philip St. Geo. Cocke, Powhatan.
James M. Morson, Goochland.
Joseph R. Anderson, Richmond.
Col. W. R. Baskervill, Mecklenburg.
David Chalmers, Halifax.

Class 43.—*Mules and Jacks.*

196. Best Jack, $50
197. Second best, 25
198. Best Jennet, 30
199. Second best, 15

☞ The premiums to be awarded to none but the finest quality of Jacks and Jennets, as above classified.

200. Best pair Mules, owned and worked by the exhibitor 1 year preceding their exhibition, 25
201. Best team of Mules, four or more, to be owned and worked as above, 40
202. Best Mule Colt 3 years old, foaled in Virginia, 15
203. Best Mule Colt 2 years old, foaled in Virginia, 15
204. Best Mule Colt 1 year old, foaled in Virginia, 10
205. Best Mule Colt, a suckling, foaled in Virginia, 5

Judges:

Augustus H. Drewry, Chesterfield.
Sharpe Carter, Nottoway.
William Smith, Henrico.
Samuel McGehee, Charlotte.
Francis B. Whiting, Clarke.

SHEEP DEPARTMENT.

Class 44.—*Fine Wools of Native Stock, including pure bred Spanish, Saxon, French and Silesian Merinos.*

206. Best Ram, $20
207. Second best, 10
208. Best pen of Ram-Lambs, 4 in number, 15
209. Best pen of Ewes, 3 in number, 30
210. Second best, 15
211. Best pen of Ewe-Lambs, 4 in number, 15
212. Second best, 10

Class 45.—*Imported Fine Wool Merinos.*

213. Best Ram, $30
214. Best Ewe, 30

☞ Imported Sheep not allowed to compete with natives, and must be superior to the native to entitle them to receive a premium.

Class 46.—*Fine Wool Grades, including crosses of the above classes.*

215. Best pen of Ewes, 3 in number, $30
216. Second best, 15
217. Best pen of Ewe-Lambs, 10

Judges:

Keith Marshall, Alexandria.
G W. C. Whiting, White Sul. Springs.
J. G. Baylor, Prince George.
Raleigh Colston, Albemarle,
William Garth, Albemarle.

Class 47.—*Middle Wools of pure bred Native Stock, including South Downs, Oxford Downs and other pure breeds of Middle Wools.*

218. Best Ram, $20
219. Second best, 10
220. Best pen of Ram-Lambs, 4 in number, 15
221. Best pen of Ewes, 3 in number, 30
222. Second best, 15
223. Best pen of Ewe-Lambs, 4 in number, 15
224. Second best, 10

Class 48.—*Imported Middle Wools, including the above varieties.*

225. Best Ram, $30
226. Best Ewe, 30

☞ Imported not allowed to compete with natives, but must be superior to them to obtain a premium.

Class 49.—*Middle Wool Grades.*

227. Best pen of Ewes, 3 in number, $30
228. Second best, 15
229. Best pen of Ewe-Lambs, 4 in number, 10

Judges :

Dr. R. C. Mason, Fairfax.
Burr Noland, Loudoun.
Dr. John B. Harvie, Powhatan.
Edward Cunningham, Powhatan.
Gen. M. W. Ransome, Garysburg, N. C.

Class 50.—*Long Wools of Native Stock, including Bakewell or Leicester, Cotswold or new Oxfordshire and Lincoln.*

230. Best Ram, $20
230. Second best, 10
232. Best pen of Ram-Lambs, 4 in number, 15
233. Best pen of Ewes, 3 in number, 30
234. Second best, 15
225. Best pen Ewe-Lambs, 4 in number, 15
236. Second best, 10

Class 51.—*Imported Long Wools, including the above varieties.*

237. Best Ram, $30
238. Best Ewe, 30

Imported not allowed to compete with natives, and must be superior to them to entitle them to receive a premium.

Class 52.—*Long Wool Grades, including crosses of the above breeds with Natives.*

239. Best pen of Ewes, 3 in number, $30
240. Second best, I5
241. Best pen of Ewe-Lambs, 4 in number, 10

Judges :

Col. E. Fontaine, Hanover.
Dr. W. L. Wight, Goochland.
James B. Newman, Orange.
John A. Scott, Prince Edward.
F. P. Wood, Prince Edward.

SWINE DEPARTMENT.

Class 53.—*Large Breed: including Chester, Russia, Bedford, Woburn, Grazier and Byfield.*

242. Best Boar two years old or over, $20
243. Second best, 15
244. Best Boar 1 year old and under 2, 15
245. Second best, 10
246. Best Breeding-Sow 2 years old or over, 20
247. Second best, 15
248. Best Breeding-Sow 1 year old and under 2, 15
249. Second best, 10
250. Best Sow and pigs, 20
251. Second best, 10

Class 54.—*Small Breeds : including Neapolitan, Suffolk, Sussex, Essex, Berkshire, Chinese and improved Hampshire.*

252. Best Boar two years old or upwards, $20
253. Second best, 15
254. Best Boar 1 year old and under 2, 15
255. Second best, 10
256. Best Breeding-Sow 2 years old or over, 20
257. Second best, 15
258. Best Breeding-Sow 1 year old and under 2, 15
259. Second best, 10
260. Best Sow and pigs, 20
261. Second best, 10

Judges :

Wm. M. Tate, Augusta.
E. C. Jordan, Jordan's Springs.
James M. Sublett, Powhatan.
Col. E. H. Herbert, Princess Anne.
Thomas L. Dicken, Henrico.

POULTRY DEPARTMENT.

Class 55.—*Gallinaceous Fowls.*

262. Best pair Game, $5
263. Best pair Spanish Black, 5
264. Best pair White Dorkings, 5
265. Best pair Speckled Dorkings, 5
266. Best pair Silver-pencilled Hamburghs, 5
267. Best pair Gold-pencilled Hamburghs, 5

268. Best pair Black Hamburghs 5
269. Best pair Dominiques, 5
270. Best pair Silver Polands, 5
271. Best pair Golden Polands, 5
272. Best pair White Crested Polands, 5
273. Best pair White Bantums, 5
274. Best pair Black Bantums, 5
275. Best pair Mongrels, 5
276. Best pair Capons, 5

Class 56.—*Ducks.*

277. Best pair Aylesbury, 5
278. Best pair Java, 5
279. Best pair Muscovy, 5
280. Best pair Poland, 5
281. Best pair Rouen, 5
282. Best pair Mongrel, 5

Class 57.—*Geese.*

283. Best pair African, $5
284. Best pair Bremen, 5
285. Best pair Hong Kong, 5
286. Best pair Mongrel, 5
287. Best pair Wild, 5

Class 58.—*Turkeys.*

288. Best pair Domestic, 5
289. Best pair White, 5

Class 59.—*Guinea Fowls, Pea Fowls, &c.*

290. Best pair Guinea Fowls, $5
291. Best pair Pea Fowls, 5
292. Best pair Pheasants, 5
193. Best collection of Pigeons, 5

Judges:

Dr. Erasmus Powell, Richmond.
Chastain White, Hanover.
Richard Powell, Goochland.
Wm. M. Bagley, Lunenburg.
J. McL. Anderson, Caroline.

DEPARTMENT OF FARM AND GARDEN PRODUCTIONS.

Class 60.—*Tobacco.*

294. Best Shipping Leaf growth of 1859, $50
295. Best Manufacturing Leaf growth of 1859, 50
296. Best Fancy Wrapper Leaf growth of 1859, 50

☞ To be represented by samples of the crop in whole and prized in 1860.

The same premiums are offered for the Fair of 1861 on Tobacco of the growth of 1860.

☞ To be represented by samples of the crop, in whole, prized in 1861, drawn and sealed by the Inspectors of the Ware-house where the same shall have been inspected.

Judges:

John F. Wren, Henrico.
John Jones, Richmond.
Samuel Hardgrove, Richmond.
James H. Grant, Richmond.
E. O. Nolting, Richmond.

Class 61.—*Manufactured Tobacco.*

297. Best specimen for general home consumption, $30

Judges:

David W. Burton, Lynchburg.
Dr. George P. Holman, Fluvanna.
John D. Hobson, Goochland.
Benjamin C. Gray, Richmond.
John W. Atkinson, Richmond.

Class 62.—*Flour, Grain and Corn.*

298. Best barrel of Flour, $10
299. Second best, 5
300. Best bushel of Wheat, 10
301. Second best, 5
302. Best bushel of Rye, 5
303. Best bushel of Oats, 5
304. Best bushel of Barley, 5
305. Best bushel of shelled White Corn, 5
306. Best bushel of shelled Yellow Corn, 5

☞ The grain to be a fair sample of the crop of the Exhibitor.

Judges:

Ro. B. Somerville, Richmond.
D. S. Delaplane, Henrico.
Asa M. Janney, Richmond.
Francis B. Hart, Richmond.
Alex. Garrett, Richmond.

Class 63.—*Other Staple Productions.*

307. Best bag of Cotton exhibited by the grower, $40
308. Best five gallons of Sorgum Molasses, 10

309. Best barrel of Sorgum Sugar, 10
310. Best collection of Seeds raised by exhibitor, 10
311. Best barrel of Rice raised by exhibitor, 5
312. Best fifty pounds dressed Flax, 5
313. Best fifty pounds dew-rotted Hemp, 5
314. Best fifty pounds water-rotted Hemp, 5
315. Best fleece of Fine Wool of Virginia growth, 5
316. Best fleece of Middle Wool of Virginia growth, 5
317. Best fleece of Long Wool of Virginia growth, 5

Judges:

Miles C. Seldon, Powhatan.
J. B. McPhail, Charlotte.
Abner Hilliard, Henrico.
Granville J. Kelley, Culpeper.
Rev. George G. Exall, Henrico.

Class 64.—*Beverages.*

318. Best specimen of domestic Wine, from a vintage of not less than 100 gallons, $20
319. Second best, 15
320. Best specimen of domestic Wine other than grape, 10
321. Best barrel of Cider, 15

Judges:

Wm. M. Harrison, Richmond.
Rob. M. Burton, "
Wm. H. Haxall, "
O. Cranz, "
Dr. Monroe Banister, Amelia.

Class 65.—*Fruits and Fruit Trees.—All raised by the Exhibitor on this side of the Potomac, and suitable for Southern Cultivation.*

322. Best and largest variety of Apples, each labelled with its name, $20
323. Best and largest variety of Pears, each labelled, 15
324. Best and largest variety of choice fruits of different kinds, each labelled with its name, 10
325. Best and largest collection of Apple Trees, 10
326. Best and largest collection of Pear Trees, 10
327. Best and largest collection of Peach Trees, 10
328. Best specimen of Fig Trees, 5
329. Best collection of Grape vines, 5
330. Best collection of Strawberry vines, 3
331. Best collection of Raspberry plants, 3
332. Best bushel of dried Apples cured by the exhibitor, 3
333. Best specimen of dried Peaches cured by the exhibitor, 3
334. Best and largest collection of native Grapes, 10
335. Second best, 5
336. Best collection of Foreign Grapes, 10
337. Second best, 5

Judges:

Dr. Wm. H. Jones, Mecklenburg.
James Ayres, Petersburg.
Randolph Harrison, Goochland.
James C. Luck, Caroline.
Wirt Robinson, Richmond.

HORTICULTURAL DEPARTMENT.

Class 66.—*Flowers.*

338. Best and largest collection of choice plants, $10
339. Second best, 5
340. Best and greatest variety of Dahlias, 5
341. Best twelve Dahlias, 2
342. Best and greatest variety of Roses, 5
343. Best twenty-five Roses, 2
344. Best and largest collection of Crysanthimums, 3
345. Best floral ornament, 5
346. Best hand Bouquet not more than 8 inches in circumference, 2
347. Best and largest collection of Verbenas in bloom, 3
348. Best and largest collection of Evergreens, 5
349. Best and largest collection of hardy flowering Shrubs, 5

Judges:

G. A. Myers, Richmond.
Thomas T. Giles, Richmond.
Hubert P. Lefebvre, Richmond.
John F. Whitfield, Powhatan.
Robert L. Lancaster, Henrico.

Class 67.—*Vegetables of Virginia Growth*

350. Best and largest assortment of table vegetables, $20
351. Best half dozen long blood Beets, 2
352. Best half dozen heads of cabbage, 2
353. Best half dozen Cauliflower, 2
354. Best half dozen Broccoli, 2
355. Best half dozen Carrots, 2
356. Best half dozen Egg Plants, 2
357. Best peck of Onions, 2
358. Best half dozen Parsnips, 2
359. Best bunch of Celery, 5
360. Best bunch of Salsify, 5
361. Best bushel of Irish Potatoes, 5
362. Best bushel of Sweet Potatoes, 5
363 Best acre of Irish Potatoes, } 25
364. Best acre of Sweet Potatoes, } * 15

* To be certified by two neighbours.

Judges:

John Page, Hanover.
R. G. Tunstall, Henrico.
Thomas H. Ellis, Richmond.
Thos. B. Bigger, "
Charles Palmer, "

DOMESTIC DEPARTMENT.

Class 68.—*Butter and Cheese.*

365. Best specimen of fresh Butter not less than 10 pounds, $25
366. Second best, 15
367. Best Firkin or Tub of salted Butter not less than 6 months old of 40 lbs. or more, 25
368. Second best, 15
369. Best Cheese not less than 20 pounds, 10
370. Second best, 5

☞ The method of making and preserving the Butter and Cheese to be stated in writing by the exhibitor.

Judges:

John B. Young, Henrico.
Edward O. Watkins, Chesterfield.
Alex. Garrett, Richmond.
J. Marshall McCue, Augusta.
Logan Waller, Richmond.

Class 69.—*Honey, Bee-Hives and Bacon Hams.*

371. Best specimen of Honey not less than ten pounds, $5
372. Best Bee-Hive, 10
373. Best Ham cured by exhibitor, 8
374. Second best, 4

☞ With respect to the premium on Honey, the kind of Hive used, and the management of the bees must be stated in writing, and also that the Honey was taken without destroying the bees.

☞ Bacon Hams exhibited must be cooked and the mode of curing them must be stated in writing.

Judges;

Daniel E. Gardner, Henrico.
Wm. O. Winston, Hanover.
A. D. Harris, Louisa.
C. B. Luck, Richmond.
L. M. Burfoot, Chesterfield.

Class 70.—*Domestic Manufactures.*

375. For the best and largest variety of Woolen Goods manufactured in Virginia, each specimen to be labeled with a descriptive commercial name and the wholesale price, a premium of $100
376. For the best and largest variety of Woolen Goods manufactured in any other slave State, if of equal or superior quality to those manufactured in Virginia, to be labeled after the same manner as above described, a premium of 50
377. For the best samples of Negro Clothing manufactured in Virginia, regard being had to quality and cheapness at wholesale prices, 50
377¼ Best and largest variety of coarse cheap Shoes, 5
377½. Best and cheapest Wool Hats, 5
387¾. Best and cheapest Negro Brogues, 10

Judges:

Horace L. Kent, Richmond.
Samuel Putney, "
Thos. R. Price, "
E. B. Bentley, "
William Breeden, "
Samuel M. Price, "

Class 71.—*Household Manufactures.*

378. Best bed Quilt, $5
379. Second best, 3

380. Best Counterpane, 5
381. Second best, 3
382. Best pair home-made Blankets, 5
383. Best home-made Carpet, 5
384. Best home-made hearth Rug, 3
385. Best home-made Curtains, 5
385. Second best, 3
387. Best piece, not less than 7 yards, Negro Shirting, home-made, 3
388. Best fine long Yarn Hose, 5
389. Best fine long Cotton Hose, 5
390. Best Silk Hose of home-made silk, 5
391. Best five pounds of Maple Sugar, 5
392. Best home-made family bread, 5
393. Best home-made pound Cake, 3
394. Best home-made Sponge Cake, 3
395. Best and largest variety of home-made Pickle, 3
396. Best and largest variety of home-made preserves, 3
397. Best and largest variety of home-made Fruit Jelley, 3
398. Best five pounds of home-made Soap, the process of making to be described in writing by exhibitor, 5

Judges:

John Stewart, Henrico.
Dr. Wm. J. Cheatham, Amelia.
Walter D. Blair, Richmond.
James Vest, Louisa.
T. M. Ambler, Fauquier.

Class 72.—*Ladies Ornamental and Fancy Work.*

399. Best specimen of Embroidery, $8
400. Second best, 6
401. Best specimen of Worsted Work, 8
402. Second best, 6
403. Best specimen of Crochet Work, 8
404. Second best, 6
405. Best specimen of Shell Work, 8
406. Second best, 6
407. Best specimen of Leather Work, 8
408. Second best, 6
409. Best specimen of Knitting, 8
410. Second best, 6
411. Best specimen of Netting, 8
412. Second best, 6
413. Best specimen of Needle Work, 8
414. Second best, 6
415. Best made Shirt, 8
416. Second best, 6
417. Most extensive variety of useful, ornamental and fancy work, not excluding articles which may have had premiums awarded them under the above specifications a premium of $10

Judges:

A COMMITTEE OF LADIES to be announced at the Fair.

Class 73.—*Servants' Premiums.*

419. Best dozen assorted Baskets made of Virginia grown materials, $5
420. Best set Plantation Hampers and Baskets, of not less than three in number of each, 5
421. Best straw Hat, 5
422. Best shuck horse Collars, 5
423. Best straw Chair, 5
424. Best door Mats, 5

Judges:

Albert Morris, Henrico.
T. M. Leitch, Buchingham.
Wm. B. Ross, Culpeper.
John W. Wilson, Cumberland.
Plummer Hobson, Goochland.

MECHANICAL DEPARTMENT.

AGRICULTURAL MACHINERY AND IMPLEMENTS.

Remarks and Special Rules in relation to Machinery, Implements and other productions of Mechanic Art.

☞ All machines, implements, or other products of mechanical art, must be exhibited by or for their respective makers or inventors or improvers, to or for whom only, premiums for such articles must be awarded. Persons who hold such articles by purchase, or as matters of traffic, will have no claim to a premium.

Every machine or implement offered for premium, must be designated by the offerer by its commercial name, or otherwise, such other concise description be given as will serve to identify it to future purchasers; and also the then selling price of the article must be stated and marked on the labels

and in the published repor's of premium articles.

The judgment of superior value must have due regard to the cheapness and durability of any machine or implement, as well as to its more effective operation while in good working order.

Class 74.—*Ploughs, Cultivators, &c.*

425. Best 3 or 4 horse plough, $10
426. Best 2 horse plough, 10
427. Best 1 horse plough, 5
428. Best shovel plough, 5
429. Best subsoil plough, 5
430. Best new ground or coulter plough, 5
431. Best hill-side plough, 5
432. Best water-furrow plough, 5
433. Best plough for digging potatoes, 10
434. Best set draining instruments other than the drain plough, 10
435. Best cultivator for corn and tobacco, 5
436. Best cultivator for 2 horses, 5

Judges:

Dr. Joseph M. Sheppard, Henrico.
Charles L. Christian, Buckingham.
Wm. Benton, Jr., Loudoun.
Strother Jones, Clarke.
John A. Pickett, Goochland.

Class 75.—*Drills, Broad-Casters, &c.*

437. Best Broad-Casting Machine for sowing grain or grass-seed, $10
438. Best Wheat Drill with guano attachment, 40
439. Best Corn Planter with guano attachment, 10
440. Best Implement for sowing and covering peas among corn, at or immediately following the last tillage, either with or without guano, 15
441. Best Lime Spreader, adapted also to guano or bone dust, 20
442. Best Turnip Drill, 3

Judges:

Gen'l Wm. B. Taliaferro, Gloucester.
Richard Thornton, Cumberland.
John Nicholas, Buckingham.
H. G. Richardson, Farmville.
Robert M. Taylor, Henrico.

Class 76.—*Wagons, Carts, Harness, &c.*

443. Best Wagon for farm use, if embracing any new and valuable improvement that shall be deemed worthy of a premium, $20
444. Best Horse Cart, embracing new improvement worthy of a premium, 10
445. Best Ox Cart, with Iron axle, 10
446. Best Wagon body or ladder, for hauling wheat in the sheaf, or hay or straw; may be exhibited by model, 5
447. Best and most numerous collection of saddles, bridles, collars, hames, harness, &c., 25
448. Best and most numerous assortment of Virginia dressed skins and leather, 25

Judges:

Dr. Wiley J. Eppes, Buckingham.
Col. V. Parrish, Cumberland.
Rev. Jesse S. Armestead, Cumberland.
Charles Friend, Prince George.
John W. Cardwell, Richmond.

Class 77.—*Farm Gate, Horse Powers, Threshers, &c.*

449. Best Farm Gate, including best hinge and fastening, &c., may be exhibited by model, $10
450. Best Sweep Horse power, 25
451. Best Threshing Machine, 30
452. Best Machine for threshing, cleansing, separating, and bagging wheat at one operation, 50

Judges:

Dr. George Newman, Orange.
Dr. Robert Henderson, Cumberland.
Charles P. Moncure, Culpeper.
Wm. Hooker, Buckingham.
James M. Willcox, Charles City.

Class 78.—*Straw and Root Cutters, Mills, Corn Shellers, &c.*

453. Best Hay or Straw Cutter, $10
454. Best Corn Sheller, 10
455. Best Grist Mill for horse power, 10
456. Best Hominy Mill, 5
457. Best Saw Mill for farm use, 10
458. Best Root Cutter, 2 50
459. Best Steam Boiler for cooking food for stock, 10

Judges:

E. G. Booth, Nottoway.
Dr. W. R. Macon, New Kent.
Dr. John E. Friend, Henrico.
George Watt, Richmond.
Garland Hanes, Henrico.

Class 79.—*Hay Press, Fan Mill, &c.*

460. Best Hay Press, $15
461. Best Fan Mill, 10
462. Best Stump Machine, 10
463. Best *Steel* Spade Fork. 5
464. Best Horse Rake for hay, 5
465. Best Gleaner, 5

Judges:

Richard S. Ellis, Ruckingham.
Ambrose Ford, Cumberland.
Wm. A. Perkins, Cumberland.
George W. Pettit, Fluvanna.
Henry Webb, New Kent.

Class 80.—*Machines and Implements.*

466. For the most extensive and valuable collection of useful machines and implements exhibited and made at any one Factory IN VIRGINIA, whether including subjects for other premiums or not, a premium of $50

Judges:

Dr. Wm. P. Moseley, Buckingham.
John Rowlett, Petersburg.
Thos. F. Nelson, Nelson.
John Haw, Hanover.
George Nicholas, Buckingham.

Class 81.—*Carriages and other Vehicles.*

467. Best and most numerous collection and variety of vehicles, made in Virginia, $50
468. Best two horse family Carriage, made in Virginia, 25

Judges:

James Galt, Fluvanna.
B. W. Haxall, Richmond.
G. Z. Miles, Hanover.
George M. Savage, Henrico.
John Allan, Goochland.

Class 82.—*Miscellaneous.*

469. Best Pump adapted to deep wells, $10
470. Best lifting and forcing pump, 15
471. Best Churn, embracing some new improvement deemed worthy of a premium, 10
472. Best Sewing Machine for general use, 15
473. Best Flour Barrels, certified to be a fair sample of 100, made and delivered by the exhibitor, 10
474. Best and most numerous collection of useful articles of Cooper's ware, 15
475. Best and most numerous collection of useful articles of Willow ware, manufactured in Virginia, 10

Judges:

N. C. Crenshaw, Hanover.
Edward Steger, Buckingham.
R. W. Baylor, Jefferson.
W. F. G. Garrett, Henrico
John Gannaway, Buckingham.

Class 83.—*Agricultural Steam Engine, Steam Plough and Steam Saw Mill.*

476. Best Steam Engine applicable to agricultural purposes generally as a substitute for horse power, $100
477. Best Steam Plough well adapted to tillage purposes, as a substitute for horse power, 300
478. Best Steam Saw Mill, 50

Judges:

Richard Irby, Nottoway.
Thomas Samson, Richmond.
J. F. Barnes, Richmond.
Charles Campbell, Richmond.
Uriah Wells, Petersburg.

Class 84.—*Reaping and Mowing Machines.*

479. Best Reaping Machine, $50
480. Best Rake and Reel for combination with Reaper, 20

Judges:

Hill Carter, Charles City.
Wm. B. Tomlin, King William.
George Hocker, Buckingham.
John Seddon, Stafford.
Edmund Ruffin, Jr., Pr. George.

Class 85.—*Farm Dwelling, &c.*

481. Best design of Farm Dwell-

ing, out houses, gate-ways, and grounds, $30

Judges:

Prof. T. H. Williamson, Lexington.
Charles Bruce, Charlotte.
Robert A Mayo, Henrico.
Richard V. Watkins, Halifax.
Dr. Charles C. Cocke, Fluvanna.

Class 86.—*Minerals of Virginia.*

482. Best collection and largest variety of specimens of Virginia minerals, $30

Judges:

Prof. S. Maupin, University of Va.
Prof. J. L. Campbell, Wash. College.
Prof. R. J. Morrison, Wm. & M. Col.
Prof. D. Lee Powell, Richmond.
Prof. Wm. Gilham, Va. Mil. Institute.

Class 87.—*Trials of Ploughs and Ploughing Match.*

483. Best two horse Plough, as shown by work, $20
484. Best three or four horse plough, as shown by work, 20

☞ All questions as to the class of ploughs on trial to be decided by the Judges.

485. Best ploughman with horses, 10
486. Second best, 5
487. Best ploughman with steers, 10
488. Second best, 5

☞ It is left to the discretion of the Judges whether or not to make two classes of premiums, one for white and another for black ploughmen.

Judges:

Hon'l Wm. C. Rives, Albemarle.
Richard G. Morris, Richmond.
B. J. Barbour, Orange.
Wm. Michaux, Powhatan.
Nath'l F. Bowe, Henrico.

Class 88.—*Premiums by Individual donors.*

489. A company of gentlemen propose to raise by subscription a sum of money to be given as first and second premiums to the two most successful competitors in a Hurdle race:

1st Premium, ⅔ds of the amount subscribed.
2d Premium, ⅓d of the amount subscribed.

Judges:

Col. Thos. J. Randolph, Albemarle.
Thomas S. Watson, Louisa.
H. C. Watkins, Chesterfield.
Fielding L. Douthat, Charles City.
Dr. J. Mayo, Westmoreland.

Economy of Agriculture.

There is no subject less understood nor more generally mistaken than this; nor any more essential to the prosperity of agriculture. Sufficient to afford matter for an entire treatise, it cannot be embraced in a short chapter. But a short chapter may put minds upon the track, able to unfold its involutions with every branch of agriculture, and more especially to disclose its value.

Diminutions of comforts, necessaries and expenses, are too often mistaken for the means of producing the ends they obstruct; and the rapacity which starves, frequently receives the just retribution of a disappointment, begotten by a vicious mode of avoiding it. From the master down to the meanest utensil, the best capacity for fulfilling the contemplated ends, is invariably the best economy; and the same reasoning which demonstrates the bad economy of a shattered loom, will demonstrate the bad economy of a shattred constitution, or an imperfect state of body. The cottagers who inflict upon themselves and their families the discomforts of cold houses, bad bedding, and insufficient clothing, to acquire wealth, destroy the vigour both of mind and body, necessary for obtaining the contemplated end, at which, of course they never arrive. The farmer who starves his labourers, is a still greater sufferer. He loses the profit produced by health, strength and alacrity; and suffers the losses caused by disease, weekness and dejection. In like manner, the more perfect, the more profitable are working animals and implements, and every saving by which the capacity of either to fulfil its destiny in the best manner, is diminished, terminates with certainty in some portion of loss, and not unfrequently in extravagant waste. Even the object of manuring is vastly affected by the plight of those animals by which it is aided.

A pinching, miserly system of agriculture may indeed keep a farmer out of a prison, but it will never lodge him in a

palace. Great profits depend on great improvements of the soil, and great improvements can never be made by penurious efforts. The discrimination between useful and productive, and useless and barren expenses, contains the agricultural secret for acquiring happiness and wealth. A good farmer will sow the first with an open hand, and eradicate every seed of the other.

Liberality constitutes the economy of agriculture, and perhaps it is the solitary human occupation, to which the adage, "the more we give, the more we shall receive," can be justly applied. Liberality to the earth in manuring and culture is the fountain of its bounty to us. Liberality to labourers and working animals is the fountain of their profit. Liberality to domestic brutes is the fountain of manure. The good work of a strong team causes a profit beyond the bad work of a weak one, after deducting the additional expense of feeding it; and it saves moreover half the labour of a driver, sunk in following a bad one. Liberality in warm houses, produces health, strength and comfort; preserves the lives of a multitude of domestic animals; causes all animals to thrive on less food, and secures from damage all kinds of crops. And liberality in the utensils of husbandry, saves labour to a vast extent, by providing the proper tools for doing the work both well and expeditiously.—*Farmers Journal.*

From the Working Farmer.

Fruit Culture.

Messrs. Editors :—Plant-lice, in some sections of the country, have caused an immense destruction of apple trees; especially in Michigan; also within the past twenty years the orange trees of Florida have suffered immensely by their ravages. If they are not the same that infest the apple trees, they are very similar in all respects.—Where these insects abound, the smooth portions of the bark of the body and limbs of the trees are more or less covered with small, muscle-shaped shells. Those formed last year, now contain from 30 to 40 eggs, each of a white color, and when examined by the aid of a microscope, they are found to be in shape nearly like those of snakes. The insects usually hatch from the 25th of May to the 10th of June, varying perhaps, a few days from the above dates, according to the lateness or earliness of the season. They soon disperse, fixing themselves upon the smooth bark, appearing as very minute white specks, scarcely perceptible to the naked eye. While the insects are in this tender state, is the proper time to destroy them, for if left for a week, each insect forms a new shell under which it deposits its eggs for the next year's crop, and it is hard removing these shells, when thus glued to the trees. Thoroughly washing and scrubbing the branches of the trees with soap-suds, applied with a stiff brush or woolen rag, will pretty effectually destroy all young and tender bark-lice. The injury done to the trees by these minute insects, is caused by their sucking the sap from the trees. "Various remedies have been tried in Florida, to arrest their progress, and lessen the injury done to the orange trees, such as fumigating the trees with tobacco smoke, covering them with soap, lime, potash, sulphur, shellac, glue and other viscid and tenacious substances, mixed with clay, quicklime, salt, &c.; but all have failed, partially or entirely, and it appears not to be in the power of man to prevent the ravages of these insignificant and insidious destroyers."

Another destructive scourge of the apple, cherry, and some other trees, is the common caterpillar; but it is unnecessary here to describe to the farmer, or orchardist, this caterpillar, his color or habits, because they have been too long and too well known to every observing person to need particular description. As is generally known, the eggs for this year's crop were fastened about the ends of many of the limbs of the tree by a kind of water-proof varnish, for which the caterpillars have an excellent recipe. By carefully examining the ends of the limbs of the apple and cherry trees, between this and the bursting of the leaves many, of these deposits of eggs can be found and readily destroyed. Each of these "varnished bracelets" contains from three to four hundred eggs, which hatch out about the time of the unfolding of the leaf. They immediately commence the formation of a little angular web or tent, between the forks of the branches, a little below the cluster of eggs. The sooner the nests and their occupants are destroyed, after this, the better. Various methods are practiced to rid the trees of these "useless intruders," such as burning the nests with lighted torches, scrubbing them with soap suds, &c., &c. The best thing I have used in

ridding trees of these disgusting insects, is the spiral or Pickering brush, fixed to the end of a light, straight pole. By thrusting this into the nests in the morning, before the caterpillars have them, (they usually remain in the nest till about nine o'clock) they can be very readily wound around the brush, from which they are easily removed and crushed by the foot. A few times passing through an orchard during one week, soon after the broods are hatched, making a careful application of the brush, will effectually use them up, and leave none for seed. "Early attention and perseverance in the use of the spiral brush, will in time, save the owner of a few acres of orchard, hundreds of dollars, and an abundance of mortification and disappointment, besides rewarding him with the sight of the verdant foliage, snowy blossoms and rich fruits of his orchard in their proper season."

The spiral brush can be had at the agricultural warehouses for a shilling or two each, and with careful usage they will last a lifetime. In the absence of the spiral brush, the head of a last year's mullen stalk tied to a pole, answers as a tolerable substitute for the wire and bristles.

The August caterpillar has increased in this section of the country in a wonderful ratio, within the past five years. Probably the easiest and most effectual way of destroying them would be to apply the lighted torch, upon the first discovery of their nests. These caterpillars attack a great variety of trees, presenting a most disgusting sight.

Another late caterpillar seems to be largely on the increase; they are very voracious, eating the entire crop except the main ribs. These generally congregate in masses upon the same limb, and make a clean sweep as far as they go. When found upon a small limb, perhaps the better way would be to cut or saw it off, and crush the depredators beneath the foot. They can be jarred off.

All the above-named insects subsist upon the sap, or the leaves of the apple tree, and frequently they are in such numbers as to seriously injure the growth of the tree, and nearly, or quite, ruin the fruit crop.

The borer, in some sections of the country, is committing sad havoc with the apple orchards and nurseries. Dr. Fitch, of New York, stated in one of his recent lectures at New Haven, that the cure or remedy is found in a liberal application of soap to the body of the tree. Dr. F. uses common soft soap, and applies it liberally in the axils of the lower limbs, and on the trunk. He applies the soap about the first of June, and after rains for a few weeks. It is well to apply it liberally where the large limbs start out, as light rains wash it down the trunks of the trees. If the above is a protection against the ravages of the borer, it is an important discovery, and should be universally practiced by the owners of apple trees. It probably will not destroy the worms when once beneath the bark of a tree, but the remedy consists in making the tree so offensive to the "winged parent" of the borer, that it will not make use of the soaped tree as a place of deposit for its eggs. But aside from its use as a preventive against the borer, the soap will be a profitable application to the tree. Perhaps whale-oil-soap may be equally good; if so, in many places it can be more readily obtained than soft soap. LEVI BARTLETT.

Warner, N. H., 1860. [*Boston Cultivator.*

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We would suggest in relation to the above, that the soda wash we have so often recommended, (made by heating sal soda red hot, and then dissolving one pound of the caustic soda in a gallon of water,) would be far superior for ridding trees of insects, to any solution of potash, or of soap. The potash, if sufficiently strong to decompose the cocoons and ova of insects, will also injure the coating of the bark of the tree, so as to render it a ready prey, later in the season, for insects of other kinds, while the whale-oil-soap, as usually manufactured, containing an excess of resin, will leave this resin on the surface of the tree filling the pores, and thus preventing them from exercising their excretory functions. Not so with the soda wash; it will not injure any live plant, but will decompose readily all those parts which have lost their vitality.

The scaly insect is readily removed from the surface of the pear tree, by a single washing with a saturated solution of caustic soda, while the bark itself is left entirely uninjured.—[ED.

A noble person needs but a plain garment to set it off; a beautiful picture, but a simple frame; a great thought is best dressed in the simplest language. But all these need a spirit of understanding to be appreciated.

From the United States' Economist.

Steam Ships between New Orleans and Liverpool.

The South is earnestly bestiring itself to establish a regular line of communication with Europe. The prospectus is out of a new line of steamers, six in number, to run regularly between New Orleans and Liverpool, touching at an Irish port, and probably also calling at Havana. The Company is entitled the "British and American Southern Steamship Company," and is to commence operations with a capital of $1,000,000, in twenty thousand shares, which are to be taken up equally in England and America. The vessels are to be first class propellers, constructed capable of making the passage within twenty-five days.

It is gratifying to witness the quickening of Southern commercial enterprise, of which this undertaking and the formation of the Belgian Direct Trading Company are substantial evidences; and, in the present case, the prospects of success are as encouraging as the spirit of enterprise is commendable. If the Southern States have had a danger, it has been in their confining themselves too exclusively to the developing of the resources of their soil, whilst purely commercial enterprises have been neglected.

This movement will tend undoubtedly to the diversion of a portion of the Southern trade of this city, and those who feel the consequences, will, of course, be no friends to the new enterprise. Such regrets, however, are quite unavailing. If the merchants of New Orleans find it to their interest to transact their business directly with Europe they will unquestionably do so, and it is an unwise and selfish policy that would wish to see business take any other course. The true interest of the country lays in each section managing its own affairs in a manner most conducive to its own prosperity. If New Orleans thinks she can advance her interests better by trading on her own account, why who would not say let her dissolve the partnership now existing between her and New York. We shall be exceedingly sorry to lose a customer so wealthy and prompt; but if it should prove that we must do so, we shall not turn cross and slight her praiseworthy efforts at independence, but wish her good-bye and good luck, and turn our attention to the cultivation of some new source of demand. New York is just now in such a position that she can afford to be liberal. Her trade is annually increasing to an immense extent, and she might lose even a very large slice of her present commerce and feel it but very little. She is becoming very powerful too as a commercial rival; and it may be well for our Southern enterprisers to remember that she will considerably annoy them by her unconquerable competition.

For the Southern Planter.

Best Shape for a Maul—How to Feed and Train Work Oxen—Recommendation of a New Ground Coalter—Reply to N. C. Crenshaw, Esq.

LEXINGTON, VA., June 4th, 1860.

Editor of the Southern Planter:

Thinking the following facts, accumulated in between thirty and forty years experience as a farmer, may be of service to the public, I give them to you to dispose of as you may think proper.

1st. With a maul, shaped as a mallet, a man can maul one fourth more rails than with the straight maul in ordinary use.

2nd. Work oxen should be fed exclusively on the offal of the farm, such as corn stalks, shucks and wheat straw. If suffered to taste better food, they will not eat enough of the coarse food to keep them in working order. Great pains should be taken in breaking them—to walk briskly and to trot with the empty cart, in going for a return load, by which much time is saved, and a much greater amount of work performed by the team. They should also be carefully trained to obey the word of command. I have seen a team of oxen so trained that the driver could pass them through a gate as far as they could hear his voice, without touching a post; and he could, by word of command, make them move in a complete circle. This team would trot with an empty cart, nearly as fast as horses, and would thus perform more work in a day than two teams broke in the usual way. Oxen broke and fed in the way recommended, are of more value on a farm, than either horses or mules, as they cost nothing to keep them, which more than compensates for the difference in the amount of work performed by well broke oxen and horses, or mules.

3rd. I would direct public notice also to an instrument used in Eastern Virginia,

called the new ground coalter. It is made of a square bar of iron, about an inch wide, and fifteen inches in length, with a coalter bill, and strongly braced to the beam behind with an iron brace. It should be worked with oxen, as horses are apt to fret at the sudden jerks and stoppages they encounter in breaking up new ground. It will tear up and break all the smaller roots, and the ploughman should have a hatchet with him, to cut the larger roots. By the use of this plough, I have known 70 acres of new ground got in and cultivated in a season, where the same force could not have got in and cultivated more than ten or fifteen acres, by the old method of grubbing and hoeing. The implement is also used to open the beds for planting corn, by attaching two short mould boards to it. I have also known it used to run in the water furrows in corn fields in dry seasons with good effect.

REPLY TO MR. CRENSHAW.

In the Whig of the 1st of June, I notice a letter communicated by you to the editors, from N. C. Crenshaw, Esq., in which he appears to have been led into a fatal error, by information derived, as he says, from an experienced farmer. This farmer informs him, that although unripe wheat may be safely put up wet, the same is not true with regard to ripe wheat. Now I can affirm from well tested experiment, that exactly the reverse is true. 'Tis true, that in both cases, considerable heat is generated from the wet straw, which dries both straw and grain; but with regard to the ripe wheat both straw and grain are preserved, and the former, with so little injury, that horses and cattle feed freely on it. I have had, I admit, no experience in putting up green wheat wet, but from what we know with regard to stacking green hay, we may safely conclude that where ripe wheat would dry, without injury to the grain, or material injury to the straw, green wheat put up wet, would be apt to rot and result in a total loss. I can pronounce, with perfect certainty, that ripe wheat may be put up wet without danger to either grain or straw, which I am persuaded cannot be affirmed with regard to green wheat, tested by actual experiment, which is the only evidence worthy of consideration, on all subjects. One well attested experiment is much more to be relied on than the most plausible theory.

WM. GARNETT.

P. S.—In a communication to the Whig I have corrected the error in which Mr. Crenshaw seems to have been led.

W. G.

For the Southern Planter.

JUNE 5th, 1860.

Dear Sir:—In your last number of the Planter "A Friend" wishes to know the name and description of a bug or insect that propagates the vermin on his young fruit trees. He does not say what kind of trees they are, but I presume them to be peach trees, as I have seen the insect he describes on my own, but have never known them to attack the apple tree. I cannot tell him the name or give him a description of the insect that produces the little bugs, but I think I can tell him something of more importance in regard to them, that is, a remedy or how to destroy them. I have tried it on my own trees, and have seen it tried (on my recommendation) by some of my neighbours with entire success. It is to sprinkle some amber (water in which tobacco has been steeped) on the trees, and sprinkle some fresh slacked lime on them while wet with the amber. If he should not succeed in destroying them the first time, try it again, and I am sure he will not be troubled with them again that season. The lime probably would answer without the amber. Some of my neighbors say they have destroyed them with lime alone, put on when the trees were wet.

SPOTSYLVANIA.

New Ventilator.

A correspondent of the New York *Tribune* proposes a plan for ventilating rooms warmed by stoves, which is as follows: Apply a vertical pipe to the front of the chimney, into which the lower end should enter below the stove-pipe, and the upper end approach within a few inches of the ceiling. In its operation, the foul air from the top of the room rushes down and into the chimney to fill a partial vacuum occasioned by the draft from the stove-pipe above. By applying a damper to the pipe, its capacity may be adjusted as desired.—*Annual of Scientific discovery*, 1860.

Respect your whole kindred, so that you may display genuine harmony.

Be particular in habits of economy, in order to be careful in the expenditure of money.

For the Southern Planter.

What Alderman Mechi says about Fattening Cattle on "Boards" instead of Bedding.

Experience has shown that in order to succeed in farming, we must produce a much larger quantity of meat on our farms than at present, and at less cost. In order to do this advantageously, it becomes necessary to consume a large portion of the straw of the farm, cut into chaff, and cooked with meal or ground oil-cake. We are thus deprived of the usual cattle *bedding*, and must find a *substitute* for the straw thus fed. The difficult question in agriculture is, how to get the best return for your straw, your root and your green crops. My own practice has convinced me that this can best be done, by *consuming much of the straw* whilst feeding the root and green crops. This cannot be effected without *steaming* or *cooking* the straw, cut up, of course, into fine chaff and mixed with other materials, and given warm to the animals.

The feeding of the straw crop being thus indispensable to profit, how shall we dispense with it for *bedding?* My practice is to keep my animals on boards. Having practiced the system rather extensively, I will communicate to you the details of it; observing, that although attended as every system must be with certain disadvantages, the balance of benefit is sufficiently considerable to induce me to continue and extend it. The quantity of stock I now have on boards is: lambs, 100; sheep, 50; calves, 60; bullocks, 30; cows, 10; pigs, 200. I arranged the floors of my stalls as follows: I may say that the bars or planks may be either of straight yellow deals, or of straight-grained hard woods. The latter are to be preferred for heavy animals, as they wear off the edges of the deals. The floors are set over pits from two to four feet deep. It is necessary, occasionally, to level the manure to prevent its touching the boards, as it would soften them and cause them to break.

Dimensions of the Planks of the Floors.

	Inches thick.	Inches wide.	Space between. Inches.
For Bullocks,.....	3	4	1⅞
" Sheep,.....	1½	3	1¼
" Pigs,.....	1½	3	1¼
" Small pigs and lambs,.....	1½	3	1
" Calves,.....	2	3	1⅝

The area allowed for each animal and its feeding apparatus is, in my practice as follows, (though Mr. Worms uses boxes 8 feet by 9 feet for a pair of bullocks, weighing when fat 40 to 50 score):

Areas allowed each Animal in superficial feet.

Small sheep,.....	8 square feet.
Large do	10 "
Small bullocks,.....	30 to 40 "
Large do	50 to 60 "
Small pigs,.....	6 to 8 "
Large do	9 to 11 "

I should say that we never sweep the floor; but the animals are perfectly clean. Of course the manure is taken from under the boards direct to the field, without the intervenient expense of double carting, shooting, or turning over of a dung-heap. The effect on the crop is unmistakable. One man on my farm feeds and entirely attends to 250 pigs. It would require two men on the old straw-bed system. Our pigs are never cramped now. Formerly, they used to be, owing to the manure heating under them, and the cold giving those parts rheumatism.

One stout lad, at 3s. 6d. per week, will feed and attend to 30 bullocks; another attends to 60 growing calves. Before I leave the boarded floors, I must confess that I never like the look of those animals so well on them as I do on a little mountain of clean straw, or a nice green pasture. But this is not a question of fancy, but profit, and I am quite sure that the system is very advantageous. It is true we like a soft bed, and so do the animals; but our medical advisers recommend hard ones.

As soon as the bullocks are transferred to these floors, they seem quite astounded; their performance is pitiable and ludicrous. The sense of danger and insecurity is very apparent, and they seem afraid to move. Still their appetite does not fail them. All their excrement, solid as well as liquid, passes readily through the openings into the receptacle below. But will they lie down? Certainly not. For twenty-four hours they resolutely maintain this standing, with rare exceptions. I then spread a light forkful or net-work of straw under them, and in a few minutes they are all comfortably at rest. The straw soon works through the openings, and now they repose comfortably on the bare boards.

The bullocks on these open floors are cleaner than those on the straw, although the former are never swept. The heavy pressure forces the liquid to the surface through the layers of straw in the latter, and keeps the animals wet. When the open boards are first tried, there is nothing pleasing to the grazier's eye, especially when compared with the unlimited supply of the ordinary straw sheds. The edges of the boards are new and sharp, and the frequent lifting of the foot indicates fear and discomfort. In lying down and rising up, the sharp edges probably give pain, but in two or three weeks all this passes off, the edges get smooth, and you will find your animals lying in various and easy positions.

I attach great importance to these open floors; they will enable us to keep almost any quantity of stock. The manure requires no turning or fermenting; there is no expense of littering or frequent removal, and no loss of ammonia by fermentation. The comfort is great in every respect. Some of my pigs and sheep have been six weeks over my liquid manure-tank without the slightest symptom of ill health, although I feared it when I made the trial. Gypsum is strown on the boards every morning. Burned earth is an essential auxiliarily to boarded floors. About a peck of gypsum to ten bullocks is enough, sprinkled every morning on the boards is highly necessary and beneficial. Every manger should have a large lump of rock salt, and a water-trough always supplied; the animals will not drink more than what is proper. The same remark applies to pigs and sheep.

There is a very powerful development of the muscles on boards—so much so, that in fattening pigs, *not* bred on the boards, I have known some of them to get capped hocks. It is surprising how quickly you may fatten young pigs on these boards. They find it inconvenient to run about, and so divide their time between eating and sleeping—a most agreeable operation for the account-book.

There can be no doubt the animals are perfectly healthy on these floors. Considering the confinement and heat, this rather surprises me, especially with the pigs fed entirely on meal; for the effluvia from under them certainly is powerful enough to discolour the paint.

Another question connected with the boards system is the fly question. Where you have a plenty of food, warmth and stock, you will have abundance of flies. My bullocks could never lie down in the day time, owing to their attacks; and, of course, the continued lifting of their feet prevented fattening. By darkening the feeding-houses, I entirely removed this nuisance, and had the gratification of putting my animals in a most profitable state of repose; for if you have ten millions of flies, not one will bite in the dark.

Mr. Mechi said at Hadleigh, "He had all his animals on boards, and was extending the operation; and he assured the society they would succeed, as he had done, in making better manure, more manure, and more meat, by having their animals on boards, instead of putting them on straw and removing that straw after it had been worked into muck, and turning it over and re-carting it after it had lost many of its soluble properties. Instead of that, let them take the pure excrement from the animals, carry it on the soil, and plow it in, and he was sure their crops so treated would exceed those grown with the primest guano. He should naturally be asked, what he did with his straw? He replied, "Eat it," that was, he let the cattle eat it, and he could keep four times as much stock. He could assure them, that if they increased their stock in proportion, taking care to add something better to the straw, they would get more manure, of a better quality, and grow more grain. He thought, also, that they did not manage their cattle well; that was, that they did not administer their food in the best mode. He was convinced that one-half the food administered in the usual way, passed through the animal undigested. This led to the consideration whether it would pay farmers to administer a smaller amount of food perfectly available to the stomach of the animal. He must think they were making a great mistake in giving so much food to their animals, or so great waste. A bullock would not put on more than two pounds of meat per day, probably not more than one, and the average, very likely, would not be more than one and a half; a stone per week, 10 lbs., would be 10d. a day. If they gave that animal 2s. worth of food, which was often done, he could not pay for it. He might make manure in return for his food, but it was impossible that he could pay for more than a

given quantity. He repeated that his animals were all on boards. He assured them that the animals neither required grooming nor bedding, and it was one of the beauties of this principle, that they might have a thousand bullocks, hogs, or sheep on boards, and they would require neither sweeping, littering, or attending to in any way beyond the mere act of feeding them; yet they would be as clean as possible, and fit for a lady's drawing-room. He was often asked by those who came to look at his animals, —bullocks, pigs and sheep,—"How often do you sweep the floor?" "Not at all; they sweep it themselves." He assured them, that by the addition of a little gypsum on the boards, the ammonia was perfectly fixed, there was no disagreeable smell at all, and the manure was taken away at intervals, just as it might be wanted.

The Sun.

"The sun, the great awakener of life' the king of nature, shoots his burning rays every day athwart the face of the waters. He causes the invisible vapours to rise, which, lighter than the air itself, unceasingly tend to soar into the atmosphere, filling it and constituting within it another aqueous atmosphere. In their ascending movement, they encounter the colder layers of the higher regions of the atmosphere which perform the part of coolers. They are condensed in vesicles, that become visible under the form of clouds and fogs. Then, borne along by the winds, whether invisible still, or in the state of clouds, they spread themselves over the continents, and fall in abundant rains upon the ground which they fertilize. All the portion of the atmospheric waters not expended for the benefit of the plants and of the animals, nor carried off anew into the atmosphere by evaporation, returns by the springs and rivers to the ocean whence it came."

Instruct the rising generation, in order to check evil habits and practices.

Put down false speaking and accusation, so that you may protect and rescue the honest and innocent.

Set the highest estimate possible on academical learning, so that you may advance the scholar.

The Southern Planter.

RICHMOND, VIRGINIA.

A Holiday Trip among the Farmers.

We have lately had the pleasure of visiting some very kind friends of the "Southern Planter," in the counties of Albemarle, Augusta and Rockbridge; and as we shall ever look back to this visit as a season of unalloyed happiness to us, we propose to speak of what we saw as the means of letting our friends there know that we have not forgotten *them*, and of communicating "the News" of that fine agricultural region of our State, to the readers of the Planter *everywhere*.

We had a regular holiday, and felt inclined to make the most of it, as it has been a long, long time, since we enjoyed a similar benefit, and if inclination alone had been consulted, we should scarcely have set out for home, until we had "no where else to go to." *Here* it is all work, and every day in the week is so much alike, that it would be a difficult matter to tell Saturday from Monday, except that on the former there is more work to do than usual, and it does not so often rain as it used to do when *we were a school-boy*. We were very much gratified at the kindness we received, which was of that cordial, unselfish sort that one may expect from the farmers of Virginia whenever he enters their abodes. We were told that we *should* do as we pleased, and we cannot help saying, "sub rosa," that we at once communicated this fact to our "better half," as affording her a hint of the existence of a species of *restraint* which would frequently be salutary to our dispositions.

Of course it pleased us to see all the horses, cows, sheep, hogs, crops, &c., that we possibly could, for we cannot help being particularly interested in all of these things.

We visited first, Mr. S. W. Ficklin near Charlottesville, who is well known to the readers of the Planter, as an enthusiastic admirer and breeder of fine horses and cattle. We found his

farm stocked with some capital animals; among them his fine Morgan stallion "Black Hawk"--a horse of great power and speed, combined with beauty—a splendid "Abdallah" mare—a filly by "old Black Hawk," and a lot of beautiful colts of *Morgan*, and "Cleveland Bay" blood. Among the cattle we noticed a very large and handsome Durham Bull. Some Short Horn Cows which Mr. F. brought from Kentucky last year, and several handsome Devons. We also noticed some fine "Chester" pigs. These were all fine of their class, but no better than his large, powerful, riding horse, which for strength, appearance and excellence of gaits, we have rarely seen equalled.

After a ride to Monticello, and the University of Virginia, both of which are objects of deep interest to us, we took the Cars for Ivy Depot, and made our way to the hospitable mansion of Dr. John R. Woods, who is also a public spirited breeder of fine stock. We spent several most delightful days with the Dr., who has a beautiful and highly cultivated farm. We employed our time in looking at the various fine specimens of blooded stock—fields of luxuriant orchard grass and clover, and in talking on agricultural matters generally.

Dr. Woods has imported from England a noble specimen of the Cleveland Bays—a Stallion, rightly named "Symmetry," five years old this spring. We saw him soon after his arrival in this country last fall, and were amazed to find him so much grown and improved since that time. He is *very large*, notwithstanding which, he has a very graceful, stylish carriage, and is one of the smoothest and most rapid walkers, we have ever seen. We hope the Dr. will have him trained to harness, for we should judge from the action displayed in his walk, that he would become a fine trotter with proper handling. We found in the pastures some very fine Brood mares with Colts—the get of Mr. R. H. Dulany's imported Cleveland "Scrivington," and "Havelock," (imported by Dr. Woods, and since sold to some gentlemen in the South) —a large flock of sheep, pure Costwolds, and South Downs crossed with Cotswold. This was the finest flock of Sheep we ever saw; among them was an imported Cotswold Ram, of such size that we had the curiosity to measure him, and found his length from the top of his eyes, to the root of his tail to be four feet ten inches—his girth behind the shoulders, four feet six inches, and his width across the shoulders twenty inches. His wool had been closely sheared, so that the measurement given above, is that of his carcase. Seven yearling Rams, age considered, we supposed were not inferior to him.

We observed the preparation of Dr. Wood's Tobacco grounds for this year's crop, which was so thoroughly pulverized and manured, that we no longer wondered *why* it was that the quality of his last year's crop was so good.

This neighborhood is a particularly successful Tobacco growing section, lying on Ivy Creek; the soil a rich chocolate clay, retentive of manures, and well adapted to all of our staple crops. On every farm, we saw fine fields of grass, and we thought it a shame that Virginia should bring from the North, her supplies of hay, when she can grow it of much better quality, than that furnished by the North. The wheat crop is a perfectly disheartening failure throughout this region, as it is also in most of our State, and this has so often been the case of late years, that we believe the best thing the farmers of the limestone region could do, would be to raise hay in its stead. We have recently seen Baled hay, raised in Orange county, sold in this market at $1 45 per hundred pounds, and in less than twenty-four hours after its arrival. Would it not pay the farmers of Albemarle, Augusta and Rockbridge, to raise hay instead of Wheat? We think it would. Near Ivy Depot are the farms of the Messrs. Garth, Gilmer, Southall, Noland, Colston, McGee, and others, all of them first rate lands, and if Tobacco was raised as a general thing all over the State, as it is among the gentlemen of Ivy Creek neighbourhood, we don't think "Ezekiel's Hair Restorative" could save us from becoming a bald headed set, i. e. if trouble produces baldness and it is as troublesome a crop there, as it is in Henrico. We saw on one farm, a "Tobacco *patch*" of sixty acres, "or thereabouts."

The more we saw of the country, the more we were pleased, and the more we felt it to be excusable for *Virginians* to be proud of the Old Dominion—having within her own borders the elements of wealth, prosperity and greatness. We proved to our heartfelt satisfaction the justice of her claim to unlimited hospitality, and kindness to the stranger within her gates.

The various Colleges and Schools of this charming section of the State, are in a very flourishing condition. The "chairs" being filled at the *University of Virginia*, the Virginia *Military Institute* and *Washington College*, by men of tal-

ent, energy, and administrative ability, it is now well known that those persons who bear off their Diplomas from these Institutions, are not the recipients of mere "empty honors," but only wear the laurels they have fairly won.

The "Military Institute" should be ever fostered and cherished by the State, since our young men are there furnished with a thorough education for the mind, and the body comes in for a course of training well adapted to promote the health and strength of the "Cadet," and to make him useful to the Commonwealth whenever she wants him for her defence.

Applications are pouring in from all quarters for admission into the Corps of Cadets; and it has become necessary to enlarge the buildings and accommodations. We were very glad to hear from Col. Smith, and Major Gilham that *a gentleman of another State*, had generously added Ten Thousand Dollars to Col. Cocke's gift of Twenty Thousand to the "Institute"—in order that her boundaries may be enlarged in proportion to her usefulness. *The same gentleman now offers if Virginia citizens will give a similar sum, to increase his donation by ten thousand dollars more.* We hope sincerely that Virginia "will cover his pile" and "go" many thousands "better."

In conclusion, we beg permission to offer to all the good friends we met in our trip, our heartfelt thanks for their kindness to us. We shall be glad to repay them "in kind," as far as we can, and whenever they will afford us the opportunity. May prosperity and happiness ever attend them.

The Crenshaw Woolen Company.

A Woolen Company under the above title has been incorporated, with a capital stock of $130,000 and located in the City of Richmond.

The Corporators are Messrs. Frank G. Ruffin, Lewis D. Crenshaw, Purcell, Ladd & Co., Crenshaw & Co., Mitchell & Tyler, Joseph Brummel, George D. Fisher, John H. Montague, John Currie, Jr., Joseph F. Powell, Goddin & Apperson, Smith & Harwood and John Waterhouse,—an association of gentlemen whose integrity of character, loyalty to the South, and zealous devotion to the interests of Virginia, afford a certain guaranty that the enterprise they have undertaken, for her liberation from humiliating vassalage and dependence upon the North, will not only be conducted upon patriotic principles, but with an enlarged liberality which will commend their establishment to public confidence, and with such intelligence, perseverance, and economy as must result in the successful achievment of the objects of the association. In proof of what we have said, let us advert to the organization of the company, that it may be seen what a high order of business capacity and commercial and general intelligence has been put in requisition for the administration and direction of the affairs of the company.

The following gentlemen have been elected to the offices they respectively fill:

LEWIS D. CRENSHAW, *President.*
WELLINGTON GODDIN,
P. W. HARWOOD,
JOHN H. MONTAGUE,
SAMUEL P. MITCHELL,
} *other Directors.*

Crenshaw & Co., General Agents for the purchase of wool and for selling the manufactures of the company and

John Waterhouse, Superintendent.

Mr. Waterhouse, has given practical proof of his fitness for the post which has beed assigned him. He had the charge of the Woolen Mill which was burnt here in 1853, for a year or two previous to that event, and had succeeded by his good management in getting it in a condition for successful and profitable operation when the fire occurred.

The Company will use the Crenshaw flour mills, replacing the milling apparatus which has been removed, by the most approved machinery for the manufacture of woolen fabrics, adapted to Southern trade.

Operations will be commenced early in July with the manufacture of nearly every description of woolen goods that are wanted in Virginia and the South, from the best coarse cloth for negro clothing to the finest fabrics for gentlemen's wear.

The general agents will purchase all kinds of wool from the coarsest grades, up to the finest saxony. We are informed, they have already purchased over 50,000 lbs. of VIRGINIA wool, and wish to get their whole supply of her native growth if practicable. They will pay "outside prices" for their raw material and will sell their goods at fair rates, that is, "upon the live and let live principle." They expect to use in the next twelve months 200,000 lbs. of wool, and if their efforts shall be met by a correlative movement on the part of the merchants and consumers of Virginia, who have committed themselves to the policy of protecting home industry and direct foreign trade, the company will so add to their machinery as to increase their consumption of wool to 300,000 pounds per annum. It is needless to add anything more, and yet we

cannot forbear to repeat, that the characters of the President, Directors, General Agents, Superintendent and Corporators are such as to give ample assurance of the most satisfactory and faithful fulfilment of the obligations they have assumed in their relation to the South and to bespeak for the company the manifestation on the part of Virginia at least, a full sense of reciprocal obligation in her relation to them.

Hogs—Different Breeds.

Our opinion has lately been so often asked in relation to the breeds of swine best adapted to the wants of the farmer, that we have concluded to answer through the columns of the "Planter," and thereby avoid the necessity of writing many letters. A good judge of swine, said in a letter published sometime ago in one of our agricultural exchanges, that the best form a hog could have to indicate a profitable carcass, would "closely resemble a round log, with four pins stuck in it to represent the legs, with a small head and tail added to it." This would undoubtedly prove a good model, and might boast of as good hams as some of the "hickory hams" of which everybody has heard that have occasionally "been sent down South" in company with "wooden nutmegs" and saw-dust cayenne pepper.

The right kind of a hog for anybody to raise is one having a small head, a long round body, short legs, wide across the shoulders, deep through the chest, with a full round ham and broad back. It is important to avoid in Breeding Sows a very dished face, (which makes the head and countenance look very much like that of the bull dog,) as they are when thus marked, almost invariably bad nurses and deficient in instinct.

There are several breeds of "improved hogs," all of which are good, when carefully bred; i. e., when only the best of the pigs in a litter are turned out for breeders. Any breed will rapidly deteriorate if care is not taken in *selecting breeders*.

The *Chester County Hog* is the favorite breed of all those who desire great size.

They are unequalled, we think, for producing large meat ("middlings" particularly) for farm laborors; but they are not well suited for "family bacon." The only objection we have to them is, that the sows are white, and generally *too* large. This, however, is regarded by many only as a matter of taste, for white hogs are usually more popular than black.

We prefer black hogs, only because they are not at all liable to "mange," while white hogs *will have it*, unless very great care is taken to prevent it.

As a mere item of beauty, a white or spotted color is certainly desirable; but the blackest hog is usually black only through the scarf skin, which pulls off when scalded. We have never seen a black hog suffering with mange, nor have we ever owned a white one that failed to have it. For this reason our individual preference is given to the "Improved Berkshire, the Skinner or Neapolitan, and the Essex breeds."

The *Suffolks* are beautiful animals, of handsome proportions, with a great tendency to take on fat—very thin hair, and a scarf skin so delicate as to be easily peeled off by the sun. For our own use we would prefer any of the other breeds named.

The *Black Berkshire*, when well bred, we regard as the most beautiful of all hogs, and it must have been one of this breed who formed the subject of the old song, "There was a lady loved a swine," &c.

We have heard butchers object to them as opening badly when slaughtered, and that the intestinal fat had a peculiar blue color. Of the truth of the assertion we know nothing. They are easily fattened, and are quiet and thrifty in certain habits. This *may be* true of all the improved breeds, *except the Chester*—of which, the thorough-bred are unquestionably the best.

The "Skinners" were very common in the vicinity of Richmond some twelve or fifteen years ago, but have almost entirely disappeared. They were, in fact, the *Neapolitan*, and took their name in Virginia and Maryland from the late John S. Skinner, who first introduced them, and who was a first rate judge as well as an ardent admirer of every kind of blooded stock.

The *Essex* have sprung from a cross of the Neapolitan with the Black Berkshire, it is said. They have inherited the thin hair and coal black skin of the Neapolitan, and by judicious breeding have gained from the Berkshire a rounder carcass and ham, with earlier maturity. We regard them as chiefly valuable for crossing with larger and coarser-boned stock, and have found the cross with the *Chesters* a good one, while one or two crosses, which we have tried with the Berkshire, disappointed us—the produce having as a general thing the characteristic marks of the Essex, with small bones, without any increase of size. The *Suffolk* and *Essex* hogs are perhaps smaller than any other of the improved

breeds; but always weigh well in proportion to bulk of carcass, as they are very compact.

The *Irish Grazier* is a good hog, but so scarce as to make it hardly worth while to mention them.

The *Improved Hampshire* is a finely formed hog. The only objection *we* could urge against them is, that they are so often *white*. Whenever we have seen a black or spotted one we have admired it greatly. Mr. Peyton Johnston of this city imported in 1856 some of this stock from the Duke of Buford's estate, Gloucester, England. The breed is a compound of the Essex, the Chinese, the Neapolitan and the improved Berkshire races, the large old English Hampshire being the foundation upon which the improved Hampshire was based. To those who, like ourselves, object to white hogs, we may say, by the way, that Mr. Johnston has now some dark spotted sows, which are *beauties*. One of them,---Princess by name,---we particularly remember as the winner of a good many premiums, and as looking like just what a hog ought to be.

It is better to raise hogs *of a good breed*, if you raise them at all, than to be bothered with the mean, roguish, old fashioned "alligator" and "land-pike," unless like an old acquaintance of ours, you are fond of *fresh meat*. He used to say that he liked the "Possum-faced" breed of hogs better than any other, because he was fond of *fresh* meat, and could swear that they were *one-half face and the other half legs* at the time they were put up to fatten, so that every ounce of flesh on their bodies at "killing-time" was of recent manufacture, and exactly suited his taste.

In raising swine---we repeat it---the breeders should be selected of good form, *no matter by what name they may be distinguished*, and the best and only such of every litter of pigs should be "turned out" for that purpose.

To those who believe that "*the breed is all in the corn crib*," we would say, try a fair experiment with a "possum face" and one of *any* of the "improved breeds," both to be fed with the same kind and quantity of grain or slop, and see for yourselves what the result will be. We say in advance, "blood will tell."

☞ Our friend, Gray Boulware, of Bowling Green, Caroline county, will please accept our thanks for a very fine Berkshire pig, which has just arrived. She does credit to her family, all of whom boast of a long line of ancestors of high blood.

Underdraining.

The principles of philosophy upon which the advocates of this system of agricultural improvement base their theory are too well established, both by scientific deductions and practical demonstration, to require further discussion.—Whilst, however, the most incredulous are indisposed to acknowledge the ameliorating influences which underdraining has upon the soil, and the benefits which the growing crops derive therefrom, yet its general adoption as a part and parcel of our system of farming depends in a great measure upon the progress of invention in developing some mode by which the labor of underdraining will be expedited and cheapened. This, like every other step in the onward march of agricultural improvement, is in advance of the age, and must await a like progress in the mechanical arts to render its application practicable. The cost of underdraining deters many who are convinced of its beneficial effects from attempting it, even on a small scale, and much valuable land in our State is, from this fact, permitted to lie out as reservoirs of stagnant water, and homes for frogs and reptiles, that, under the ameliorating system of drainage, would become the most valuable meadow and pasture land.

The beneficial influence of drainage is not confined only to low, wet, or marshy lands, but similar advantage (although not to so great an extent) results from the thorough underdraining of apparently high, dry land, particularly where the character of the soil is of a stiff, cloggy texture, and consequently very retentive of water. With the present facilities, however, of underdraining, but few persons are willing to incur the heavy expense of underdraining, except where it is indispensable for the reclamation of swampy or marsh lands. As a system for the improvement of lands, and the augmentation of crops, we cannot hope for its general introduction and appreciation until the cost can, by mechanical operation, be brought within the means of the farmer of limited capital. That this may and will be done we have no doubt. The mole-plan is an approximation that savors of final success, although now subject to objections. A late invention, for which a patent has been granted to the inventor, Mr. F. B. Scott, of Buffalo, claims the attention of the public, and if it is all that the patentee claims for it, surely we may congratulate the agricultural world upon a triumph of mechanics in the saving of labor, as important in its results to the amelioration of

the soil and the enhancement of its products as the introduction of the propelling power of steam in transmitting the interchanging commodities of the commercial world. As to its utility in its practical application, we can only form an idea from the following notice taken from the "Buffalo Daily Enquirer," which we transfer to our columns, that our readers may form their own estimate of its peculiar virtues.

C.

—

SCOTT'S AUTOMATON EXCAVATOR.

This is an invention for which a patent has been granted to Mr. F. B. Scott, of this city, and which deserves more than a passing notice. Mr. Scott has now on exhibition, at his shop, over 231 Main street, a large working model, beautifully finished, which better illustrates the invention than any description which could be given in a paper. We were much interested in our examination of it, and are happy to find that it is receiving such flattering testimonials from so many men whose judgment stands high in the community.

Within the last few years, much attention is beginning to be paid to the system of thorough drainage, as a means of accomplishing the most remarkable results in the improvement of farm lands. The great difficulty in the way of its general adoption is, its being so expensive an undertaking, although when once accomplished, it proves a very profitable investment. Anything which tends to reduce the cost of thorough drainage will tend to its more rapid introduction; also, the more there is done, the more the cost will be reduced. For example: drain tile, which are now furnished at ten dollars per thousand, can, when the demand becomes more general, be as easily sold for five. If, in the same manner, an equal saving could be effected in cutting the trenches for receiving the tile, which is now done by manual labor, the cost of draining would be reduced nearly one-half. Mr. Scott claims that, by his machine, this can be accomplished; and he certainly is sustained by the opinions of some of the best practical and scientific men in the city.

In describing the advantages of the machine, we will let Mr. Scott speak for himself:

"There are twelve spades, rotated on a wheel which makes twelve revolutions per minute. If each spade should cut at an advance of half an inch, it would give six inches advance at a revolution, which, at the rate of twelve revolutions per minute, would give six feet advance per minute, or 360 feet per hour, or nearly 220 rods per day. Deduct one-third for stoppage, and say 150 rods per day, with a two-horse power and three men; which, if it were four feet deep, would take from thirty to forty men to accomplish in the same time by manual labor. The machine is adapted to work in the most tenacious clay, every part being made to clean itself. It brings up the earth, and, by a simple process, carries it off and deposits it on one side. It cuts the whole depth by once going over the ground. The excavator wheel can be raised and lowered without throwing any part out of gear. It can cut a trench for putting in tile, four feet deep, by removing one-half the quantity of earth necessary by manual labor. It is so arranged that striking large stones will not break any part of the machinery, and it can dig out the smaller ones. It admits of being built light and portable, and at the same time possessing great power. It is simple in its construction. It can be made to move itself from one locality to another, without any additional power. It admits of being worked by manual labor, like a hand-car, or by horses, or steam, or caloric, and can be adapted to prairie ditching, and, on a large scale, to cutting sewers for city drainage. It can be regulated on the surface to determine the inclination or fall which shall be given to the trench below."

Mr. Scott has forwarded drawings and specifications to have it patented in Europe.

Error Corrected.

To the Editor of the Southern Planter:

In looking over the May number of the Planter, my attention was attracted by the heading, "A Valuable Table," on page 284, in which the linear dimensions of seven measures are put down in figures. As your intention was, of course, to give information, I take the liberty to say that they are all incorrect, except the 1st and 5th—the barrel and the gallon. The 4th gives the proper dimensions of a "half bushel," and not of a "peck."

The others are entirely wrong.

SUBSCRIBER.

June, 1860.

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REMARKS BY THE EDITOR.—We are much indebted to "Subscriber" for the above communication, calling our attention to the palpable errors contained in the short article, entitled "A Valuable Table," transferred to our pages (without the least suspicion of incorrectness) from one of our exchanges.

In regard to the half bushel and peck, we have very little doubt but that the original contained correct calculations of both, and that the close of the paragraph in relation to the peck was misapplied to that respecting the half bushel, and the balance of it omitted by some printer, through whose hands it had passed. We beg of our readers to apply the senatorial mode of expunction to the article on our 284th page, referred to by Subscriber, and to accept the following corrected copy, with the peck restored to the place it ought to have occupied in that article, which we hope "*will be found valuable to many of them:*"

A VALUABLE TABLE.

[*Corrected from May number, page* 284.]

A box 24 inches by 16 inches square, 28 inches deep, will contain a barrel—five bushels.

A box 24 inches by 16 inches square, 14 inches deep, will contain half a barrel.

A box 24 inches by 16 inches square, 5.6 inches deep, will contain a bushel.

A box 12 inches by 11.2 inches square, 8 inches deep, will contain half a bushel.

A box 12 inches by 11.2 inches square, 4 inches deep, will contain a peck.

A box 8 inches by 8 inches square, 4.2 inches deep, will contain a gallon.

A box 4 inches by 8 inches square, 3.9 inches deep, will contain, within a small fraction, half a gallon.

A box 4 inches by 4 inches square, 4.2 inches deep, will contain one quart.

Dr. John N. Powell's Farm.

In the latter part of May, shortly after our June number had gone to press, which accounts for the late appearance of this notice, we spent an afternoon, with a few friends who accompanied us, at the hospitable mansion of Dr. John N. Powell, six or eight miles from this city. We there saw, in the order and arrangement of his farm, very much to excite in us the most favorable impression of his judicious and skillful management. The doctor has a compact and picturesque farm of more than seven hundred acres, bordering the Chickahominy, including rather over one-fourth part of rich bottom land of that famous river, and with the exception of a field in front of his dwelling, which is level enough to have required, in his judgment, the ditches which traverse it, the balance, highland, consisting of graceful undulations and gradual and lengthened slopes, affording ample natural channels for its drainage, with very few, if any, exceptional cases of exposure to the too precipitous discharge of surface water, and consequent detrition of the soil. We saw neither gall nor gulley to mar the beauty of the landscape; and if the doctor found such on his entering into possession of the premises, we can well imagine that he lost no time in burying the loathsome spectacle out of sight.

The soil of the upland is of a stiff, tenacious clay, but not without a sufficiency of sand, suitably to adapt it to wheat. It was, as we suppose, naturally infertile, and hard to cultivate, but if such was the case, its present improved condition only affords the higher testimonial of the skillful administration of the proprietor, who has successfully conquered all these natural disadvantages, and removed them out of the way. The chief element of this improvement is the farm-pen, where no means are neglected for producing and preserving the largest amount of putrescent manures, which the careful husbandry of all the resources of the farm will allow.

The stables, cow-sheds, straw-racks, corn-house, barn, &c., and the construction and inclosure of the stock-yard, are all models of their kind, and we recommend them to the imitation of his neighbors. The crop of wheat, of which he sowed about two hundred bushels, and put it in with Bickford and Huffman's drill, a part *with entire success upon pea-fallow*, was magnificent; it was just then fully headed, and promised an average yield of from 20 to 25 bushels per acre. The best portion of this wheat (for fine as it all was, it admitted of degrees of comparison) was a new white variety, bearing the name of "Bowers," which we thought could not fall much short of 30 bushels to the acre.

After viewing the outbuildings, crops, &c., without having seen the doctor's fine stock and splendid clover fields, which were too distant for present inspection, but the quality of which we could not undervalue, for—reasoning *a posteriori*—from effect to cause—the abundant specimens of the finest butter and richest milk and cream which fell under our observation, could be ascribed to nothing short of the existence of fine cattle and rich and abundant clover pastures.

Returning from this general review, which we were reluctantly compelled to do, by the wane of day, we passed through his flourishing and exuberant strawberry beds, which had yielded their fifty and sixty quarts per day, (of the finest descriptions, for we know not how long,) and there were gathered and ready for market next morning about the same number of like measure.

During the balance of the time allotted to our very pleasant and instructive visit, we regaled ourselves at the social board, loaded with the choicest of creature comforts, where we had reason to know that the skill and housewifery of our obliging hostess would suffer no disparagement by comparison with the good management displayed by our gentlemanly and courteous host, in the successful administration of his department.

We crave pardon for the freedom with which we have written. The fact is, we saw so much to approve and commend that we could not

withhold the utterance of our feelings, and if we have given a notoriety to our friend from which his modesty would have continued to shrink, we felt it to be due to the agricultural brotherhood that the light of his example should no longer be hidden under a bushel, for we hold it to be a law of Divine enactment that no man liveth unto himself, but is bound to contribute of his knowledge and experience for the benefit of all with whom he sustains the relation of neighbor.

When to Harvest, and how to Shock Wheat.

Too late for its appearance in the June number, the following communication was received from N. C. Crenshaw, Esq.; and that the suggestions which it contains might be published in time for this year's harvest, we availed ourselves of the kindness of the Editor of the Whig to lay them before the public through the medium of that paper. The communication is now copied from the Whig, as we deem it worthy of permanent record in the pages of this Journal for future reference. As Mr. Garnett thinks an experienced farmer has led Mr. Crenshaw into what he considers a fatal error in regard to the greater safety of shocking unripe than fully ripe wheat, when wet, we publish in this number a communication from Mr. Garnett, expressing his views on the subject. This communication is preceded by some valuable suggestions by him on other topics.

—

SHRUBBERY HILL, Hanover.

Friend Williams:

In compliance with my promise, I send thee the following statement:

Some years ago, I hired a man to cut wheat who did not give me satisfaction. I discharged him. As he left the field where the hands were at work, he passed through a piece of wheat that was just in the dough state, and, being angry at being discharged, cut a row through the field. The season was a wet one, and the rust attacked the field. When we came to reap it, I found the row he cut and left on the ground, well-filled, plump wheat, while all around it was scarcely worth cutting.

Some time back I saw a recommendation in the *Planter* from —— Garnett, to proceed to cut and shock wheat in wet weather. As an experiment, I cut and shocked thirteen shocks of wheat, that was barely ripe, in a drizzling rain. Some days after, the weather became fine. I opened and dried ten of the shocks, fearing to risk so much. I found them keeping well. The remaining three shocks cured and kept as well as any shocks I put up that season.

I mentioned this circumstance to an old and experienced farmer, who informed me that the wheat kept because it had not fully matured and dried when cut. That when wheat became fully matured and dry, it could not be put up wet without spoiling, as it would certainly heat and sprout. He further said that he had cut and shocked green wheat that cured well without being opened.

Last harvest, I cut and put up a shock of wheat in a very green state, which cured well; the grain was plump and fine. Having heard that seed wheat should always be allowed to thoroughly ripen before being cut, I kept that shock and sowed it to itself; it came up as well, and is now looking as well as the rest of my wheat, on the same quality of land. I therefore conclude, 1st. That it is best to cut wheat that is likely to have the rust as soon as it is in the dough state; 2d. That it is not safe to cut and shock wheat fully matured except when dry.

I do not wish any farmer to do more the present season than make experiments to test the truth of the above conclusions.

Respectfully,

N. C. CRENSHAW.

BELL HAVEN, Accomac Co., Va.,
June 1st, 1860.

EDITOR OF THE SOUTHERN PLANTER, *Richmond:*

Gent.—Have you any information why Cabbages have the Big Root, and if so, what is the cause, and what the remedy? I have a square in my garden that had the Big Root last year, in the early Cabbages, which I removed and then set out others for the fall which had no Big Root. This spring I find in the same square Big Root, and no Big Root in the next square adjoining, all manured alike, plants out of the same bed, from the same seed, planted out at the same time, and worked alike. Please let me hear from you on the subject.

Yours truly,

A. J. WARD, P. M.

—

REMARKS BY THE EDITOR.

We referred Mr. Ward's inquiry to Mr. Rennie, one of our most intelligent and experienced gardeners, whose observation has impressed him with the opinion, that the "Big Root" is owing to the existence of sourness in the soil. He has heard it said that this has happened in light, dry soil, but no such case has come under his observation.

We have seen the same disease on the strawberry plant, and as in every instance it was developed in wet soil, we had come to the conclusion at which Mr. Rennie had arrived in relation to the Cabbage. Lime and drainage

are in our opinion the true remedy; but the application of the lime without drainage would probably avail nothing.

Mediterranean Wheat.

Having heard that Mr. Peyton Johnston had a very fine field of Mediterranean wheat which we intended to have visited before harvest, but were disappointed, we applied to him for a memorandum of particulars respecting it, in response to which he has furnished the following statement:

"FIELD No. 1.—The grain was sown last October, on ground that had been in potatoes. It was worked with a double plow, then harrowed, when guano at the rate of 100 lbs. to the acre was scattered over and plowed in crosswise with a single plow. The usual quantity of Mediterranean wheat was then sown broadcast, and the land dragged and rolled.

"FIELD No. 2, was in turnips last fall. It had been well manured for that crop. On my way to the Central Agricultural Fair last October, I observed that Mr. Bowe had sown wheat in the spaces between his turnip crop, which induced me to have the cultivator run between the rows of mine. I then had the wheat sown and dragged in with a single-horse harrow. This was done the first week in November. The wheat grew well, and looked as if sown by a drill machine. Both fields were grazed by the cows when the ground was hard, up to the 1st April, when they were again rolled. No. 2 being the best land, has the finest crop, the avarage yield is pronounced to be by judges about thirty bushels to the acre. The seed sown was from the produce of one bushel, had of Mr. David Landreth, of Philadelphia, in 1858. The grain was imported that summer for him from Triest, and sold at $5 per bushel. The head is large and well filled with plump grains; the yield of straw is not much.

"A sample of the seed can be seen at the Planter's Office, or at 115 Main street.

"June 22d, 1860. P. JOHNSTON."

Acknowledgments.

We omitted in our last to include in our notice of Mr. C. L. Flint's treatise on cattle, his able and extended report, as secretary, to the Massachusetts board of agriculture, and to tender him our thanks for a number of copies, (which we have distributed among our friends,) of his admirable, illustrated tract on the cultivation of the grasses. We intended also to have acknowledged thankfully the receipt from C. L Bartlett, Esq., of Boston, of a copy of his pamphlet on *the history; economy, as a manure; and modes of applying Peruvian Guano on the farm and the garden*, and copies of his republication of the above tract on the Grasses.

Agents for this Journal.

Mr. A. T. MOOKLAR is our Agent for the counties of Essex, King William, Caroline, King and Queen and the lower part of Hanover, viz: Hanover C. H. and Old Church post offices.

Mr. EDGAR BURROUGHS, for Princess Anne county.

Mr. ISAAC IRVINE HITE, traveling agent, has bills against subscribers in the counties of Orange, Nelson, Amherst, Albemarle, Spotsylvania, Stafford, King George, Louisa and Fluvanna.

Mr. JNO. P. JOHNSTON is our agent at Danville.

Mr. W. L. SMITH has, *at present*, bills against subscribers in the counties of Amelia, Powhatan and Chesterfield.

Mr. GEO. C. REID is agent for Norfolk county and vicinity.

Mr. T. B. MONTAGUE is agent for Gloucester county.

"Hospital for Slaves."

Drs. Hancock, Peachy and Luckett, Proprietors.

For rates of charge for Board and Treatment see our advertising sheet.

We call attention to this new establishment, where sick negroes are provided with comfortable quarters, proper diet, nurses and medical treatment. The physicians are all well known here. Dr. Hancock is an old and valued friend of ours; and we are very sure that the hospital and its inmates will be thoroughly and properly attended to.

The California Culturist.

A monthly of 48 large octavo pages. W. Wadsworth, Secretary of the California Horticultural Society, editor and proprietor. Towne and Bacon, printers, San Francisco.

It contains a variety of useful and interesting articles on agriculture, horticulture, &c., and in its mechanical execution is a model of artistic taste and beauty.

Mr. J. J. Hite's Land Agency.

We desire to call attention to Mr. J. J. Hite's Land Agency advertisement. Mr. Hite has the advantage of an extensive acquaintance in his section of the State, and his business qualifications ensure a faithful discharge of all duties entrusted to him.

Patent Well Curb.

We purchased of H. M. Smith, Esq., during the bitter cold weather of last winter a nicely contrived "Well Curb," ready for use as soon as it was set over the mouth of the well.

We found it very useful and convenient then, and it is doing good service now.

Mr. Smith has since improved the apparatus, having made it much stronger, and affixed a "brake" to it, which prevents the bucket from running down the well if the handle should accidentally slip from the grasp of the person drawing water.

This is an excellent contrivance, we think, and we would advise our country friends to examine it, if they should want anything of the kind.

☞ Sale of W. S. H. Baylor's farm, see advertising sheet for terms, &c.

This farm is situated in a rapidly improving country, near navigable water and the York River Railroad.

Cattle's Tongues—Curry Combs.

The tongue of a cow or ox is suggestive. It is armed with a compact bed of spines, very rough to the touch, and adapted to a variety of uses. With this pliable member, it draws grass beneath the teeth for cropping, and all other articles of food when necessary. It comes in play in reaching up into the limbs of trees for foliage or fruit, or in reaching over walls and fences after forbidden crops. The tongue is also used in disturbing the hair and skin on all parts of the body within reach, and the inaccessible parts of the head are curried by mutual accommodation. No sight is more common in a herd of cattle than this reciprocal toilet of the tongue. Here is nature's hint for the use of the card and curry-comb. These tools are especially called for in Winter, when cattle are kept in stalls, with their heads confined, so that they can not use their tongues upon their own skin.

It is said by old hostlers, that a good currying, brushing and rubbing down once a day, is equal to a feed of oats for a horse. However this may be, there can be no doubt that it greatly promotes the comfort and health of horses and cattle. It removes all filth from the skin, which is apt to accumulate in stables, unless currying is attended to daily. The skin is constantly throwing off effete matter, which collects around the roots of the hair, and stops up the pores, unless it is in some way removed. The tongue does this partially, but the card and curry-comb do it still better. This office is performed for the horse quite regularly, because he is more frequently exhibited in the presence of his owner, and the cleanliness of the carriage, and of the clothes of the family, depend somewhat upon the condition of the skin of the horse. But the ox, the cow, and the young animals, are sadly neglected. It is not unfrequently, that a yoke of oxen will come out of the stable in the Spring, with a thick plaster of filth upon their hams, the accumulation of a whole Winter—a disgrace to humanity, and to the good husbandry of the owner.

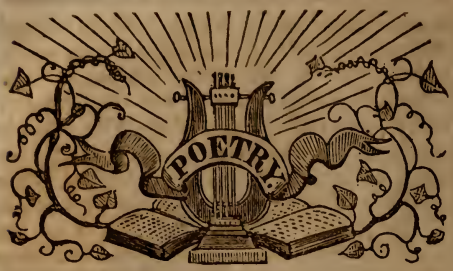
All these animals manifest their pleasure at the use of the card and curry-comb upon their skins, and after a little practice, the young stock will come as regularly for their carding, as for their food. It is an excellent method to tame heifers that are to bear their first calves in the Spring. They become accustomed to the handling of man, and submit to the first milking without much resistance. It is equally good for steers that are soon to be brought under the yoke. They become so gentle under gentle treatment, that they are easily broken to the yoke, and make a more tractable team, than by the ordinary process. The card is a much better persuader, than the ox whip. This is excellent business for the boys, and they should be taught to keep the card moving.—*American Agriculturist.*

Spayed Cows.

A writer in the American Stock Journal states that Dr. Dadd, Veterenary Surgeon, has successfully performed the above operation upon cows in full milk, without pain, through the use of ether.

"I was present," says he, "to witness the operation on five cows belonging to E. R. Anderson, Esq." After one year's trial of eight cows spayed, the result was so satisfactory that he has determined to subject other animals from time to time, as they come into full milking, to the same treatment, until his entire herd, of some fifty head, has undergone the operation.

"Put away all strange notions, in order to pay the profoundest respect to the instruction that is correct and upright."



Daily Work.

Who lags for dread of daily work,
And his appointed task would shirk,
Commits a folly and a crime;
A soulless slave—
A paltry knave—
A clog upon the wheels of time.
With work to do, and store of health,
The man's unworthy to be free,
Who will not give,
That he may live,
His daily toil for daily fee.

No! Let us work! We only ask
Reward proportioned to our task:
We have no quarrel with the great;
No feud with rank—
With mill or bank—
No envy of a lord's estate.
If we can earn sufficient store
To satisfy our daily need,
And can retain,
For age and pain
A fraction, we are rich, indeed.

No dread of toil have we or ours;
We know our worth and weigh our powers;
The more we work the more we win:
Success to Trade!
Success to Spade!
And to the Corn that's coming in!
And joy to him who, o'er his task,
Remembers toil is God's own plan;
Who, working, thinks—
And never sinks
His independence as a man.

Who only asks for humblest wealth,
Enough for competence and health;
And leisure when his work is done,
To read his book
By chimney nook,
Or stroll at setting of the sun.
Who toils as every man should toil
For fair reward, erect and free:
These are the men—
The best of men—
These are the men we mean to be!

Work.

Attend, oh man,
Uplift the banner of thy kind;
Advance the ministry of mind!
The mountain height is free to climb,
Toil on—man's heritage is time!
Toil on!

Work on and win;
Life without work is unenjoyed!
The happiest are the best employed!
Work moves and moulds the mightiest birth,
And graps the destinies of earth!
Work on.

Work sows the seed;
Even the rock may yield its flower—
No lot so hard but human power,
Exerted to one end and aim,
May conquer fate, and capture fame!
Press on.

Press onward still:
In nature's centre lives the fire
That slow, though sure, doth yet aspire;
Through fathoms deep of mould and clay
It splits the rock that bars its way!
Press on!

If Nature then,
Can tame beneath her weight of earth,
When would her hidden fire know birth?
Thus man, through granite Fate must find
The path—the upward path of mind!
Work on.

Pause not in fear;
Preach no desponding, servile view—
Whate'er thou will'st thy will may do!
Strengthen each mighty nerve to bend
Truth's bow, and bid its shaft ascend!
Toil on.

Be firm of heart;
By fusion of unnumber'd years
A Continent its witness rears;
A drop 'tis said, through flint will wear;
Toil on, and Nature's conquest share!
Toil on.

Leaf by Leaf the Roses Fall.

Leaf by leaf the roses fall,
Drop by drop the springs run dry
One by one, beyond recall,
Summer beauties fade and die;
But the roses bloom again,
And the spring will gush anew,
In the pleasant April rain,
And the summer sun and dew.

So in hours of deepest gloom,
When the springs of gladness fail,
And the roses in their bloom,
Droop like maidens wan and pale,
We shall find some hope that lies
Like a silent gem apart,
Hidden far from careless eyes,
In the garden of the heart.

Some sweet hope to gladness wed,
That will spring afresh and new,
When grief's winter shall have fled,
Giving place to rain and dew—
Some sweet hope that breathes of spring
Through the weary, weary time
Budding for its blossoming,
In the spirit's glorious clime.