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J. R. WILLIAMS, EDITOR.

THE SOUTHERN PLANTER.

DEVOTED TO

AGRICULTURE, HORTICULTURE,

AND THE

HOUSEHOLD ARTS.

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THE SOUTHERN PLANTER

Devoted to Agriculture, Horticulture, and the Household Arts.

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

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

J. E. WILLIAMS, EDITOR. AUGUST & WILLIAMS, PROP'RS.

VOL. XIX. RICHMOND, VA., SEPTEMBER, 1859. No. 9.

Proceedings in the Laboratory.

By PROFESSOR ANDERSON, M. D., *Chemist to the Highland and Agricultural Society of Scotland.*

ON THE METHODS OF EXPRESSING THE ANALYSIS OF A SUPERPHOSPHATE.

When the chemical department of the Highland and Agricultural Society was originally established, superphosphate of lime was a manure almost unknown in Scotland. A few farmers had adopted the system of dissolving bones in acid for their own use, but the product was employed chiefly for experimental purposes, and on a very small scale; and the small quantities of the manufactured article used were brought from England, and principally from Newcastle. Under these circumstances, samples of this manure were rarely sent to the laboratory, and in the few instances in which analyses were required, I adopted the plan which had been used by my predecessor, the late Professor Johnston, not because it was the best, but because it did not at that time appear necessary to make any change. Since then the state of matters has greatly altered,—superphosphate having become one of the staple artificial manures, and having in Scotland reached a consumption which probably exceeds that of guano; and now, on looking back, it is a matter of regret that a more precise and chemically accurate method of *expressing* the results of analysis was not adopted at a time when the change might have been brought about without difficulty. That difficulties must attend any alteration in the established methods of expressing the results of commercial analyses is sufficiently obvious, because, as they are almost exclusively addressed to persons who are unacquainted with the refinements of chemical analysis, they are judged of solely by comparison, and if the usual mode of expression be departed from, it is difficult for any one who is not a chemist to do this in a satisfactory manner. Considerable differences are observable in the form of analyses made by different chemists; but so far as those made in my laboratory are concerned, care has always been taken to preserve the original form, which, though perfectly adapted for giving a proper estimate of the value of the manure, is not the most accurate in a chemical point of view. Circumstances to which it is not necessary to refer in detail, some time back induced me to make a change, which only the fear of producing inconvenience had caused me to

defer; and I propose now to explain its nature, so as to avoid any misunderstanding as to the meaning of these analyses.

It is scarcely necessary to observe, that a chemical analysis of the most perfect kind aims at expressing the quantities of all the ingredients of the substance analysed, in exactly those forms of combination in which they naturally exist in it; but the mode in which this is done is not known to the non-chemical reader. Suppose that a substance be found to consist of a mixture of sulphate and nitrate of soda, its analysis of course will state this; and it is popularly supposed that the chemist separates these two compounds directly from one another, and, weighing them, determines at once the quantities of each; but this is very far from being the case. On the contrary he ascertains the quantities of soda, sulphuric and nitric acids separately, and then, by a very simple calculation, founded on the established principles of chemical science, he ascertains the proportions of soda which belong to the two acids, and, adding these to the respective weights, obtains the quantities of each of these compounds. In the case we have supposed, nothing is easier than the application of these principles, but it is different when the substances are more complicated, and contain a considerable number of different elements. If, for instance, the substance were found to contain sulphuric acid, nitric acid, soda, and potash, it would then come to be a question how these substances are arranged, and whether it consisted of nitrate of soda and sulphate of potash, or of nitrate of potash and sulphate of soda. In this case it is impossible to demonstrate with rigid accuracy which of these two views is the truth, and the chemist is found to adopt that which appears to him to be the most probable. Of course, if the analyst is content to set down separately the per-centage of each of the four constituents of the substance, he avoids all dispute; but the further arrangement of the results becomes a matter of opinion, in regard to which differences must be expected; and, in point of fact, it may, and frequently does happen, that two different chemists, analysing one and the same substance, may obtain precisely the same experimental results, and yet express them so differently that the analyses appear totally at variance with one another. A chemist at once distinguishes a real from an apparent discrepancy, and can in a moment calculate back to the original experimental data, and re-construct it according to his own views, so that the mode of expression is of little consequence to him. All difficulties may be evaded by abandoning altogether the attempt to express the mode of arrangement of the elements of the compound analysed, and simply setting down the results as experiment gives them; and this is a plan largely in use among scientific chemists. But it is not applicable to commercial purposes; for the value of a substance which the analysis is intended to determine, not unfrequently depends, to a very great extent, on the particular forms of combination in which its constituents are found; and even if this were not the case, it would be more convenient to represent some of those substances, not in their separate state, but in that of their familiar commercial products..

In applying these observations to the analysis of a superphosphate, it must be obvious that, if each of its constituents were separately given, the result would be very uninstructive; for all the phosphoric acid would appear under one head by itself, while the value of the manure really depends, not so much on its total quantity, as on the proportion existing in a state in which it is soluble in water; and an analysis which did not give separately the quantities of that acid existing in a soluble and an insoluble state, would be practically useless. These observations apply with equal force to every other commmercial product, and hence chemists have found it advisable to agree upon some plan which shall be at once intelligible, and calculated to express with accuracy the chemical constitution of the substance analyzed.

As far as the analysis of a superphosphate is concerned, two different systems of expressing the results have been in use for a considerable number of years, both of which admit of an equally accurate valuation of the manure; and analyses calculated according to either method are comparable among themselves, provided proper precautions are taken. But while both methods indicate with equal accuracy the value of the manure, that adopted by my predecessor, and used up to about a year since by myself, is less consistent with chemical principles than the other. The conviction that a commercial analysis, even

the sake of convenience, should never be allowed to violate what appears to be the most accurate chemical view, has often made me anxious to adopt the latter method; and, after much consideration, I resolved to make the change, feeling assured that it must be done sooner or later, and that to postpone it was to increase the inconvenience which might be encountered. A year's experience has shown me that the difficulty was much smaller than I had anticipated; and the motives which actuated the change have been appreciated when they have been rightly understood, and the advantages of the method now in use fully recognized.

In order to render intelligible to my readers the nature of the difference, it will be best to place before them the analysis of the same superphosphate, calculated according to what may, for convenience, be called the old and new system, it being understood that both are obtained by calculation from precisely the same analytical results. The analysis is one taken at random from the better varieties of that manure:

ANALYSIS OF SUPERPHOSPHATE.

Old System of Calculation.

Water,	20.33
Organic matter,	11.12
Soluble phosphates,	20.80
Insoluble phosphates,	9.00
Sulphate of lime,	14.64
Sulphuric acid,	10.66
Alkaline salts,	8.50
Sand,	4.95
	100.00
Ammonia,	0.96

New System.

Water,	15.54
Organic matter,	11.12
Biphosphate of lime, equivalent to 20.80, bone phosphate made soluble,	13.34
Insoluble phosphates,	9.00
Sulphate of lime,	37.55
Alkaline salts,	8.50
Sand,	4.95
	100.00
Ammonia,	0.96

In comparing these two statements, which appear at first sight so different, it is important to bear in mind that they represent the same analysis—that is to say, the practical operations are one and the same; the difference being merely a matter of calculation—dependent on the use of a different mode of putting together the experimental results. It is to be observed that five of the items—namely, organic matter, insoluble phosphates, alkaline salts, sand, and ammonia—are the same in both analyses, but that in the latter, the quantity of sulphate of lime is greatly increased, while sulphuric acid has entirely disappeared; and in place of soluble phosphates we have biphosphate of lime, accompanied, however, by a statement of the quantity of bone phosphate to which it corresponds, and which, it may be noticed, is identical with the soluble phosphates in the old system of expression. The chemist, in examining these analyses, is enabled to infer from them that the materials used to make the manure (in this case most probably bones, coprolites, and acids) must, when mixed together, have contained in all 29.8 per cent. of phosphates in the state in which they exist in the bones or other materials employed, of which 9.00 remain in their original insoluble form of combination, and the remaining 20.8 have been rendered soluble by the action of sulphuric acid. This change the sulphuric acid brings about by converting them into a new chemical compound, differing from the original bone earth phosphate in composition, and in its solubility in water; so that it is wrong to write down *soluble phosphates*, as is done in the old system, for they no longer exist in the bones in that state, the name really expressing the quantity of insoluble phosphates destined to be converted into a soluble compound by the action of the acid. This change the acid effects by removing from the insoluble phosphates two-thirds of the lime they contain. Now, the 20.80 per cent. of soluble phosphates consist of

Phosphoric acid,	9.60
Lime,	11.20
	20.80

But when the sulphuric acid comes in contact with these phosphates, it combines with and removes two-thirds of their lime; consequently

Phosphates,	20.80
Subtract lime (two-thirds of 11.20,)	7.46
Biphosphate of lime,	13.34

and there remains biphosphate of lime, consisting of

Phosphoric acid,	9.60
Lime,	3.74
	13.34

As the value of phosphates depends entirely on the phosphoric acid they contain, and is quite independent of the substance with which it is in combination, of course the value of the soluble part is not affected; and it will be observed that in the new system, where biphosphate of lime appears in the analysis, a statement of the quantity of phosphates in their original insoluble state of bone phosphate from which they have been derived, is also given. The lime which has been separated from the phosphates in the act of rendering them soluble, combines with sulphuric acid, and appears in the analysis as sulphate of lime; and, being added to that already existing in the manure, adds greatly to the proportion of that substance. A difference also exists in the quantity of water, due to the fact that sulphate of lime, in its natural state, contains what chemists call "water of combination;" and as it is a rule in such analyses to state all the constituents, as far as possible, in their ordinary commercial forms, the requisite quantity of water is deducted from that appearing in the old system of analysis, to supply its requirements.

The difference between the two modes of expressing the analysis of a superphosphate, when looked at in a broad point of view, consists in this,—that the old method gives the materials which are used to make it, at the moment of mixture before the chemical change has commenced, but distinguishing under a separate head the quantity of phosphates about to become soluble, and the quantity of sulphuric acid destined to produce that change; while the new system represents matters as they actually exist in the manure when it reaches the farmer. It is scarcely necessary to observe that the latter must be the more correct course, and more consistent with the principles usually adopted by chemists.

In estimating the value of superphosphates stated according to the new method, it is important to bear in mind the distinction between biphospate of lime, and soluble phosphates—the former being worth more than half as much again as the latter. Latterly I have been accustomed to assume £30 per ton as the value of soluble phosphates, and £47 for that of biphosp. lime, in calculating the values of these nures. Of course those proportions liable to vary with the state of the marke. but they must always bear that ratio to one another.

The analysis of a superphosphate is one of the most troublesome and complicated of those which we are commonly called on to make, and requires a variety of precautions, to insure accuracy, which are little understood by those chemists who have not directed their special attention to it. The method most commonly employed of determining the biphosphate of lime, which consists in adding a quantity of chloride of calcium to the solution in water, is especially fallacious, and causes that substance to be overrated by from one to three per cent., and consequently exaggerating the value of the manure from 9s. to £1, 7s. per ton. The farmer is peculiarly interested in this point, and it is one which necessarily entails considerable difficulty, as nothing appears on the face of the analysis itself to indicate the method in which the phosphates have been determined; and it is the more important, because a certain class of dealers, who cannot be called fraudulent, but who are not unnaturally anxious to make their wares appear to the best advantage, find out those chemists who, by adopting the less accurate mode of experiment, obtain a higher result than others, and prefer their analysis; and it concerns such chemists also, because they may thus lend themselves to an over-estimate of the value of the manure they analyse.

It is much to be desired that some simple rules should be laid down to enable farmers to judge of the accuracy of an analysis, but unfortunately nothing short of a knowledge of chemistry will enable them to do this in all cases.

The necessity which exists for this was brought very prominently under my notice some time since, by an analysis of a superphosphate emanating from a chemist of some popular repute, and stated according to the old method, which gave eighteen per cent. of soluble phosphates, and only *one and a half* of sulphuric acid; while it is well known that this quantity of phosphates can not be made soluble by less than *nine or ten per cent. of acid;* indicating, of course, that the analysis must be erroneous, as actually turned out to be the case on repeti-

tion, when only some fourteen per cent. of soluble phosphates were found in it. Unfortunately it is not always so easy to detect errors as it was in this case, and it cannot be doubted that the farmer is often misled by inaccurate and incomplete analyses.

NOTE ON CONCENTRATED CATTLE-FOODS.

I had prepared some month since a short notice regarding the nature of some of the substances now so extensively advertised as foods for cattle, which circumstances prevented appearing at the time it was written. Since then, Mr. Lawes has published in the *Journal of the Royal Agricultural Society of England*, a paper on the same subject, in which he expresses opinions completely concordant with my own, and has rendered my observations unnecessary. But as there are probably many readers of the Transactions into whose hands Mr. Lawes's paper may not fall, it may be of some use to put on record analyses of such foods, merely for the sake of showing how little they merit the encomiums bestowed on them, or the price at which they are advertised.

	I.	II.
Water,	14.38	12.65
Oil,	7.05	4.00
Albuminous compounds,	10.00	7.94
Gum, sugar, &c.,	54.37	69.81
Fibre,	7.61	
Ash,	6.59	5.60
	100.00	100.00
Nitrogen,	1.60	1.27

These substances are made up of a variety of different kinds of ordinary food, among which Indian corn and bean meal appear to be the principal, mixed with a small quantity of some aromatic seed (in one case apparently caraway seed) for the purpose of giving the mixture an attractive flavour. The exact nature of the latter substance cannot be determined without a long and elaborate examination, which, under the circumstances, it did not appear necessary to undertake; for the results, so far as they go, are sufficiently conclusive as to the value of the articles. It is obvious that they are cattle-foods of the most ordinary description, of comparatively low value, and not for a moment to be compared with the ordinary cereals, beans, or oil-cake. And yet No. 2 is offered for sale at £42 per ton, being at the rate of 4½d. per lb., when the meat it is to produce is sold for 6d. The materials of which these foods are made, cannot, when reckoned at the very highest rates, be worth more than from £7 to £10 per ton; so that the farmer who purchases is made to give an unreasonable and unfair price, which he ought not to pay, *even if the food fulfilled* the promises of the sellers. That the traffic in these articles must be carried on very extensively cannot be doubted; and it is a matter of the very greatest regret that farmers should give countenance to it by testimonials, of which a long list is to be found appended to the advertisements. So strong is my opinion on this point, that I have absolutely refused to make analyses of these foods for their makers, lest the results should be used in any way to lead farmers into the belief that I am favourable to them.

It is worthy of notice that all foods of this description have a small quantity of an aromatic substance mixed with them, which may serve the part of a condiment, and induce the animals fed upon them to consume a larger quantity of their ordinary food, and, by promoting digestion, cause the animal to fatten more rapidly than it otherwise would. But on this point we had no information; and it would be of interest to have a few experiments made on the effect of such substances mixed in small proportion with the food of animals. But even supposing a favourable result to be obtained from such substances, it would not in any way invalidate the remarks now made, or form an argument for the farmer's paying £40 per ton for what is worth £7 or £8.

ON SOME NEW VARIETIES OF GUANO.

During the first ten or twelve years after the use of guano became common in this country, the supply equalled, if it did not exceed, the demand, and the farmer had the opportunity of choosing between Peruvian and some other varieties—such as Ichaboe and Saldanha Bay—which, though inferior, were good, servicable guanos, and in some soils gave as good or even a better result than the more expensive kind. The deposits of the latter, which appear not to have been large, were exhausted very rapidly, and their place has since then been very imperfectly supplied; for notwithstanding an active search in all parts of the world, and the discovery of numerous de-

posits, some of them of very considerable extent, the quality has generally proved very inferior; and as yet, none comparable to Peruvian, and very little which will bear comparison even with Saldanha Bay, has been discovered. The importations of new and inferior guanos have nevertheless been very large, and we shall certainly be very greatly within the mark if, excluding all the better kinds, we estimate the quantity of the inferior guanos which have reached the British Islands within the last five years, at a hundred thousand tons. Much of this is almost absolutely worthless; but, taking a general average, their value, as indicated by many analyses made in my laboratory, does not exceed £3 or £4 per ton. The cost of importing a guano, including expenses at the place of loading, freight, and charges in this country, certainly cannot fall short of £5 or £6 per ton; and when profit to the importer and retailer is added, the cost to the farmer, at the very lowest possible estimate, must exceed £7 per ton. If these calculations be correct—and they are undoubtedly all below the truth—either the importers of guano or the farmers must, during these five years, have incurred a loss of from £300,000 to £400,000. It is a question of considerable interest to determine which of these two parties has been the loser; and it requires but little consideration to see that, though the importers may not have been scatheless, the main bulk of the loss must have fallen on the farmers. It is well known to all persons acquainted with commercial matters, that, though not very saleable, these guanos are eventually got rid of. Some of them are used for adulterating Peruvian guano, but the bulk reaches the farmer directly. Now, it is only necessary for the farmer to ask himself whether he has ever bought a guano at £3 per ton, or seen one in the market at that price, to enable him to draw his own conclusions; and he may rest assured, that if, during the last five years, he has bought a guano at £7 or £8 per ton, without seeing or understanding the analysis, the chances are that he has paid for it nearly double its real value.

The cure of this, no doubt, is in the hands of the farmer himself, if he chooses to make use of it; but there is so much inertness and indifference, that things can only be made right by the discovery of large supplies of guanos of better quality than those recently discovered; and th cannot be done until importers employ persons of skill and experience in the search. At present everything is intrusted to the ship captains, who judge of the quality of the guano by all sorts of rude and insufficient tests. Meanwhile an increased supply of really good guanos of uniform composition, is a matter of the highest moment, and I have always looked upon it as one of my most important duties to watch for, and bring under the notice of agriculturists, guanos likely to prove useful, or which are of manifestly inferior quality.

On the present occasion, I have the satisfaction of directing attention to a new guano, which seems likely to be a very important boon to the farmer. It is met with on a small island in the Pacific, apparently of the coral formation. It has not yet been imported, but samples have arrived which are of a very promising kind. Two, which have been analysed, were found to contain—

	I.	II.
Water,	4.60	4.60
Organic matter and ammoniacal salts,	16.85	16.38
Phosphates,	71.40	69.90
Carbonate of lime,	3.15	7.90
Alkaline salts,	3.90	1.07
Sand,	0.10	0.15
	100.00	100.00
Ammonia,	1.32	1.26

These samples are both very dry, and may possibly have lost some moisture during their transport to this country; but, making due allowance for this, it is obvious that this is a very excellent specimen of the phosphatic guano—of a kind which has been little seen of late years. It may be best compared to Saldanha Bay, but is superior to it in the quantity of phosphates, and if of uniform quality, will undoubtedly come largely into use. It is stated that the island contains upwards of 5,000,000 tons of guano, apparently of very uniform quality. The shore is also covered with coral sand, containing a considerable quantity of phosphates, but not sufficient to render its importation profitable. Two samples have been examined for phosphates, which showed the following per-centages:

No. 1,	13.65
No. 2,	18 07

The remainder of their constituents were not determined, but they consisted chiefly of carbonate of lime. I have not been able to learn whether this guano is likely to be imported in sufficient time for the next turnip crop, but its arrival will be looked forward to with interest.

A very remarkable guano has recently been imported from the west coast of South America, under the name of Valparaiso guano. It consists of a mixture of a powder, with large lumps of an exceedingly hard reddish brown substance, which require a pretty smart blow with a hammer to break them. A fair sample was found to contain:

Water,	7.85
Organic matter and ammoniacal salts,	14.75
Phosphates,	20.07
Sulphate of lime,	5.56
Alkaline salts, consisting principally of common salt,	47.60
Sand,	4.17
	100.00
Ammonia,	2.21
Phosphoric acid in the alkaline salts, equal to 6.42 phosphate of lime,	2.94

The hard lumps, which appeared like stones, were found to have a composition differing but little from the foregoing; they contained:

Water,	5.25
Organic matter and ammoniacal salts,	13.50
Phosphates,	16.30
Sulphate of lime,	3.26
Common salt,	54.26
Other alkaline salts,	4.28
Sand,	3.15
	100.00
Ammonia,	1.77
Phosphoric acid in the alkaline salts,	0.99

These lumps must be looked upon as a mixture of rock salt and guano, and it is impossible to avoid speculating as to how it could be deposited. The lumps were quite as hard as the ordinary rock salt; and it is stated that the deposit is of considerable extent and depth. It is scarcely necessary to observe that it is not likely to prove of much use to the farmer.

Another new guano, bearing some resemblance to Ichaboe, has recently been imported; but from what locality I did not learn. It contains:

Water,	29.31
Organic matter and ammoniacal salts,	36.24
Phosphates,	22.15
Carbonate of lime,	0.43
Alkaline salts,	9.85
Sand,	2.02
	100.00
Ammonia,	6.45
Phosphoric acid in the alkaline salts, equal to 2.24 phosphate of lime,	1.03

The analysis was made after removal of about three per cent. of small pebbles; and this, along with the presence of roots, seemed to show that the deposit was probably a superficial one; or, at all events, that the cargo had been taken from the surface.

At the present time, considerable importations are being made of a mineral phosphate, under the name of Sombrero Island guano, which, though not directly interesting to the farmer, as it will probably not be advantageously applicable to the land in its natural state, is a very valuable material for the manufacture of superphosphate. The greater part of the island of Sombrero is said to be composed of this substance, which forms a bed of some forty feet in thickness. It is found in the form of a soft stone, varying from buff to pinkish in colour. It is easily pulverized, and its powder greatly resembles bath-brick in appearance. A sample examined in the laboratory contained:

Water,	8.96
Phosphate of lime,	37.71
Phosphates of alumina and iron,	44.21
Phosphate of magnesia,	4.20
Sulphate of lime,	0.86
Carbonate of lime,	3.36
Soluble silica,	0.30
Sand,	0.40
	100.00
Total phosphoric acid,	36.36
Equivalent to phosphate of lime,	79.36

Another sample of the same substance contained:

Phosphates,	77.90

A considerable quantity of the phosphoric acid in this substance is in combination with alumina and iron; but this cannot affect its agricultural use. As a material for the manufacture of superphosphate, it is of much value, and, being sold at £5, 10s. per ton, it is materially cheaper than bone-ash,

which, if containing 79 of phosphates, would be sold for about £7, 10s. per ton.

It is necessary to guard against confounding the true Sombrero Island guano with another substance sold under the same name, and which contains—

Water,	3.85
Organic matter,	11.60
Phosphoric acid,	26.23
Oxide of iron and alumina,	28.76
Lime,	18.12
Carbonate of lime,	2.27
Alkaline salts,	6.57
Sand,	2.60
	100.00
Ammonia,	0.22

In this instance the phosphoric acid is equivalent to more than 57.70 of phosphate of lime, and the whole characters of the substance are quite distinct from those of Sombrero guano. It is much darker in colour, and resembles an ordinary guano. From some circumstances which have come to my knowledge, there is reason to suspect that it really comes from Avis Island, which is not far distant from Sombrero Island, and is known to contain a phosphorite similar, but inferior, to that from the latter locality.

NOTE ON A PARTICULAR KIND OF SULPHATE OF AMMONIA.

The sulphate of ammonia hitherto met with in commerce, has been on the whole remarkable for its purity, and has usually, even when dark-coloured, contained about 95 per cent of the salt, and from 24 to 25 per cent of ammonia. Within the last few months, however, a kind has been introduced which looks very well—is pale coloured—sometimes is almost quite white—and well crystallized, but which, nevertheless, is considerably inferior to many samples which are less satisfactory to the eye. It varies considerably in composition, and sometimes contains several per cent of muriate of ammonia. The following are analyses of it:

	I.	II.	III.	IV.
Water,	7.93	9.05	6.20	5.77
Sulphate of ammonia,	71.78	79.63	84.25	85.21
Muriate of ammonia,	7.85	....	....	....
Fixed salts,	12.44	11.17	9.55	9.02
	100.00	99.85	100.00	100.00
Ammonia,	20.98	20.55	21.65	21.94

These samples all contain a considerable quantity, both of water and fixed salts, and are worth from 10 to 15 per cent less than the best sulphate of ammonia. They have apparently been manufactured by some new process, for they all contain a small quantity of sulpho-cyanide of ammonium—a substance possessing the property of striking a dark-red colour with iron salts, and which affords a convenient means of recognising sulphate of ammonia of this kind. It is probably prepared from the so-called ammonia refuse, or ammonia black of the gas works—a substance got in one of the patent processes for purifying gas. This substance contains sulpho-cyanide of ammonium, and a considerable quantity of sulphate of ammonia, and has hitherto been sold at a very low price. I have recently been informed that a process has been contrived for extracting sulphate of ammonia from it, and I suspect that these samples have been so prepared. The farmer ought to be on his guard against this article, which he would, from its appearance, take to be of excellent quality; and should take care to examine the analysis, and to observe that the price charged him corresponds with the per centage of sulphate of ammonia.

COMPOSITION OF TWO KINDS OF MANUFACTURING REFUSE WHICH MAY BE EMPLOYED AS MANURES.

Two kinds of refuse from manufactories have recently come under our notice in the laboratory, both of which may be advantageously employed as manures.

The first is a refuse obtained by Teal's patent for recovering the fat from waste-soap liquors. This process, which is chiefly applicable to wool scourers' soap-waste, is conducted in the following manner:—The fluid, as obtained from the wool-scourers, is run into large tanks, where it is heated along with sulphuric acid, which causes the fat to separate from the soap and rise to the surface, carrying with it all the impurities removed from the wool.

The semi-solid product, after separation from the water, is subjected to pressure in powerful Bramah presses, when the oil or grease is expressed, and a dark brown cake—still containing some oil along with small quantities of woollen fibre and other impurities—is left. This substance constitutes the refuse in question. Its composition is—

Water,	9.16
Organic matter,	70.65
Phosphates,	1 37
Alkaline salts,	2.96
Sand,	15.86
	100.00
Ammonia,	1.15

Calculating according to the principle usually adopted for valuing manures, this substance is worth rather more than £1 per ton. But it must be distinctly understood that this is its value on the farm and not at the place of manufacture, where it ought to be sold at from 10s. to 15s. per ton. The reason for this will be at once apparent, if the cost of carriage be taken into account. If a ton of Peruvian guano cost £13, and the expense of cartage be 5s., then the total cost of that manure on the farm will be £13, 5s. per ton; but to produce the same manurial effect with this refuse, it would be necessary to employ thirteen tons; and if £1 were paid for it, the cost of the whole would then stand thus:

Thirteen tons at £1,	£13	0	0
Carriage, at 5s. per ton,	3	5	0
Total cost,	£16	5	0

Giving a difference of £3, which would have to be deducted from the price of the thirteen tons, to make them equal in cost to guano. If we add that this substance would probably not act so rapidly as guano, we require to make a further deduction, because, all other things being alike, the manure which makes its return most rapidly is the most valuable.

The other substance is glue-makers' refuse, of which the composition is—

Water,	41.05
Organic matter,	35.90
Phosphates,	1.90
Carbonate of lime,	18.81
Sand,	2.34
	100.00
Ammonia,	2.60

The value of this substance is about £1, 16s. per ton, subject, of course, to a certain deduction for the cost of carriage. It has been long employed as a manure in the neighborhood of tan and glue-works, and with marked success. It acts rapidly, being generally in a more or less putrid state, and may be usefully employed on all kinds of crops.

While mentioning these substances, it may be well to refer to an article sold under the name of wool-manure, because that title is calculated to mislead the purchaser. Several samples of the manure in question were analysed in the course of last season, and the subjoined will serve as a specimen of all the others:

Water,	14.92
Organic matter,	12.76
Soluble phosphates,	1.25
Insoluble phosphates,	24.58
Sulphate of lime,	24.47
Sulphuric acid,	traces
Alkaline salts,	3.39
Sand,	18.63
	100.00
Ammonia,	1.36

It is obvious that the name wool-manure by no means describes this substance, which is neither more nor less than an inferior superphosphate. It may have been made from coprolities and the organic matter obtained by mixing it with wool-refuse; but there were no indications by which the accuracy of this opinion could be supported or refuted. The value of the manure does not exceed £3 per ton.

From Jackson's Agriculture and Dairy Husbandry.

Culture of Wheat.

Wheat is the most important of all the grains. The variety most profitable to be produced must depend upon the nature of the soil, as land which has produced an indifferent crop of one may yield an abundant crop of another kind, and land is frequently found to yield better crops if the varieties be alternately changed. It has been observed, that a mixture of grain produces the heaviest crops, and that mixed flour makes the best bread.

The richer description of clays and strong loams are the best adapted for the production of wheat: but if properly cultivated and well manured, any variety of these two soils will produce excellent crops of this grain. Good wheat land ought always to possess a large quantity of clay and little sand; for although light soils may be made to produce good crops, yet the strong clay lands in general yield the heaviest grain. Sandy soils, being deficient in firmness, do not afford sufficient support to the roots of plants, such as wheat, which do not sink far into the soil. There are light soils, however, made from decomposed granite, felspar, or

clay-stone, compounded with vegetable matter, which produce excellent wheat. These soils abound in the neighbourhood of Edinburgh, and in Fifeshire, and the wheat from them is frequently superior to any in the Edinburgh market. The produce of these soils, however, is much hurt by dry weather.

"Colonel le Couteur, of Jersey, has made the culture of the best varieties of wheat his particular study for several years, and has arrived at the following conclusion, by actual and careful experiment, namely, 'that one ear of a superior variety, sown grain by grain, and suffered to tiller apart, produced 4 lbs. 4 ounces of wheat, whereas another ear of an inferior sort, treated in the same manner, produced only 1 lb. 10 ounces. This proves that it is of paramount importance to select the most productive and farinaceous sorts for seed; it being obvious that a farmer who would have sown his whole crop with the last variety, would have probably been ruined; whereas, the superior variety would have enabled him to farm with profit.' It is hardly possible to enter a field of wheat nearly ripe, without observing that the ears of some of the plants are much superior to the generality of those growing around. Several new and excellent sorts have been obtained, by intelligent farmers making a selection of these remarkably superior ears; saving and growing them apart until the pure stock was increased to serve themselves, and, in time, their immediate neighbourhood. By such means, the Hardcastle, the hedge-wheat, Hunter's, Heckling's, &c., have been originated, and with manifest advantage to the sower, so long as the sorts were kept pure, and attention being paid to giving the sorts those most suitable soils which experience had pointed out. This mode of obtaining improved varieties of corn, so strenuously advocated by Colonel le Couteur, has been practised but by few farmers—a general idea prevailing among them that it is the richness of the land and judicious culture which gives quality, and consequently value, to the sample. In this they are partly right: because, though very fine wheat, in a miller's estimation, may be grown on poor land, it is impossible to grow a profitable crop—a great bulk of both straw and grain answering the farmer's purpose better than the high quality of the latter. But Colonel le Couteur seems fully convinced that both these objects, that is, quantity and quality, may be obtained at the same time, upon ordinary wheat land; and this is a result that should always be kept in view by agriculturists. Adapting the sort to the soil is one means for securing success. The red and yellow wheats answer better on the heaviest clayey loams than the white varieties, which are delicate, and more suitable for lands of a lighter description."* Sir George Mackenzie of Coul has found by experiment that the variety of wheat, cultivated so successfully by Colonel le Couteur, thrives well in Ross-shire, and in that northern county actually yields a heavier produce than in Jersey. This, however, we must ascribe to Sir George's skilful mode of farming more than to either soil or climate.

The late Mr. Brown, of Markle, an experienced agriculturist, was of opinion that profitable crops of wheat might be produced every second year on rich clays and loams, if well cultivated and situated in a good climate. Land, however, must be highly manured and judiciously fallowed, to bear such frequent repetitions of wheat.

"The season for sowing wheat is necessarily regulated by the state of the land, as well as of the season, on which account it is not always in the farmer's power to choose the moment he would prefer. After fallow, as the season allows, it may be sown from the end of August to the middle of November. On wet clays, it is proper to sow as early as possible, as such soils, when thoroughly drenched with moisture in autumn, are seldom in a proper state for harrowing the succeeding spring. In the opinions of many experienced husbandmen, the best season for sowing wheat, whether on fallow, rag-fallow, or ploughed clover stubble, is from the beginning of September to the 20th of October, but this must depend upon the state of the soil and weather. In East Lothian, on dry, gravelly loams, in good condition, after a clover crop, and well prepared, wheat has been known to succeed best when sown in November. After drilled beans, whenever the season will admit of ploughing and harrowing, wheat may be sown from the middle or end of September to the middle of November; after this season, the sowing of wheat ought not to be hazarded till the spring quarter returns.

After turnips, when the crop is consumed or fed off, and the ground can be properly

* Young Farmer's Manual, by J. Main, 1839.

ploughed, wheat may be sown any time betwixt the 1st of February and the middle of March, and it is customary to plough and sow the land in successive portions as fast as the turnips are consumed. It is only on turnip soil of a good quality, verging towards loam, and in high condition, that winter wheat, sown in spring, can be cultivated with success. When circumstances are favourable, however, it will generally happen that such lands, when wheat is not too often repeated, will nearly produce as many bushels of wheat as of barley. The wheat crops, therefore, on an average of seasons, will exceed the value of the barley crop considerably; hence its culture is an object which ought not to be neglected."*

Wheat, as will afterwards be more particularly mentioned, is liable to certain diseases, as, for example, smut, mildew or rust, &c. With the view of preserving the grain from these most injurious disorders, it is customary to prepare the seed by steeping or pickling it in a kind of saline brine, or diluted urine. The value of this process may be learned from the following experiments, as stated in various reports before us. Mr. Bailey, of Chellingham, tried experiments on seed in which were a few balls of smut. One-third of the seed was steeped in urine, and limed; one-third steeped in urine, dried, and not limed; and the other third sown without steeping or liming. The result was, that the seed which had been pickled and limed, and that which was pickled and not limed, was almost free of smut, while that which was sown without undergoing this process was much diseased. The following experiments were made at Lord Chesterfield's farm of Bradly-Hall, in Derbyshire: The first was on a peck of very smutty wheat, one-half which was sown in the state it was bought, and the other washed in three waters, steeped two hours in brine strong enough to float an egg, and then limed. The result was, that two-thirds of the wheat grown from the unwashed seed was smutty, while that produced by the steeped and limed seed had not a single ear of smut. The second experiment was made upon some very fine wheat, perfectly free from smut. A quart of this was washed in three waters, to make it perfectly clean; it was then put for two days into a bag in which was some black dust of smutty grain, and the result was, that a large portion of wheat thus sown was smutty, while out of twenty acres sown with the same grain, not inoculated, not one smutty ear was found. Mr. Taylor, junior, of Ditchingham, near Bungary, rubbed a number of ears of wheat with the powder of smut, having moistened them to make the powder adhere; one-half of these were washed, wetted with chamber lye, and limed. A similar quantity of dry wheat was then procured, the whole being dibbled, each parcel by itself. The produce of the infected wheat was three-fourths smut; the same infected wheat, steeped and limed, was perfectly sound. The valuable results arising from steeping wheat seed need not be further illustrated, and we shall now proceed to describe the process.

Steeping or pickling is performed, as already mentioned, after the seed has been washed, by allowing it to lie for a time amongst stale urine, diluted with water, or salt brine, of sufficient strength to float an egg. The seed is put into tubs, containing as much liquid as will cover the grain a few inches, and allow it to be well stirred, so as to bring all the light grains to the surface, which are skimmed off as long as they continue to rise. Another way is to put the seed into baskets, which are immersed in the water, are easily taken out, and can be conveniently placed over an empty tub to drain. The seed is left for three or four hours in the chamber lye, or full six hours in the pickle, after which the liquor is drawn off, and the wheat spread thinly on the floor of the granary, where it is well sprinkled over with quick-lime slaked in the liquid. About half a peck of lime is sufficient for a bushel of wheat, and it should be well stirred, so that every grain may get a portion. If the seed is to be drilled, it should be passed through a coarse sieve after being limed, which will facilitate its progress through the machine. The grain will thus be quickly dried; and it should not lie more than six hours in the heap, then be spread out and used the following day.

Some caution should be used in having the lime properly slaked, for if this is not done, too great a heat may be raised, which will destroy the vegetative principle. Doubts have been expressed of the efficacy of lime, and a solution of copperas is used on the Continent instead. Dry powdered lime would certainly have no effect, but when

* General Report of Scotland.

newly slaked it is very efficacious, as has been proved from experiment. It was found that a steep of lime-water alone, in which wheat was immersed for four and twenty hours, proved a powerful preventive of disease, while the good effects of unmixed urine were very inconsiderable.

Of the two kinds of steep mentioned, urine is thought the most efficient, and it should be used neither too fresh nor too stale, as in the first state it is ineffectual, and in the second, injurious. The seed should be sown as soon as dry, for if allowed to lie in sacks or heaps beyond a day or two, the lime may be very hurtful. Another steep, which is recommended by Sir John Sinclair, and is much used in Flanders, France, and Switzerland, is a weak solution of the sulphate of copper, or blue vitriol. The modes of using it are as follow:

Into eight quarts of boiling water put one pound of blue vitriol, and while quite hot, three bushels of wheat are wetted with five quarts of the liquid; in three hours the remaining three quarts are added, and the wheat is suffered to remain three hours longer in the solution. The whole should be stirred three or four times during the six hours, and the light grains skimmed off. After the wheat is drained, slaked lime is thrown on it to facilitate the drying. Another way of using it is, to dissolve five pounds of the sulphate of copper in hot water, and add as much cold water to this as will cover three bushels of wheat. The wheat is allowed to remain five or six hours, or even longer, in the liquid. After two or three bags, of three bushels each, have passed through the liquid, one pound more of the sulphate for each bag should be added; and after twelve bags or so have passed through, new liquid will be required.

Various other preparations of vitriol, nitre, sulphur and arsenic have been tried, in some instances with considerable benefit; and a solution of one pound of arsenic, in thirty gallons of water, has been recommended as a destructive of insects and field mice. From what has been stated, the importance of this operation will be at once apparent, and its practice ought never to be neglected. "But unless other means be taken to guard against the infection, the farmer can never be secure against the communication of the contagion, even after all these operations have been performed. The contagious smut powder adheres to sacks and barns with which it has been in contact; it attaches itself to the straw and chaff, and is thus probably in many instances carried from the barn and stable doors, when the dung is taken green to the fields, without being properly turned and fermented. The infection may indeed be carried by the wind from other fields, and in various ways, which cannot be guarded against. But no person, who is duly sensible that the disease may be checked, if not wholly eradicated, by careful attention, should hesitate to employ all those means of prevention which may be in his power. The barn in which corn has been either stored or thrashed, should therefore be thoroughly aired, and every corner swept; if also the walls of the interior were well washed with strong lime-water, the precaution would not be improper, and sacks which have held the infected grain should be immersed in a similar solution."*

If the seed is not put in the ground until the spring months, the kind sown should either be of the true spring sort, or taken from wheat known to have been sown in the spring of the preceding year. Wheat is generally sown broadcast, but it is now becoming common to sow it with a machine. By this it is sown in a breadth of eighteen feet, as fast as a horse can walk, being about four acres an hour. The machine holds as much seed at a time as will go over an acre, and requires one man and one woman to manage it, eight horses following to harrow in the seed.

Drilling is much practised on soils of a light character, especially if the land be infested with annual weeds. When sown in spring, the drill allows the free operation of hand-hoeing and weeding, which are of considerable advantage. It occupies more time than broad-cast sowing, and is principally practised on light soils. A third process of sowing is by what is termed ribbing, formerly explained. The seed, in practising this method, is scattered by the hand, and falling for the most part in the furrows between the ribs, it has all the appearance of having been drilled, the ribs being then harrowed across. This process and drilling have the double advantage of allowing the operation of weeding, and also the free circulation of air between the plants, which is of great importance when the grain is ripen-

* British Husbandry.

ing. Dibbling in the seed is a process practised in some parts of Norfolk, but it requires too much labour ever to become general. It is performed by one man dibbling, and three or more children dropping in the grains; and the seed is harrowed in by a bush harrow. It saves seed greatly; and the grain produced is more equal throughout a field than by the broadcast method.

"The quantity of seed necessary depends both on the time of sowing and the state of the land—land sown early requiring less than the same land when sown in winter or spring, and poor land being always allowed more seed than rich. The quantity accordingly varies from two bushels or less to three, and sometimes even to four bushels per imperial acre. Winter wheat, when sown in spring, ought always to have a liberal allowance, as the plants have not time to tiller much without unduly retarding their maturation."*

The depth at which the seed is deposited in the soil is not of material consequence; but it should always be sufficiently covered to protect it from the depredations of birds. This is proved by the vigorous growth of shaken wheat and all other grains, although not all covered by the soil.

When broad-cast sowing is practised, harrowing, rolling and hand-hoeing will be the principal after-culture necessary. These operations are useful to loosen the ground when grass seeds are sown in winter wheat, and at the proper season are beneficial to the wheat itself. On strong clay soils they are sometimes performed even when grass is not sown, especially if the winter has been wet, or the crop appear thin. The operation should be done when the crop begins to vegetate; and great attention is necessary to this, as, if the plants are in an inactive state, they may be rotted by the work, and if too far advanced, their growth may be checked.

"Rolling in spring ought never to be omitted on dry porous soils, which are frequently left in so loose a state by the winter frosts, that the roots quit the soil and perish. If the land be rough and cloddy, the roller has a still more beneficial effect than the harrow in pulverizing the inert masses and extending the pasture of the plants. Hand-weeding, so far as to cut down thistles and other long weeds, is never neglected by careful farmers, but the previous culture ought to leave as little as possible of this work to be done when the crop is growing. Annual weeds, which are the most troublesome, can only be effectually destroyed by hand-hoeing; and to admit of this, the crop ought to be made to rise in rows, by being sown either by a drill machine or on ribs. Where grass seeds are to be sown on drilled wheat, the hand-hoeing assists in covering them."*

Feeding sheep on young wheat is sometimes practised in England, when the shoots are too luxuriant in the early part of spring, in order to check the growth of the outer blades. The practice, however, is objected to, as the sheep will generally prefer the tender blade in the heart of the plant, which may hurt its after-growth. In Scotland this is seldom or never practised, as the consequences are thought too dangerous in a cold, uncertain climate.

The almost universal practice is to cut wheat before it is dead ripe, as at this stage the grain is apt to drop from the ear, and the ear itself to break off, which causes considerable loss of grain. The best time for cutting this and all other grains is when no juice can be expressed from the straw immediately below the ear; the grain will then be comparatively clean-skinned and fine, and both grain and straw more valuable than if allowed to get too ripe. When too ripe, the grain assumes a dusky color, which is much against its appearance.

"The flour of wheat which is cut before it is quite ripe, is whiter than that which is allowed to come to maturity, and bears a higher price in the markets. The grain which is intended for the miller should therefore be reaped before it has reached its perfect growth. The wheat is ground into meal of various degrees of fineness, and a bushel of 60 lbs. weight generally yields, when dressed, about the following quantities:—Fine flour, 25½ lbs.; household flour, 22½ lbs.; pollards, (shorts,) 8 lbs.; bran, 3 lbs. A bushel of wheat, therefore, averages 48 lbs. of both kinds of flour of that sort called *seconds*, which is alone used for making bread through the greater part of England; and a sack of marketable flour must by law weigh 280 lbs. The bakers admit they can make two or three quartern loaves

* Encyclopædia Britannica, article Agriculture.

* Encyclopædia Britannica, article Agriculture.

more than the usual quantity from one sack of flour when it is the genuine produce of good wheat. It was found, upon a comparative trial of English and Scotch wheat, of apparently equal quality, that there was a difference in favour of the English of no less than 13 lbs. of bread upon 2½ cwts. (280 lbs.) of flour. As to the greater quantity of bread produced by an equal weight of English flour, the cause appears to be, that the English flour is more absorbent than the Scotch, and consequently requires more water to bring the dough to the same consistency for being baked."*

Wheat is almost universally cut with the sickle, (lately with the reaping machine,) and tied up in sheaves, which are often made of single lengths of the straw, and the smaller the sheaves the easier they are dried. The sheaves are set up in stooks of twelve or fourteen, according to the length of the straw, and are set in rows, the top of each touching, with an opening at the bottom to admit the free passage of the wind. From the strength of the straw, wheat remains opener in the sheaves than any other grain, and consequently wins and dries sooner. The best criterion for judging of the fitness of grain to be carried home is to examine the knots or joints of the straw, and if these be perfectly dead and free from juice, the crop may be then gathered with safety, even although it be a little wet with rain. If the crop, or part of it, is meant to be thrashed early, for seed or other purpose, it is necessary to allow it to remain longer on the field. When the straw is mixed with succulent weeds, or rank clover and grass, the grain must remain on the field till these are dried, or, from their wet nature, the crop will be apt to heat in the rick, and the produce be injured.

Ashes as a Manure.

Facts in agriculture, though of seeming insignificance, are always interesting and valuable. It may scarcely seem necessary to urge upon farmers the value of wood ashes as a manure, or the advantages of their application to the soil, as both leached and unleached ashes, within the last few years, have become better appreciated for their fertilizing properties—yet it is the province of the agricultural press to give "line upon line, and precept upon precept," to bring forth "thoughts new and old" for the reasonable consideration of its readers.

Ashes may be used with advantage to almost any class of crops, but especially as a dressing for grass, grain and Indian corn, though the immediate benefit of ashes is most perceptible on leguminous plants, such as clover, peas, beans, &c. Ashes, in some respects, act like lime; consequently on thin, poor soils, they should not be applied in large quantities, unless vegetable matter is added at the same time, as the effect is too stimulating and exhausting. They act like lime in having a tendency to give compactness to light sandy soils, and render heavy clay soils light and friable. They serve, too, to neutralize whatever superabundance of acids there may be in any soil.

As a top-dressing to grass, ashes are very beneficial, as it roots out the moss, and promotes the growth of white clover. Mossy meadows and pastures may be renovated by applying ashes and plaster (gypsum). There are always natural grass seeds in every soil, lying ready for germination and growth as soon as the manurial or feeding elements of the soil are ready for their development. On this principle it is, that a dressing of lime, or ashes and plaster, will bring into action seeds of white clover, where a white clover plant was never known to have existed before.

As an application to the corn crop, ashes have been found to be of much value—applied as a hill dressing about the time of the first hoeing—enabling it to get a better start in the early part of the season, and thus preparing it better to withstand the drouth of mid-summer. They not only cause the plants to start vigorously, but enable them to hold that vigor until the roots attain size and strength to seek, over a larger proportion of the soil, the elements needed. We have noticed a material difference in the yield of corn-fields, dressed and undressed, which could only be attributed to this fact. Some farmers practice mixing salt with ashes as a top-dressing for corn, but whether beneficial or not we cannot say from experience; but the better way, we should think, would be to use the salt in the compost-heap, where, in small quantities, it might prove beneficial in promoting the decomposition of animal and vegetable substances.

It has been asserted, that ashes at twenty-five cents a bushel are cheaper than phos-

* British Husbandry.

phate of lime at six cents per pound. Several salts are necessary for full growth and maturity of the wheat plant. In using the super-phosphate of lime, the farmer uses but one of the salts necessary for its perfection; but in the use of ashes, he applies, besides the several salts of potash, more or less of other salts, no less valuable, according to the kind of timber from which the ashes were produced. Different woods have a very different proportion of mineral constituents—hence the value as manure is variable.

Leached ashes produce nearly the same effect with unleached, but a larger quantity is generally required. There are soils in which much alkali exists; in such the soluble parts of ashes will be of little value; and the leached remains may be altogether superior, for few soils contain so much phosphoric acid as not to be improved by its addition as manure. They are of too valuable a character to be suffered to remain unemployed as they have been—remaining in large heaps on the sites of old asheries in many places in the country. We have not the least doubt that every farmer will find it more profitable to apply the ashes made on his premises to the soil, than to sell them to manufacturers at fifteen or even twenty cents per bushel. Farmers are beginning to feel more and more that they must do something to enrich their farms. Let not this source of fertility be neglected, and let further experiments be made in its use.

Rural American.

Advice about Teeth.

An eminent surgeon-dentist, residing in London, gives the following useful hints about the care of teeth. They are simple, timely, and deserve attention:

In the first place, the teeth should be fairly used. By this I mean, not made to perform the duties of crackers for nuts, experimented on to ascertain their strength, or, by ladies, to rival scissors in cutting thread; for, rest assured, in every case, more particularly the last, the party having recourse to such practices, will surely some day rue them; the teeth, so unwittingly injured, being always to part company with their fellows. Those who indulge in such or similar habits, may truly be called the dentist's friends. Cleanliness is absolutely essential for the preservation of the teeth, and they should be well brushed at least morning and evening, that any feculence which may be attached to them, either during sleep from the stomach, or by day from meals, may not be allowed permanently to adhere, causing, firstly, discoloration, then tartar, and subsequently, if I may so express myself, undermining the constitution of one or more, as from their position they may be more or less liable to corrosion. In order that the teeth should look natural, that is, retain their natural color, a dentifrice, free from the smallest particle of acid, should be used at the matin hour, and the mouth rinsed with tepid water, for extremes of heat and cold are most highly prejudicial not only to their color, but also to their durability; and I know no method so simple of converting a really useful and ornamental set into one of pain and subsequent extinction, than the use of washing in either one or the other. The person who habituates himself or herself, to any extent, to hot soup, tea, or other drinks, assuredly rivals the friend to the dentist just named. Brushes for the teeth should be of medium substance of bristle, and those made on what is called the penetrating principle are best. I would also observe that children at any early age, should be instructed in the use of a tooth-brush, and taught the value and importance of the teeth, in order to inculcate habits of cleanliness, and a due appreciation of the ornaments of the mouth. A brush properly selected (not too hard) may be used by children of five years of age, every morning; and by being part and parcel of the general ablution, and thus directing habitual attention to the teeth, a useful and cleanly habit will be engendered, which will probably insure for them proper care through life.

Industry.

Toil is the price of sleep and appetite, of health and enjoyment. The very necessity which overcomes our natural sloth, is a blessing. The world does not contain a brier or thorn that divine mercy could have spared. We are happier with the sterility which we can overcome by industry, than we could be with the most spontaneous and unbounded profusion. The body and the mind are improved by the toil that fatigues them; that toil is a thousand times rewarded by the pleasure it bestows. Its enjoyments are peculiar; no wealth can touch them.

Measure of Manhood.

No impression of society is more false or fatal to true manhood, than that which measures a man's worth by the field of labor he occupies, so long as that labor is useful and honest—and no dishonest toil can be useful. The nobility of man in this country does not depend on wealth, birth or title. Nor does it take color from the *nature* of his profession, but rather from the *spirit* which animates him—the spirit by which, with or against the smiles of temporal fortune, he shapes his career among his fellow-men. He is a truer man who turns chimney-sweeping to an honest, independent account, than he who, scorning the rough toils of the humble and needy, is willing to live an idler—however proudly caparisoned—upon the industry of others.

Now and then we hear of "the most respectable classes," and find on examination that this respectability is credited to peculiar professions and labors. What could be more offensive to that spirit of republicanism which discards the theory of "divine rights," and special nobilities of blood and caste? Yet this sentiment of distinction exists and increases amongst us. We see it in manifold displays of a pseudo-aristocracy, who, glorying in the possession of superior wealth, won, most likely, by the hard-handed industry and prudence of a former generation, or by some successful speculation, look down with vulgar scorn upon men who eclipse them in all the attributes of manhood. That man is base, who fails to remember with pride a noble-minded or noble-acting ancestry, but baser is he who seeks to hide his own meanness or weakness under the mantle of reputable forefathers. The proudest coat of arms ever graven on a man's shield, or fitted to his shoulders, is the home-spun coat won by honest toil. Substract from the world's history the record of such toil, and the earth is stripped of its most substantial glories. The patent nobilities have done little more than to rust and corrupt the fruits of heroic labor.

What matters it whether one carry the hod or the plumb-line—whether one mixes the mortar or handles the trowel—so long as each is essential to human welfare? Not that we would have any man seek a lower grade of toil, if a higher be at his command. What we hold is, that the shepherd and plowman are as noble in their place as is the Secretary of State in his. To the working-man—and he who toils not usefully is a drone among men, and an abomination in the sight of God—we have but a few words of advice. Heed not the false sentiment that would deny you dignity or respectability, because your labor soils your hands and swarths your brow. Better have soiled hands and swarth brow, than the corrupt heart and vicious brain of the two extremes of society who prey on your labor—the vagabonds of the gutter, shameless in their mendicity and crime, and the vaunted aristocracy, whose wealth hides their corruption from the public sight. Aim high with honest purpose, holding a true soul better than gold, and the approval of conscience sweeter than the world's flattery, and you will triumph even in the humblest vocation. Your daily labor shall not be the gauge of your manhood, for you will have over and above that, for self-communion and for society, a heart and brain which are not tied to, nor bound up in, the toil of your hands.

[*Southern Chronicle.*

Fever and Ague.

There are some situations where fever and ague prevails every season, and this is the case in the vicinity of creeks and swamps in Long Island, not one mile from New York City. An acquaintance of ours, who has resided for several years on one of these creeks, never has had a single case of fever and ague in his family, while all his neighbors have been more or less affected with it every season. He attributes his immunity from this troublesome disease to the use of a good fire in his house every chilly and damp night in Summer and Fall. When the Indians travel at night or early in the morning in swampy regions, they cover their nose and mouth with some part of their garments to warm the air which they inhale, and this they say prevents chills and fevers.—*Scientific American.*

The grape crop around Cincinnati is said to be the largest ever grown and is estimated as worth one million of dollars.

Contentment produces, in some measure, all those effects which the Alchemist usually ascribes to what he calls the Philosopher's Stone; and if it does not bring Riches, it does the same thing by banishing the desire for them.—*Addison.*

SEVENTH ANNUAL EXHIBITION

OF THE

VA. STATE AGRICULTURAL SOCIETY,

TO BE

HELD AT PETERSBURG

ON THE

1st, 2d, 3d and 4th of November, 1859.

—

SCHEDULE OF PREMIUMS.

BRANCH I.

Premiums for Experiments.

—

Class 1st.

1 to 5. For each of five best experiments on any important and doubtful or disputed question or questions of practical Agriculture; each experiment covering not less than four acres of land and including a series of not less than eight different matters of trial, observation, measurement, correct estimate, or comparison of results; and, which moreover, by its proper direction, accuracy of performance, and the careful and full report of procedure and results thereof, shall serve to furnish valuable instruction for practice on the subject investigated, whether two or more experiments shall be on the same subject, or each, on a different one, a premium of $100

Class 2d.

6 to 15. For each of ten other next best experiments, of similar character and merit with the above described, but falling short of the full requisitions for the foregoing, a premium of 25

Class 3rd.

16 to 35. For each of twenty other accurate and instructive experiments, or series of experiments on one general subject, of merit and useful value, a premium of 10

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Remarks and Special Rules for Branch I.

The superiority of merit or value of any two experiments, claiming the same or like premiums, will be decided in reference to the nearest approximation to the following conditions:

1st. The comparative extent and completeness of the processes of experiment, and the apparent accuracy of the procedure.

2nd. The clearness of the report.

3rd. The utility of the information so conveyed.

Exact measurements of results always will add much value to reports of experiments, and should not be omitted whenever the case may require such exactness. But in many other cases, estimates of comparative results, or products, by the eye, may serve, if sufficient for the case and for reaching correct conclusions.

Judges.

The Executive Committee.*

BRANCH II.

Premiums for Written Communications.

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Class 1st.

36 to 40. For each of the five best essays or written communications, whether on the same or on different subjects of practical agriculture, or on scientific agriculture, strictly and usefully applicable to practice, of high order of merit and utility for instruction—and conforming to the requisitions of the general rules on the subject, a premium of $50

Class 2nd.

41 to 50. For each of ten other and next best essays or written communications as above described, but which may fall short of the requisitions for the higher offers, a premium of 20

Class 3rd.

51 to 70. For each of twenty other next best instructive written communications of new facts in agriculture, a premium of 10

71. For the best treatise on gar-

* See RULES AND REGULATIONS.

dening suited to the climate of Virginia, to be not less than one hundred pages, 25

72. Best treatise on the culture and management of Broom Corn, 10

Remarks on, and Special Rules for, Branch II.

ESSAYS AND OTHER WRITTEN COMMUNICATIONS.

1. Essays and other written articles on practical subjects, must be founded mainly, and on scientific subjects, at least partly, on the writer's practical experience and personal observation or investigation; though portions of each may rest on other authorities, to be stated particularly or generally, as required by the case.

2. The award of superiority to any one writing over others on the same subject, will be made in reference to its probable greater utility to agricultural improvement or profit, as well as the ability with which the subject is treated.

3. In matter designed to instruct or to guide practical labours, clearness and fullness of details will be deemed a high claim to merit—and next conciseness. Nothing necessary for instruction should be omitted, and nothing included that can be omitted without injury to the value of the instruction.

4. Written Communications to the Executive Committee may be sent in at any time—the earlier the better—as they will at once be referred to the Committee on Essays, who will thus be enabled to scrutinize, and the more correctly to estimate by comparison, the relative merits of the different Essays submitted for their examination.

5. It is required that all written communications to the Society, received at any previous time and published by order of the Executive Committee, and which have not been duly considered, and denied premiums by the judges, shall be still held and considered as claiming, and in competition with any more recent writings for premiums offered, and for which any such writings may be suitable, and further, even the previously published writings, which had been duly considered by the judges at the preceding Fair, and to which premiums were denied, shall still be held under review and consideration, by the judges for the next year's premiums, not again to be placed in competition, but for the purpose of being compared as to degrees of merit with the later writing then under consideration and adjudication for premiums.

6. When a premium has been awarded at a previous time to an essay, any other and later essay or written communication on that subject, to obtain a premium must be either deemed to have important additional value compared with the former one so honoured, or otherwise be very different in matter, or manner of treatment, as well as of a sufficiently high order of merit.

7. All written communications to which may be awarded premiums, will be published in the Transactions of the Society; and any others offered to compete for premiums, and not obtaining that honour, will be published in like manner, if deemed worthy by the Executive Committee.

Judges.

The Executive Committee.

BRANCH III.

HORSES.

Thorough Bred—1st Class.

☞ Awards to be made without regard to performance on the turf, and the judges are required to reject any animal competing in this division, with which there is not furnished a complete pedigree, showing the purity of blood on the side of both dam and sire.

73. For the best thorough bred stallion, $50 00

74. For the second best, 25 00

75. For the third best,

CERTIFICATE OF MERIT.

76. For the best thorough bred brood mare, 25 00

77. For the second best, 12 50

78. For the third best,

CERTIFICATE OF MERIT.

79. For the best entire colt foaled since 1st January, 1856, 15 00

80. For the best entire colt foaled since 1st January, 1857, 10 00

81. For the best entire colt foaled since 1st January, 1858, 7 50

82. For the best filly foaled since 1st January, 1856, 15 00

83. For the best filly foaled since 1st January, 1857, 10 00

84. For the best filly foaled since 1st January, 1858, 7 50
85. For the best foal dropped since 1st January, 1859, 5 00

☞ No premium to be given in the foregoing class to an animal that is unsound.

Judges.

Col. Wm. Townes, Mecklenburg.
Thomas W. Doswell, Hanover.
William Berkeley, Loudoun.
John M. Botts, Henrico.
Oden Bowie, Marlborough, Md.
Otway P. Hare, Prince George.

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The Horse of General Utility—2d Class.

86. For the best stallion for useful and elegant purposes combined, 50 00
87. For the second best, 25 00
88. For the third best,
CERTIFICATE OF MERIT.
89. For the best brood mare for useful and elegant purposes combined, 25 00
90. For the second best, 12 50
91. For the third best,
CERTIFICATE OF MERIT.
92. For the best entire colt foaled since 1st January 1856. 15 00
93. For the best entire colt foaled since 1st January 1857, 10 00
94. For the best entire colt foaled since 1st January 1858, 7 50
95. For the best filly foaled since 1st January 1856. 15 00
96. For the best filly foaled since 1st January 1857. 10 00
97. For the best filly foaled since 1st January 1858. 7 50
98. For the best foal dropped since 1st January, 1859. 5 00
99. For the best pair of matched horses, 25 00
100. For the second best pair of matched horses, 10 00
101. For the best single harness horse, mare or gelding, 15 00
102. For the second best, 10 00

☞ No premium to be given in the foregoing class to an animal that is unsound.

Judges.

John A. Selden, Charles City,
Norborne Berkeley, (Aldie) Loudoun.
Nathaniel Burwell (Millwood) Clarke.
Dr. Lucian B. Price, Hanover.
Benjamin Wood, Albemarle.

Quick Draught Horses—3d Class.

103. For the best stallion for quick draught $50 00
104. For the second best, 25 00
105. For the third best,
CERTIFICATE OF MERIT.
106. For the best brood mare for quick draught, 25 00
107. For the second best, 12 50
108. For the third best,
CERTIFICATE OF MERIT.
109. For the best entire colt foaled since 1st January 1856, 15 00
110. For the best entire colt foaled since 1st January 1857, 10 00
111. For the best entire colt foaled since 1st January 1858, 7 50
112. For the best filly foaled since 1st January 1856, 15 00
113. For the best filly foaled since 1st January 1857, 10 00
114. For the best filly foaled since 1st January 1858, 7 50
115. For the best foal dropped since 1st January 1859. 5 00
116. For the best pair of matched horses for quick draught, 25 00
117. For the second best, 10 00
118. For the best single harness horse, mare, or gelding, 15 00
119. For the second best, 10 00

☞ No premium to be given in the foregoing class to an animal that is unsound.

Judges.

Samuel B. Finley, Augusta.
Rob't D. Turnbull, (Lawrenceville) Brunswick.
William T. Joynes, Petersburg.
Thomas Branch, "
Albert Aikin, Henrico,

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Heavy Draught Horses—4th Class.

120. For the best stallion for heavy draught, 50 00
121. For the second best, 25 00
122. For the third best,
CERTIFICATE OF MERIT.
123. For the best brood mare for heavy draught, 25 00
124. For the second best, 12 50
125. For the third best,
CERTIFICATE OF MERIT.
126. For the best entire colt foaled since 1st January 1856, 15 00

127. For the best entire colt foaled since 1st January 1857, $10 00
128. For the best entire colt foaled since 1st January 1858, 7 50
129. For the best filly foaled since 1st January 1856. 15 00
130. For the best filly foaled since 1st January 1857, 10 00
131. For the best filly foaled since 1st January 1858, 7 50
132. For the best foal dropped since 1st January 1859. 5 00
133. For the best pair of heavy draught horses, 20 00
134. For the best team of heavy draught horses, not less than four, 30 00

[To be tested on the Fair Grounds according to such plan as may be prescribed by the judges.]

☞ No premium to be given in the foregoing class to an animal that is unsound.

Judges.

John Harrison, Upperville.
Col. Christopher Haskins, Lochleven.
Francis B. Whiting, Jr., (Millwood) Clark.
George W. Mowry, Augusta.
Sylvanus Johnson, Petersburg.

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Saddle Horses—5th Class.

135. For the best stallion for the saddle, 50 00
136. For the second best, 25 00
137. For the third best,
CERTIFICATE OF MERIT.
138. For the best brood mare for the saddle. 25 00
139. For the second best, 12 50
140. For the third best,
CERTIFICATE OF MERIT.
141. For the best entire colt foaled since 1st January 1856. 15 00
142. For the best entire colt foaled 1st January 1857, 10 00
143. For the best entire colt foaled since 1st January 1858, 7 50
144. For the best filly foaled since 1st January 1856, 15 00
145. For the best filly foaled since 1st January 1857, 10 00
146. For the best filly foaled since 1st January 1858. 7 50
147. For the best foal dropped since 1st January 1859, 5 00
148. For the best saddle horse, mare or gelding, $20 00
149. For the second best saddle horse, mare or gelding, 10 00
150. For the best pony, 5 00

☞ No premium to be given in the foregoing class to an animal that is unsound.

Judges.

Robert Carter, Upperville.
Peyton R. Berkeley, Prince Edward C. H.
D. W. Haxall, Charles City.
Archie C. Randolph, (Millwood) Clarke.
Dr. Henry Lewis, Brunswick.

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MULES AND JACKS.

6th Class.

151. For the best jack, 50 00
152. For the second best, 25 00
153. For the best jennet, 25 00
154. For the second best, 10 00
155. For the best pair of mules, to be owned and worked one year preceding their exhibition, 15 00
156. For the best team of mules, 4, or more, to be owned and worked 1 year preceding their exhibition, 25 00
157. For the best mule colt, 3 years old, foaled in Virginia, 10 00
158. For the best mule colt, 2 years old, foaled in Virginia, 10 00
159. For the best mule colt, 1 year old, foaled in Virginia, 7 50
160. For the best mule colt, a suckling, foaled in Virginia, 5 00

Judges.

Augustus H. Drewy, Chesterfield.
Sam'l McGehee, Charlotte.
Sharpe Carter, Nottoway.
Robert Blackwell, Lunenburg.
Dan'l Hatton, Nansemond.

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CATTLE.

Short-Horns or Durhams, or Herefords, of Native Stock—1st Class.

161. For the best bull, 3 years old and upwards, 50 00
162. For the second best, 25 00
163. For the third best,
CERTIFICATE OF MERIT.
164. For the best cow, 3 years old and upwards, 50 00
165. For the second best, 25 00
166. For the third best,
CERTIFICATE OF MERIT.

167. For the best bull between 2 and 3 years old, $40 00
168. For the second best, 20 00
169. For the third best,
CERTIFICATE OF MERIT.
170. For the best bull between 1 and 2 years old, 25 00
171. For the second best, 12 50
172. For the best heifer between 2 and 3 years old, 25 00
173. For the second best, 12 50
174. For the best heifer between 1 and 2 years old, 25 00
175. For the second best, 12 50
176. For the best calf or heifer 1 year old, 10 00

For the best *Imported Short Horns* and *Herefords*, same premiums as the above, but the *Imported* breeds shall compete only in their own class.

Judges.

A. S. Mathews, Wythe,
John A. Carter, Upperville.
Thomas L. Farish, Albemarle.
Josiah W. Ware, (Berryville) Clarke.
Robert W. Bragg (Rehoboth) Lunenburg.

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Devons, of Native Stock—2d Class.

177. For the best bull, 3 years old and upwards, 50 00
178. For the second best, 25 00
179. For the third best,
CERTIFICATE OF MERIT.
180. For the best cow, 3 years old and upwards, 50 00
181. For the second best, 25 00
182. For the third best,
CERTIFICATE OF MERIT.
183. For the best bull, between 2 and 3 years old, 40 00
184. For the second best, 20 00
185. For the third best,
CERTIFICATE OF MERIT.
186. For the best bull, between 1 and 2 years old, 25 00
187. For the second best, 12 50
188. For the best heifer, between 2 and 3 years old, 25 00
189. For the second best, 12 50
190. For the best heifer, between 1 and 2 years old, 25 00
191. For the second best, 12 50
192. For the best calf or heifer under 1 year old. 10 00

Best *Imported Devons*, same premiums as the above, but the *Imported* breeds shall compete only in their own class.

Judges.

Dr. Philip B. Pendleton, Louisa.
H. K. Burgwynn, Halifax, N. C.
Paschal Buford, Bedford.
Harrison Brander, Chesterfield.
Dr. J. P. Goodwin, Dinwiddie.

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Ayrshires or Alderneys, of Native Stock—3d Class.

193. For the best bull, 3 years old and upwards $40 00
194. For the second best, 20 00
195. For the third best,
CERTIFICATE OF MERIT.
196. For the best cow, 3 years old and upwards, 40 00
197. For the second best, 20 00
198. For the third best,
CERTIFICATE OF MERIT.
199. For the best bull, between 2 and 3 years old, 20 00
200. For the second best, 10 00
201. For the third best,
CERTIFICATE OF MERIT.
202. For the best heifer, between 2 and 3 years old, 20 00
203. For the second best, 10 00
204. For the best bull, between 1 and 2 years old, 20 00
205. For the second best, 10 00
206. For the best heifer, between 1 and 2 years old, 20 00
207. For the second best, 10 00
208. For the best calf or heifer, under 1 year old, 10 00

For the best *Imported Ayrshires* and *Alderneys*, same premiums as the above, but the *Imported* breeds shall compete only with their own class.

Judges.

Nathan Luffborough, Upperville.
Dr. John R. Woods, Albemarle.
F. T. Ridley, Southampton.
Ramsay McHenry, Maryland.
John Turpin, Petersburg.

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Grades—4th Class.

209. For the best cow, 3 years old and upwards, 40 00
210. For the second best, 20 00
211. For the third best,
CERTIFICATE OF MERIT.

212. For the best heifer, between 2 and 3 years old, $12 00
213. For the second best, 8 00
214. For the third best,
CERTIFICATE OF MERIT.
215. For the best heifer, between 1 and 2 years old, 12 00
216. For the second best, 8 00
217. For the best heifer, under 1 year old, 5 00

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

Judges.

Dr. A. A. Campbell, Nottoway.
Henry B. Jones, Rockbridge.
T. Freeman Epes, Nottoway.
Josiah Dabbs, Halifax.
John Page (Millwood) Clarke.

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DAIRY COWS.

5th Class.

218. For the best cow for dairy, 40 00
219. For the second best, 20 00

Judges.

Wm. Miller, Winchester,
James Newman, Orange.
Edwin McCormick, Berryville.
Edward Hill, King William.
Henry Cox, Henrico.

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Working Oxen—6th Class.

220. For the best yoke of oxen over 4 years old, 30 00
221. For the second best, 15 00
222. For the best yoke of oxen under 4 years old, 30 00
223. For the second best, 15 00

The oxen to be tested according to rules to be prescribed by the Committee of Award.

Judges.

S. T. Stuart, Fairfax.
Chas. H. Carter, Nottoway.
Chas. H. Lynch, Lynchburg.
Wm. Strother Jones, Federick.
Edwin Edmunds, Prince Edward C. H.

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FAT STOCK—CATTLE.

7th Class.

224. For the best pair aged fat steers, 50 00
225. For the second best pair, 30 00
226. For the best pair of fat steers under 4 years old, $50 00
227. For the second best pair, 30 00
228. For the best pair fat cows or heifers, 50 00
229. For the second best, 30 00
230. For the best fat cow, over 4 years old, 25 00
231. For the second best, 15 00
232. For the best fat heifer, 25 00
233. For the second best, 15 00
234. For the best single fat steer, 25 00
235. For the second best, 15 00

The owner will be required to state the mode of fattening in all cases.

Judges.

Joseph Cloyd, Pulaski.
Sam'l H. Bell, Augusta.
Cloyd McGavock, Wythe.
Charles Grattan, Rockingham.
John W. Patteson, Middleburg.

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SHEEP AND SWINE—*8th Class.*

236. For the best pen fat sheep, 4 or more, 10 00
237. For the best pen fat hogs, 4 or more, 10 00
238. For the best slaughtered mutton, 5 00

Judges.

H. Carrington Watkins, Chesterfield.
E. C. Robinson, Amelia.
Col. J. S. Clarke, Surry.
Dr. J. F. Early, Greene.
Wm. Patrick, Augusta.

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SHEEP.

FINE WOOL, OF NATIVE STOCK.

1st Class—Including Spanish, Saxon, French, and Silesian Merinos.

239. For the best ram, 20 00
240. For the second best, 10 00
241. For the third best,
CERTIFICATE OF MERIT.
242. For the best pen of ewes, three in number, 20 00
243. For the second best, 10 00
244. For the third best,
CERTIFICATE OF MERIT.
245. For the best pen of ewe lambs, 4 in number, 10 00
246. For the best pen of ram lambs, 4 in number, 10 00

Grades—2nd Class—Including the same varieties as 1st Class.

247. For the best pen of ewes, 3 in numbe , $20 00
248. For the second best, 10 00
249. For the third best,
CERTIFICATE OF MERIT.
250. For the best pen of ewe lambs, 4 in number, 10 00

Judges.

Dr. R. C. Mason, Fairfax.
Wm. Garth, Albemarle.
G. W. C. Whiting, White Sulphur Springs.
J. G. Baylor, Prince George.
William Dillard, Surry.

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MIDDLE WOOLS, OF NATIVE STOCK.

South Downs—3rd Class.

252. For the best ram, 20 00
253. For the second best, 10 00
254. For the third best,
CERTIFICATE OF MERIT.
255. For the best pen of ewes, 3 in number, 20 00
256. For the second best, 10 00
257. For the third best,
CERTIFICATE OF MERIT.
258. For the best pen of ewe lambs, four in number, 10 00
259. For the best pen of ram lambs, four in number, 10 00

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South Down Grades—4th Class.

260. For the best pen of ewes, 3 in number, 20 00
261. For the second best, 10 00
262. For the third best,
CERTIFICATE OF MERIT.
263. For the best pen of ewe lambs, 4 in numbe:, 10 00

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Oxford Downs—5th Class.

264. For the best ram, 20 00
265. For the second best, 10 00
266. For the third best,
CERTIFICATE OF MERIT.
267. For the best pen of ewes, 3 in number, 20 00
268. For the second best, 10 00
269. For the third best,
CERTIFICATE OF MERIT.
270. For the best pen of ewe lambs, 4 in number, $10 00
271. For the best pen of ram lambs, 4 in number, 10 00

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Oxford Down Grades—6th Class.

272. For the best pen of ewes, 3 in number, 20 00
273. For the second best, 10 00
274. For the third best,
CERTIFICATE OF MERIT.
275. For the best pen of ewe lambs, 4 in number, 10 00

Judges.

Raleigh Colston, Albemarle.
Philip N. Mead, Millwood, Va.
John A. Scott, Prince Edward.
John A. Lancaster, Buckingham.
Dr. R. C. Ambler, Markham Station.

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LONG WOOLS, OF NATIVE STOCK.

7th Class.

276. For the best ram, 20 00
277. For the second best, 10 00
278. For the third best,
CERTIFICATE OF MERIT.
279. For the best pen of ewes, 3 in number, 20 00
280. For the second best, 10 00
281. For the third best,
CERTIFICATE OF MERIT.
282. For the best pen of ram lambs, 4 in number, 10 00
283. For the best pen of ewe lambs, 4 in number, 10 00

☞The long wooled breeds include Bakewell or Leicester, Cotswold or New Oxfordshire and Lincoln.

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Long Wool Grades—8th Class.

284. For the best pen of ewes, 3 in number, 20 00
285. For the second best, 10 00
286. For the third best,
CERTIFICATE OF MERIT.
287. For the best pen of ewe lambs, 4 in number, 10 00

Th s class of Grades comprises any of the crosses of the above long wools on native stock.

Judges.

Dr. John B. Harvie, Powhatan.
Gen'l M. W. Ransom, Garysburg, N. C.
John H. M. Carter, Thoroughfare.
Edward Cunningham, Powhatan.

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FOREIGN SHEEP.

9th Class.

288. For the best imported Merino ram, $20 00
289. For the second best, 10 00
290. For the best imported Merino ewe, 20 00
291. For the second best, 10 00
292. For the best imported South Down ram, 20 00
293. For the second best, 10 00
294. For the best imported South Down ewe, 20 00
295. For the second best, 10 00
296. For the best imported Oxford Down ram, 20 00
297. For the second best, 10 00
298. For the best imported Oxford Down ewe, 20 00
299. For the second best, 10 00
300. For the best imported Bakewell or Leicester ram, 20 00
301. For the second best, 10 00
302. For the best imported Bakewell or Leicester ewe, 20 00
303. For the second best, 10 00
304. For the best imported Cotswold or New Oxfordshire ram, 20 00
305. For the second best, 10 00
306. For the best imported Cotswold or New Oxfordshire ewe, 20 00
307. For the second best, 10 00

Imported sheep not allowed to compete with natives.

☞ The judges of awards on fine wools will also adjudge the premiums on imported Merinos. The judges on middle wools, the premiums on imported South Downs and Oxfords, and the judges on long wools, the premiums on imported Bakewells and Cotswolds.

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Cashmere Goats—9th Class.

308. For the best pair Cashmere goats, male and female, 20 00
309. For the best pair, cross of Cashmere with native goat,

CERTIFICATE OF MERIT.

Judges.

Mann P. Nelson, Jefferson.
James M. Sublett, Powhatan.
Capt William Nelson, Hanover.
John H. Flood, Appomattox.
Dr. S. P. Christian, New Kent.

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SWINE.

Large Breed.

310. For the best boar over two years old, $20 00
311. For the second best, 10 00
312. For the best boar 1 year old, 15 00
313. For the second best, 8 00
314. For the best breeding sow over 2 years old, 20 00
315. For the second best, 10 00
316. For the best sow not less than 5 months and under 18 months old, 15 00
317. For the second best, 8 00
318. For the best lot of pigs, not less than 5 in number, nor less than 2, and under 5 months old, and of the same litter, 10 00
319. For the second best, 5 00

The large breed includes Chester, Russia, Bedford, Woburn, Grazier, Hampshire, Duchess County, native and grades.

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Small Breed.

320. For the best boar over two years old, 20 00
321. For the second best, 10 00
322. For the best boar 1 year old, 15 00
323. For the second best, 8 00
324. For the best breeding sow, over 2 years old, 20 00
325. For the second best, 10 00
326. For the best sow, not less than 6 months nor more than 18 months old, 15 00
327. For the second best, 8 00
328. For the best lot of pigs, not less than 5 in number, nor less than 2 and under 5 months old, and of the same litter, 10 00
329. For the second best, 5 00

The small breed includes Neapolitan, Suffolk, Sussex, Essex, Berkshire, Chinese, natives and grades.

Judges.

E. C. Jordan, Jordan's Springs.
John F. Bootton, Madison.
John W. Dyer, Chesterfield.
E. G. Bagley, Macfarlands.
Wm. Benton, Jr., Middleburg.

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Additional Premiums to Premium Animals.

CERTIFICATE OF MERIT.

330. For the best bull of any breed on exhibition,
331 For the best cow of any breed on exhibition,
332. For the best stallion of any breed on exhibition,
333. For the best brood mare of any breed on exhibition,
334. For the best ram of any breed on exhibition,
335. For the best ewe of any breed on exhibition,
336. For the best boar of any breed on exhibition,
337. For the best breeding sow of any breed on exhibition,

Judges.

Wm. C. Rives, Albemarle.
S. W. Ficklin, Albemarle.
Wm. M. Tate, Augusta.
Braxton Davenport, Jefferson.
Sam'l Bryerly, Berkeley.

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POULTRY.

Chickens—1st Class.

338. For the best pair Cochin China, $2 00
339. For the best pair Imperial China, 2 00
340. For the best pair White Dorking, 2 00
341. For the best pair Red Chittagong, 2 00
342. For the best pair Gray Chittagong, 2 00
343. For the best pair Black Poland, 2 00
344. For the best pair White Poland, 2 00
345. For the best pair Silver Pheasant, 2 00
346. For the best pair Golden Pheasant, 2 00
347. For the best pair Spangled Hamburg, 2 00
348. For the best pair white or red game, 2 00
349. For the best pair Bramah Pootra, $2 00
350. For the best pair Virginia game, 2 00
351. For the best pair Black Spanish, 2 00
352. For the best pair Indian Mountain, 2 00
353. For the best pair Wild Indian game, 2 00
354. For the best pair Sumatra game, 2 00
355. For the best pair Ostrich game, 2 00
356. For the best pair Bolton gray, 2 00
357. For the best pair Sea-bright Bantam, 2 00
358. For the best pair Java Bantam, 2 00
359. For the best pair Great Malay, 2 00
360. For the best pair Jersey Blue, 2 00

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Turkeys—2nd Class.

361. For the best pair common Turkeys, 2 00
362. For the best pair wild Turkeys, 2 00
363. For the best pair crested Turkeys, 2 00

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Geese—3rd Class.

364. For the best pair common Geese, 2 00
365. For the best pair wild Geese, 2 00
366. For the best pair China Geese, 2 00
367. For the best pair Bremen Geese, 2 00
368. For the best pair Poland Geese, 2 00
369. For the best pair African Swan Geese, 2 00

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Ducks—4th Class.

370. For the best pair of white Poland Ducks, 2 00
371. For the best pair Muscovy Ducks, 2 00
372. For the best pair Aylesbury Ducks, 2 00
373. For the best pair common Ducks, 2 00
374. For the best pair summer Wild Ducks, 2 00

5th Class.

375. For the greatest variety of Poultry by one exhibitor, $10 00

Judges.

Wm. M. Bagley, Lunenburg.
J. McL. Anderson, Caroline,
Rev. Jeremiah Porter, Richmond.
Daniel Dyson, Chesterfield.
Robert Tyler, Hanover, (Old Church.)

BRANCH IV.

AGRICULTURAL IMPLEMENTS.

CLASS I.

Ploughs, Cultivators, &c.

376. For the best 3 or 4 horse plough, $10 00
377. For the best 2 horse plough, 8 00
378. For the best single do. 5 00
379. For the best shovel do. 5 00
380. For the best sub-soil do. 5 00
381. For the best new-ground or coalter plough, 5 00
382. For the best hill-side plough, 5 00
383. For the best cultivator for corn, 5 00
384. For the best cultivator for tobacco, 5 00
385. For the best cultivator for two horses, 5 00
386. For the best wooden-frame harrow, 6 00
387. For the best iron-frame harrow, 6 00
388. For the best drain and furrow plough for opening and cleaning out water furrows, $10 00

Judges.

John H. Stokes, Lunenburg.
Z. R. Lewis, Albemarle.
John Coleman, Halifax.
J. W. McPhail, Charlotte.
Richard V. Gaines, Charlotte.

CLASS II.

Drills, Broadcasters, &c.

389. For the best broadcasting or drilling machine for sowing grain or grass seed, $20 00
390. For the best wheat drill, 20 00
391. For the best broadcasting machine for sowing guano, $20 00
392. For the best lime spreader, 20 00
393. For the best corn planter, 10 00
394. For the best seed drill, 3 00
395. For the best attachment to drill for drilling guano, 15 00
396. For the best implement for sowing and covering peas among corn, at or immediately following the last tillage, and either with or without guano, 15 00

Judges.

Ths. J. Randolph, Albemarle.
Robert Douthat, Charles City.
Dr. Robert Harrison, Prince George.
F. Lewis Marshall, Fauquier.
B. W. Leigh, Mecklenburg.

CLASS III.

Wagons, Carts, Harness, &c.

397. For the best wagon for farm use, $10 00
398. For the best dumping wagon, 10 00
399. For the best horse cart, 8 00
400. For the best ox cart with iron axle, 10 00
401. For the best wagon body, or ladder, for hauling wheat in the sheaf, or hay, or straw, may be exhibited by model, 5 00
402. For the best set of wagon harness, 5 00
403. For the best harness for horse cart, 2 50
404. For the best ox yoke, 2 50

Judges.

Charles Friend, Prince George.
Col. Joseph Tuley, Clarke.
Col. Isaiah Dabbs, Halifax.
E. R. Turnbull, Brunswick.
Fielding L. Taylor, Gloucester.

CLASS IV.

Rollers, Clod Crushers, and Farm Gate.

405. For the best smooth roller, $10 00
406. For the best pegged roller, to be exhibited by model, 10 00
407. For the best clod crusher, 10 00
408. For the best farm gate, including hinge and fastening, to be exhibited by model, 5 00

Judges.

John A. Scott, Farmville.
Julian C. Ruffin, Prince George.
Wilson Winfree, Powhatan.
Dr. Richard Haskins, Brunswick.
Dr. Richard Epps, Prince George.

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CLASS V.

Horse Powers, Threshers, Separators, &c.

409. For the best sweep horse power, $25 00
410. For the second best sweep horse power, 10 00
411. For the best threshing machine, 20 00
412. For the best machine for threshing, cleansing and separating wheat at one operation, 30 00
413. For the best machine for gathering clover seed, 20 00
414. For the best machine for hulling and cleansing clover seed, 20 00

Judges.

William Irby, Lunenburg.
James Beazley, Greene.
Thomas Bruce, Halifax.
W. H. Anderson, Prospect Depot.
John Haw, Hanover.

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CLASS VI.

Straw and Root Cutters, Corn Shellers, Mills, &c.

415. For the best hay or straw cutter for horse power, $10 00
416. For the best hay or straw cutter for hand power, 5 00
417. For the best horse power cutter, for cutting cornstalks for fodder, 15 00
418. For the best corn sheller for horse power, 10 00
419. For the best corn sheller for hand power, 5 00
420. For the best grist mill for horse power, 10 00
421. For the best saw mill for farm use, 10 00
422. For the best corn and cob crusher, 10 00
423. For the best root cutter, 2 50
424. For the best steam boiler for cooking food for stock, 20 00

Judges.

S. S. Gresham, King & Queen.
Dr. Rob't A. Patteson, Littleton, N. C.
John Harris, Mansborough, N. C.
John Hunter, Louisa.
Dr. C. D. Everett, Everettsville, Alb.

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CLASS VII.

Fan Mill, Hay Press, Ditching Machine, &c.

425. For the best fanning mill, $10 00
426. For the best hay press, 15 00
427. For the best stump machine, 30 00
428. For the best ditching machine, 30 00
429. For the best rotary digger, 30 00
430. For the best steel spade fork, 2 00
431. For the best horse rake for hay, 5 00
432. For the best gleaner, 3 00
433. For the best brier hook, 1 00

Judges.

Henry Stokes, Prince Edward.
William C. Graves, Orange.
George Watt, Richmond.
John Taylor, Jr., Culpeper.
John C. R. Taylor, Albemarle.

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CLASS VIII.

434. For the most extensive and valuable collection of useful machines and implements exhibited and made at any one factory, whether including subjects for other premiums or not, a premium of $25 00

Judges.

Judge Thomas Ruffin, North Carolina.
Edwin G. Booth, Nottoway.
P. P. Nalle, Culpeper.
William J. Watkins, Charlotte.
John Rowlett, Petersburg.

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CLASS IX.

Miscellaneous.

435. For the best pump adapted to deep wells, $10 00
436. For the best water ram in operation, 10 00
437. For the best scoop or scraper, 10 00
438. For the best leveling instrument, suitable for draining operations, 10 00

439. For the best churn, $4 00
440. For the best sausage cutter, 2 00
441. For the best washing machine, 2 00
442. For the best sewing machine, 10 00
443. For the best machine for shearing sheep, 10 00
444. For the best tide gate or model of same, 10 00

Judges.

Edward Friend, Dinwiddie.
John G. Powell, Nottoway.
Dr. M. L. Anderson, Albemarle.
Frank P. Wood, Prince Edward.
Richard Stokes, Prince Edward.

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CLASS X.

Agricultural Steam Engine.

445. For the best steam engine, applicable to agricultural purposes generally, as a substitute for horse power, $25 00

Judges.

William Allen, Surry.
Edward H. Herbert, Princess Anne.
H. E. Shore, Nottoway.
William Benton, Jr., Loudoun.
Col. R. S. Neblett, (Bl'k Face,) Nottoway.

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CLASS XI.

Ploughing Match.

446. For the best ploughman with horses, $10 00
447. For the second best ploughman with horses, 5 00
448. For the best ploughman with steers, 10 00
449. For the second best ploughman with steers, 5 00
450. For the best dynamometer, 10 00

Judges.

Edward A. Marks, Prince George.
William Michaux, Powhatan.
William H. Turnbull, Dinwiddie.
Dr. William J. Cheatham, Amelia.
Robert M. Taylor, Henrico.

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CLASS XII.

Trial of Ploughs.

451. For the best 2 horse plough, adapted to the section in which trial is to be instituted, $20 00

452. For the best three or four horse plough, adapted to the section in which trial is to be instituted, $20 00

There shall be three separate trials of ploughs—one for the Tide-water, one for the Piedmont, and one for the Trans-montane sections of the State. These trials shall be held respectively, after due public notice, at such times and places as shall be appointed by the chairman of the Committee of Award for the section in which the trial is to be made.

The judges will award the premiums offered, only to such implements as may be deemed fully worthy of that distinction.

The relative merits of all the ploughs submitted for trial shall be tested upon each of the several points contained in the following scale, and full report thereof shall be made to the Executive Committee.

SCALE OF POINTS FOR PLOUGHS.

1. *Economy of Power*, or the least resistance to draught, according to depth and width of furrow, 20
2. *Facility in Changing the Set*, so as to give more or less land, or greater or less depth, without disturbing the proportionate width of furrow, and without alteration of harness, 10
3. *Steadiness of Action*, with as little labor to the ploughman as comports with the proper control and guidance of the plough, 10
4. *Adjustment of all the parts in harmonious relation to each other*, so that each shall duly perform its appropriate function, 15
5. *Effectiveness of Operation*, cutting a furrow, the width of which shall bear a due proportion to the depth thereof, and also cutting the furrow slice of uniform thickness, and lifting and turning it at the proper angle, with the least degree of friction, 25
6. *Strength, durability and simplicity of construction*, 10
7. *Price and facility, and economy of repairs*, 10

100

Judges.

TIDE-WATER.

James M. Willcox, Chairman, Charles City.
[The Chairman to choose his associates.]

PIEDMONT.

Richard H. Carter, Chairman, Fauquier.
[The Chairman to choose his associates.]

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TRANS-MONTANE.

Chas. Grattan, Chairman, Rockingham.
[The Chairman to choose his associates.]

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Class XIII.

Trial of Reaping and Mowing Machines.

453. For the best reaping machine, $25 00
454. For the best mowing machine, 20 00
455. For the best grain cradle, 5 00

Judges.

Tucker Carrington, Clarksville.
J. Randolph Bryan, Gloucester.
Thos. M. Bondurant, Buckingham.
James Vest, Louisa.
J. Marshall McCue, Augusta.

BRANCH V.

ORCHARD AND GARDEN PRODUCTS.

Class I.

Fruits and fruit trees.

456. For the best and largest variety of apples suitable for Southern raising, each labeled, $10 00
457. For the best and largest variety of pears, 8 00
458. For the greatest number of choice varieties of different kinds of fruit, 10 00
459. For the best and largest collection of apple trees, suitable for Southern raising, 10 00
460. For the best pear trees, 10 00
461. For the best peach trees, 10 00
462. For the best fig trees, 5 00
463. For the best grape vines, 5 00
464. For the best strawberry vines, 3 00
465. For the best raspberry plants, 3 00
466. For the best bushel dried apples, 3 00
467. For the best bushel dried peaches, 3 00
468. Model or drawing of the best kiln for drying fruit, 10 00

Judges.

Yardley Taylor, Loudoun.
Paul C. Venable, Mecklenburg.
Col. Wm. P. Tate, Greensville.
H. C. Williams, Fairfax.
Henry J. Smith, Henrico.

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Class 2nd.

Flowers.

469. For the largest and choicest collection of plants, $10 00
470. For the second best, 5 00
471. For the best and greatest variety of dahlias, 2 00
472. For the best twelve dahlias, 2 00
473. For the greatest variety of roses, 5 00
474. For the best twenty-five roses, 2 00
475. For the best and largest collection of chrysanthemums, 3 00
476. For the best floral ornament, 5 00
477. For the best hand bouquet, not more than eight inches in circumference, 2 00
478. For the best and largest collection of verbenas in bloom, 3 00
479. For the best and largest collection of evergreens, 5 00
480. For the best and largest collection of hardy flowering shrubs, 5 00

Judges.

Rev. A. J. Leavenworth, Petersburg.
Paul Lemoine, do.
Robert B. Bolling, do.
Thomas S. Gholson, do.
Dr. J. T. Pretlow, Southampton.

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Class 3rd.

Vegetables.

481. For the largest and best assortment of table vegetables, $10 00
482. For the best dozen long blood beets, 2 00
483. For the best dozen head of cabbage, 2 00
484. For the best dozen cauliflower, 2 00
485. For the best dozen broccoli, 2 00
486. For the best dozen carrots, 2 00

487. For the best dozen egg plants, 2 00
488. For the best peck of onions, 2 00
489. For the best dozen parsnips, 2 00
490. For the best bushel of Irish potatoes, 2 00
491. For the best bushel of sweet potatoes, 2 00

Judges.

Wm. Ayres, Petersburg.
Joseph Sinton, Henrico.
Henry Irvin, Norfolk.
Thomas Gentry, Prince George.
James R. Read, Dinwiddie.

BRANCH VI.

Butter, Cheese, Bacon, Honey, &c.

CLASS 1st.

BUTTER AND CHEESE.

492. For the best specimen of fresh butter, not less than ten lbs., 10 00
493. For the second best specimen of fresh butter, not less than five pounds, 5 00
494. For the best firkin or tub of salted butter, not less than 6 months old, 10 00
495. For the second best firkin or tub of salted butter, not less than 6 months old, 5 00
496. For the best cheese, not less than 20 pounds, 10 00

The method of making and preserving the butter and cheese to be stated by the exhibitor.

Judges.

Daniel Lyon, Petersburg.
T. M. Ambler, Fauquier.
Ed. O. Watkins, Chesterfield.
Wm. C. Hume, Orange.
W. B. Ross, Culpeper.

CLASS 2d.

Honey, Bee Hives, and Bacon Hams.

497. For the best specimen of honey, not less than ten pounds, 5 00

The honey to be taken without destroying the bees—the kind of hives used, and the arrangement of the bees to be stated by the exhibitor.

498. For the best bee hive, 10 00
499. For the best ham, cured by exhibitor, $8 00
500. For the second best, 4 00

Manner of curing to be described by exhibitor, and the hams exhibited to be cooked.

Judges.

Alex. Garrett, Richmond.
John F. Whitfield, Powhatan.
Wm. B. Green, Dinwiddie.

BRANCH VII.

Household and Domestic Manufacture.

HOUSEHOLD MANUFACTURES.

CLASS 1st.

501. For the best quilt, 5 00
502. For the second best quilt, 4 00
503. For the best counterpane, 5 00
504. For the second best counterpane, 4 00
505. For the best pair home-made blankets, 5 00
506. For the best home-made carpet, 5 00
507. For the best home-made hearth-rug, 3 00
508. For the best set home-made curtains, 5 00
509. For the second best set home-made curtains, 3 00
510. For the best piece, not less than 7 yards home-made negro shirting, 3 00
511. For the best piece, not less than 10 yards, winter clothing for negroes, to be woven by hand, 5 00
512. For the best piece, not less than 10 yards, heavy woollen jeans, to be woven by hand, 5 00
513. For the second best piece not less than 10 yards, heavy wollen jeans, to be woven by hand, 3 00
514. For the best piece linsey, not less than 7 yards, to be woven by hand, 5 00
515. For the second best, 3 00

Judges.

A Committee of Ladies.

CLASS 2d.

516. For the best fine long yarn hose, 3 00

517. For the best fine long cotton hose, $3 00
518. For the best silk hose of home-made silk, 5 00
519. For the best specimen of home-made wine, 5 00
520. For the best home-made bread, 5 00
521. For the best home-made pound cake. 3 00
522. For the best home-made sponge-cake, 3 00
523. For the best varieties home-made pickles, 3 00
524. For the best varieties home-made preserves, 3 00
525. For the best varieties home-made fruit jelly, 3 00
526. For the best 5 pounds maple sugar, 5 00
527. For the best sample home-made soap, the process of making to be described by the exhibitor, 5 00

Judges.

A Committee of Ladies.

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LADIES' ORNAMENTAL AND FANCY WORK.

Class 3d.

528. For the best specimen of embroidery, 8 00
529. For the second best, 6 00
530. For the best specimen of worsted work, 8 00
531. For the second best, 6 00
532. For the best specimen of crochet work, 8 00
533. For the second best, 6 00
534. For the best specimen of wax work, 8 00
535. For the second best, 6 00
536. For the best specimen of shell work, 8 00
537. For the second best, 6 00
538. For the best specimen of ornamental leather work, 8 00
539. For the second best, 6 00
540. For the best specimen of block work, 8 00
541. For the second best, 6 00
542. For the best specimen of knitting, 8 00
543. For the second best, 6 00
544. For the best specimen of netting, 8 00
545. For the second best, $6 00
546. For the most extensive variety of useful, ornamental and fancy work, not excluding articles which may have had premiums awarded them under any of the above specifications, 10 00

Judges.

A Committee of Ladies.

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DOMESTIC MANUFACTURES.

Class 1st.

547. For the best flour of white wheat,
548. For the best flour of red wheat, Certificate of Merit.

Judges.

David H. Branch, Petersburg.
Andrew Kevan, do.
Asa M. Janney, Richmond.
Branch T. Hurt, Petersburg.
Wesley Grigg, do.

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Class 2d.

549. For the best manufactured tobacco, Certificate of Merit.

Judges.

Nathaniel Blick, Petersburg.
Geo. P. Holman, Fluvanna.
William Martin, Henry,
V. Witcher, Pittsylvania.
Samuel Williams, Petersburg.

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Class 3d.

550. For the best pair of bed blankets,
551. For the best pair of servant's blankets,
552. For the best of piece woollens,
553. For the best of piece cotton cloth.
554. For the best piece of cloth or webbing, suitable for horse collars and harness,
555. For the best and greatest variety of coarse, strong, and cheap shoes,
556. For the best and cheapest wool hats,
557. For the best collection of coarse wollen fabrics for farm purpose,

Certificate of Merit.

558. For the best and cheapest negro brogues, 10 00

Judges.

T. M. Leitch, Buckingham.
James M. McNutt, Farmville.
James P. Marshall, Charlotte.
Col. D. A. Weisiger, Petersburg.
Josephus Hurt, do.

BRANCH VIII.

Honorary Testimonials to each individual of Virginia who, previous to 1859, has discovered or introduced, or brought into use any principle process, or facility generally, or any improvement by which important value has been gained for the Agricultural interests of Virginia.

Judges.

N. Francis Cabell, Nelson,
William C. Rives, Albemarle.
Wm. B. Harrison, Prince George.
Thos. J. Randolph, Albemarle.
R. M. T. Hunter, Essex,
John Todd, Isle of Wight.
J. Mayo, Westmoreland.
Wm. S. Simpson, Petersburg.

BRANCH IX.

Class 1st.

Special Premiums for any useful subjects not embraced under any of the foregoing heads.

559. Discovery in Virginia of mineral phosphate of lime in sufficient quantity to be valuable for sale and distant transportation as manure, a premium of $50 00

If more than one claimant, the most valuable discovery to have the award.

Judges.

Julian C. Ruffin, Prince George.
Fielding L. Douthat, Charles City.
Wm. S. Simpson, Petersburg.

Class 2nd.

560. For the successful and economical application, in actual operation, of steam-power to tillage purposes, as a substitute for team or animal power—to draw or work plows, harrows, rollers, clod-crushers, or any substitutes thereof, operating either to break, subvert, or pulverize the soil, or otherwise to prepare it for putting in seed, or for the production of crops on level or moderately undulating land—a premium of $500

As conditions necessary for competing for or obtaining the above premium: It shall be required by the judges that full trials shall be made of the implements or machines offered, in practical labours and performance, and for as much time, before or after the annual exhibition as shall be deemed proper by the committee of award. Also that the operation shall be considered economical and profitable, and more so than the use of team labour for the same purposes, and on fields not less than fifty acres of size.

Should there be more than one machine competing for this premium, it will be awarded to the best, (if deserving it by sufficient merit,)—or if two be deemed deserving and of equal claims of merit, the premium shall be divided equally between them.

Any person designing to compete must notify the Secretary of the Society (at Richmond, Va.,) of his intention at least forty days before the Exhibition, and he will then be notified when and where (on James river,) the machine must be brought and tried. It must also be exhibited on the Fair Grounds during the Exhibition of the Society.

Judges.

Wm. B. Harrison, Prince George.
Wm. C. Knight, Nottoway.
Robert Douthat, Charles City.
John A. Selden, do.
Richard Irby, Nottoway.
Wm. W. Gilmer, Albemarle.
Edmund Ruffin, Jr., Prince George.

Class 3rd.

561. For the best plan of preserving wheat from the time of harvest until it is sent to market, including shocking, stacking, and securing against weavil—to have been tested by satisfactory personal experience, and to be accompanied by full and accurately written descriptions and drawings, if necessary, $50 00

Judges.

The Executive Committee.

CLASS 4th.

562. For the best dozen baskets of different kinds, made in Virginia, of Virginia grown material, $5 00

563. For the best set of plantation hampers and baskets, not less than three in number, 5 00

Judges.

James C. Gates, Chesterfield.
Henry Cox, Henrico.
Wm. C. Jones, Surry.
Thos. Jones, Richmond County.
Col. Alex. Fleet, King & Queen.

BRANCH X.

DISCRETIONARY PREMIUMS.

Judges.

Richard Irby, Nottoway.
Henry T. Garnett, Westmoreland.
Dr. W. H. Perry, Lunenburg,
Alex. Donnan, Petersburg.
B. Johnson Barbour, Orange.

American Hydraulic Cements.

Not many years ago all the roman and hydraulic cements used for our public works were imported from England, but at present very little foreign cement is employed, as our engineers consider the American superior in quality for most purposes. One reason for this preference is the freshness of the home product; it can always be procured when newly ground, whereas foreign cement becomes somewhat impaired in its energy by its transport across the ocean, where the atmosphere is very humid. By exposure to a humid atmosphere, hydraulic cement absorbs carbonic acid and moisture, which injure its adhesive and *quick-setting* qualities. Messrs. Delafield & Baxter, Wall-street, this city, who manufacture the famous Rosendale hydraulic cement, inform us that it will keep for a year or more in tight barrels lined with paper, as they put it up, when protected from a moist atmosphere. They have also furnished us with information in preparing this cement for use, which we know will be useful to many of our readers. As it sets rapidly on exposure and under water, it should only be mixed in such quantities as are required for immediate use; a sufficient quantity of water is employed to make it into a paste of moderate thickness, care being exercised to wet it thoroughly. The sand most suitable for mixing with it should be free from organic and other impurities, and should consist of fine, sharp grains of silica. The use of sand in cement and mortar is to prevent rapid shrinkage, also exposure of the cement on a greater surface; its office is a mechanical, not a chemical one. Experienced engineers in charge of public works usually mix their cement in the proportion of one part of cement to one and a half or two of sand. Others sometimes mix three or four parts of sand to one of cement. All cements (mortars also) should, if possible, be prepared under cover, to prevent their drying too rapidly in warm weather. The stone or brick to be cemented should be free from dirt and well moistened, otherwise they will absorb the moisture from the cement, and prevent the adhesion of its particles during the process of crystallization.

Hydraulic cement is chiefly useful as a mortar for works under water, and for walls of buildings under ground. In making concrete foundations with it, one and a half parts of sand to one cement should be made up to the consistency of good mortar, and one measure of it to three of broken stones or brick are about the proper proportions that should be used. The whole of the concrete should be laid as rapidly as possible, and finished in sections, well rammed, so as to have the whole work formed into one solid mass, and of an even surface, before it sets, when it should be left undisturbed until it hardens; and if it is exposed in a dry place, it should be moistened occasionally with a little water. Very cold weather is injurious to the energy of cement; in northern latitudes it loses energy during a low temperature, and remains inert until the return of warm weather. Inexperienced persons unacquainted with this fact have condemned the best cements by applying them in the wrong season.—*Scientific American.*

Animalcules have been discovered so small that 1,000,000 would not exceed a grain of sand, and 500,000,000 would sport in a drop of water; yet each of these must have blood vessels, nerves, muscles, circulating fluids, etc., like large animals.

Proceedings in the Laboratory.

By PROFESSOR ANDERSON, M. D., *Chemist to the Highland and Agricultural Society of Scotland.*

ON THE COMPOSITION AND VALUE OF FISH-MANURE.

Some years since, public attention was directed to the large quantities of fish unsuited for human food, and of offal collected at the large fish curing-establishments existing in various parts of the coast. The good effects obtained by their application as manure by farmers in the neighbourhood, suggested the importance of converting them into a portable form, so as to insuro the use of that large proportion for which there existed no demand in their natural state; and it was pointed out that if this could be done, the supply of refuse fish might be greatly increased, it being at present a common practice among fishermen to throw into the sea all the inedible fish, whereas if a demand existed for them, they would all be brought to shore. The result of this suggestion was, that a large number of patents for methods of treating fish and offal were taken; but few, if any, of them have come into operation on the large scale, and, at all events, the manufacture has attained no extension, and the prospects of an abundant supply of manure from this source are at the present moment as distant as ever. The principal cause of this result appears to be the too great complexity of the methods of manufacture which were suggested, and which required, in many instances, expensive and complicated machinery, or too costly materials. The former of these is a difficulty of the most serious character, because there are few, if any, places where the supply of fish is sufficiently large to enable expensive machinery to be worked with profit; and the irregularity of the supply, and the total cessation of fishing, during a considerable part of the year, render it impossible to carry on the works with that regularity which is the soul of all manufacturing processes in which machinery is employed.

As a necessary consequence of these expensive processes, the cost of the manure produced was excessive; and farmers, contrasting it with guano and other manufactured manures, and finding that they were materially cheaper, naturally evinced a preference for those which they had been accustomed to use, and refused to give a price which would remunerate the manufacturer.

The failure of these processes, however, should not lead to the conclusion that it is impossible to convert fish into a dry manure, but should rather direct attention to the contrivance of simpler and easier processes. The truth is, that there has been a great deal of misunderstanding as to what is required to make such substances portable. The manufacturers are rarely familiar with the principles of the art they practise, and being strongly impressed with the importance of rendering manures soluble, have most commonly made treatment with sulphuric acid in some way or other a fundamental part of their process; whereas, in this case, at least, all that is requisite is to remove the water, and to reduce the dry residue to a pulverulent state. To effect this object, no complicated apparatus is necessary, all that is required being a stove or flat drying surface, heated either by a small furnace, with flues passing backwards and forwards, or by means of steam, the latter being preferable. A thin layer of the moist fish or offal being laid upon this, might be rapidly dried and converted into a proper state before putrefaction commenced, and a manure be produced which would have comparatively little smell. As regards its value, there is some difficulty in forming an opinion; but some guide may be afforded by reference to the composition of such manures of this kind as have appeared in the market, analyses of several of which have at different times been made in the laboratory. The first of them to which I shall refer are two samples made on the east coast of England, by a process, with the nature of which I am unacquainted They were found to contain:—

	I.	II.
Water,	9.77	12.15
Organic matter,	53.55	55.27
Phosphates,	4.72	6.44
Sulphate of lime,	1.63	1.71
Common salt,	26.49	22.29
Sand,	3.84	2.14
	100.00	100.00
Ammonia,	6.20	7.63

If we estimate these according to the plan used for guanos, then No. I. is worth about £4, 12s., and No. II., £5, 10s. per ton,—values which are certainly not very high. We must take into account, however, the

large quantity of common salt, which materially reduces the value; and if it were possible to exclude this substance, which we shall immediately see can be done, then the value of these samples would be about £5, 15s., and £6, 18s. respectively.

Another sample, the source of which I have been unable to ascertain, but which I believe to have been offered for sale in Liverpool, contained:—

Water,	7.55
Organic matter,	87.45
Phosphates,	0.55
Carbonate of lime,	0.45
Alkaline salts,	2.55
Sand,	1.45
	100.00
Ammonia,	7.29

The absence of common salt in this case, except to a very small extent in the alkaline salts, shows the possibility of producing a manure without that substance; but in this case the value is somewhat lower, owing to the trifling proportion of phosphates. It does not exceed £4, 16s. per ton. It is probable that in this case some charcoal or other organic matter had been mixed with the fish, with the view of its acting as an antiseptic during the process of manufacture; but on this point I am unable to speak positively.

The last sample to which I shall refer was manufactured on the Portuguese coast, whence it was imported into this country. It is of a totally different nature from the others, sulphuric acid having obviously been used to some extent in the process, and sulphate of lime apparently added as a drier. For this reason its value must be estimated on the same principle as that of a superphosphate, which indeed, it somewhat resembles in composition.

Water,	14.04
Organic matter,	27.77
Biphosphate of lime equivalent to 7.00 bone-earth made soluble,	4.48
Insoluble phosphates,	1.60
Sulphate of lime,	36.17
Alkaline salts,	6.14
Sand,	9.80
	100.00
Ammonia,	2.10

This manure is worth only £3, 16s. per ton, and this value is chiefly derived from the biphosphate of lime it contains.

Fish-manures have usually been offered for sale at from £8 to £9 per ton; and at this price there is obviously no inducement to buy them, and hence the failure of the manufacture. But it is still a question whether, setting aside all complex processes, and simply confining the process to drying the fish and offal, it might not be possible to produce a manure which could be sold at a price sufficiently low to create a demand. The point on which this must mainly depend, is the price at which the raw material can be obtained. At present we believe fish-refuse may be got for 8s. or 10s. per ton; and as it will require four or five tons to make one ton of manure, the raw material may be taken to cost about £2 per ton; and allowing the same sum for the cost of manufacture, the price at the works would be £4 per ton, which would be increased, by retailer's profit, &c., to £6 when it came into the hands of the farmer. This price would exceed the value of any of the samples of which the analyses have been given above; but then it is probable that the quality of the manure would also greatly exceed any of them; in fact, if properly manufactured, it can scarcely be doubted that a manure fully equal to that value might be produced. It is extremely desirable, for the interests of agriculture, that some trial should be made, so as to ascertain whether it be practicable to produce such a manure with profit. One thing, however, is certain, that if it is to be done at all, it ought not to be taken up as a separate branch of manufacture, but should be carried out by the fish-curers, who ought to convert their own refuse into manure. Any other plan involving, as it must necessarily do, considerable cost in transporting the raw material from one place to another, is not likely to succeed. On the coast of Scotland, there are many places where abundance of fish is to be obtained; and it is much to be desired that some enterprising persons could be found to make a trial of this manufacture.

ANOTHER DEATH FROM HYDROPHOBIA. A large dog, raving with hydrophobia, passed through the upper part of Orange, N. J., last week, biting a number of other dogs, several cows, and a little girl on the heel, lacerating it very much. Dr. Wm. Peterson was called, and opened her leg, using every effort to save her life, but was unable to effect a remedy, and she died.

From Jackson's Agriculture and Dairy Husbandry.

On Manures.

By repeated cropping, the best soils become exhausted of their fertile properties, while naturally indifferent soils require the administration of certain qualities, before they will yield a due return to the labors of the husbandman. There are, no doubt, soils so naturally rich in some parts of the world, that though used for twenty or more years in growing successive grain crops, they show no indication of impoverishment; yet even these must in time be exhausted, and therefore, in all circumstances, manures or artificial fertilizers, require the consideration of the husbandman. In our own country they are of the first importance.

Manures are of two classes, both of which have distinctive characters, and perform different offices in the economy of vegetation. The first of these comprehends all animal and vegetable decomposing matter, and is principally employed in feeding the plant, augmenting its size, and sustaining the vital energy. The second operates more on the soil and decomposing matter than in directly contributing to the support of the vegetable. The first kind has been called animal and vegetable, and the second fossil, manures. Under this second class are ranked not only lime, marl and gypsum, but sand, gravel and clay, so that all the meliorations which are effected on soil by blending and compounding the original earths, are compressed within its limits.*

The animal and vegetable manures, which are putrescent in their nature, are foremost in importance and dignity. They consist of certain elementary parts of animal and vegetable substances, elaborated by a natural chemical process in the course of the decomposition or decay of the bodies. The excrementitious matter, or dung of all animals, is no other than the remains of the vegetable or animal food which has been received into the stomach, undergone there a partial dissolution, and been thrown out as unserviceable for the further nutrition of the system. From this universal decay of organised matter, and its conversion into fluids and gases, it would seem that animal and vegetable substances, and excrementitious matter, are resolvable into each other, and are only different parts of the same original principles. The essential elements of them all are hydrogen, carbon and oxygen, either alone, or in some cases united with nitrogen. Conveyed by liquids or moist substances into the ground, these elements are sought for as nourishment by the roots of plants, and so form the constituent principles of a new vegetation. Inasmuch as flesh consists of a greater concentration of these original elements than vegetables, the manure produced by carnivorous animals (man included) is always more strong in proportion to its bulk than that discharged by animals who live only on herbage. Experience fully proves that all animal and vegetable manures are but varieties of one kind of principles; their actual shape and appearance being of much less consequence than the degree of strength in which these principles reside in them.

Whatever be the value of the elementary principles of manures, practically they are of no use as a manure till they are disengaged by putrefaction. Putrefaction or decomposition is a beneficent destroying principle in nature. If the animal or vegetable substance do not putrefy or decay, it is of no more use in the ground than a stone. For the sake of illustration, take a piece of peat. It is an inert vegetable mass, composed of successive layers of vegetation, and preserved from putrefaction by water, and certain antiseptic qualities in its substance. As it exists in this preserved condition, it is valueless as a manure; it can form only an unfermented and living dung-hill. But when we remove it from its native bog, expose it to the atmosphere, and artificially bring on decomposition, or destruction of the living fibre, its character is at once changed, and we realise what may possibly be a nutritious manure.

It may be further observed, that putrefaction is in every instance produced by the elementary principles being set at liberty either in a fluid or volatile state. If a quantity of stable-dung be piled into a heap, and freely exposed to all varieties of weather, it soon heats and emits a stream of vapor, which is often visible as a cloud over it. These vapors, and also the odors which it sends forth, are gases escaping, and the heap is constantly diminishing in weight and volume; at the end of six months, if there have been alternate moisture and warmth, not above a fourth of the original essential material remains to be spread on the field;

*Young's "Letters of Agricola."

there may be in appearance nearly as much substance, but it is comparatively of little value—the real manure is gone, and what remains is little better than a mass of unputrefied rubbish.

It may be safely averred, that no principle connected with agriculture is so little understood or thought of, as that which has been now mentioned. We therefore crave the most earnest attention to it by every reader of these pages. Generally speaking, the excrementitious matters thrown to the dung-hill are treated with perfect indifference as to the effects of exposure and drainage away in the form of liquids. It cannot be too strongly stated that this is a gross abuse in farming, which cannot be too speedily remedied. The putrescent steam contains the very essence of the manure, and should either be scrupulously confined within the limits of the dung-hill, or conveyed to fresh vegetable or earthy matter, that it may impart its nutritive qualities.

The earth is a powerful absorber of all the gases which arise from putrefaction, whether in solids or liquids. It is remarked, that the odor proceeding from the dissolution of organised matter never rises through the ground to assail the nostrils. A strongly dunged field, after being ploughed, sown and harrowed, sends forth a healthful and refreshing smell—a proof that all the putrid vapors, which otherwise would annoy us, are absorbed and retained for the nutrition of the crop. It is on this account that the poorest earth can be enriched in a very high degree by mere exposure to the gases of putrefaction. Put a layer of common soil along the top of a fermenting dung-hill, from twelve to eighteen inches thick, and allow it to remain there while the process is carrying on with activity, and afterwards separate it carefully from the heap, and it will have become impregnated with the most fertilizing virtues.*

A knowledge of this important truth has led to the practice of making compost dung-heaps, in which the valuable liquids and gases of different kinds of manure are absorbed by earth, or some other substance, and the whole brought into the condition of an active manure for the fields. Hitherto, it has been customary to speak of dung-hills, but there ought to be no such objects. The collection of manure from a farm-yard and offices, should form a dung-*pit*, not a dung-*hill*; and the manner of making and managing the contents of this pit on the best principles is well worthy of our consideration.

* Young's "Letters of Agricola."

FARM-YARD MANURE.

The situation of the dung-pit should be near the stables and cow-houses, and placed so low that all streams of urine from them should flow at once into it, so that nothing be lost. It may be three or four feet deep, and of a size proportionate to the stock of cattle usually kept by the farmer. It is not necessary that it should be built round with a wall, or have a perpendicular descent, as it may slope gently inwards, and deepen gradually towards the centre. It should, if possible, be covered by a roof, to prevent the action of the sun. If the bottom be found firm, impervious, and capable of containing the juices, no further trouble is requisite, and the work is complete; in many instances, however, it will be necessary to first puddle with clay, and then line the bottom with flag-stones. Into this pit, earth, with refuse straw, should be brought, and strewed over the bottom and sloping sides, to the thickness of from nine to twelve inches, and this will form an inferior layer to absorb all that portion of the liquid manure which naturally runs to the bottom. The pit is now prepared to receive all kinds of animal and vegetable manure, which, when brought, should always be laid evenly over the surface. In Scotland, such dung-pits are common, and in the course of accumulation, a young or wintering stock of cattle is allowed to go at large upon the whole; the animals being at the same time fed on a proper allowance of straw. Care is also taken to mix, in laying on, the dung brought from the cow-house, stable and piggeries, so that the rich excrement of the well-fed animals may be incorporated with that of a poor description from others. It is likewise of the utmost importance, though too frequently neglected, to convey to the pit the entire liquid refuse of the farm-yard, provided the quantity be not so great as to make it advisable to have a separate pit for its reception.

It is customary to cart away the material of the dung-pit at convenient opportunities, (usually during the frosts in winter,) to a place in the fields, near where it is to be used, and there pile it up in a quadrangular

heap of about four feet in height. * * * * It may, however, be stated, that for want of attention to principles already explained, such dung-heaps, by exposure for months to the weather, must lose some of their valuable properties. In every instance, the dung-heap in the fields should be placed in a hollow situation, with a substratum of earth, and should have a scattering of a few inches of earth over it, and around the sides, to keep in the volatile gases.

When the dung-pit has been thus emptied, it may again be progressively filled as before, and when it is carted out in any of the spring months, it will be found necessary to turn it once, or oftener, for the purpose of accelerating the decomposition of the strawy part of the mass. * * * *

In some parts of Yorkshire the farmers make their cattle eat a great part of the straw, and in Norfolk they convert nearly the whole of the straw into manure, by treading and laying it out to rot. No system is considered so impoverishing to the land, in the latter county, as that of giving straw for food, instead of applying it as manure. A medium course is doubtless the most approved, when it can be conveniently carried into effect. Cattle getting straw for both food and litter, will consume nearly three-fifths of it as food, and there will still remain a sufficient qantity to mix for manure; but if fed wholly on straw, although a large dung-hill may be produced, it will be found of less value.

When cattle get a proportion of turnips, and eat half of the straw, leaving the other half as litter, the manure will be pretty good. If they are in the course of being fattened upon turnips, or other food producing lax-dung and much urine, they will require three-fifths of the straw for litter, and these proportions will produce good manure. Ferns, thistles, ragweeds and other rank growing plants, before coming into seed, by being mixed in the dung-hill, will make a good augmentation to it.

We have been led to recommend the formation of dung-pits on the plan stated, both from a general conviction of their adaptation to the required purpose, and the examination of one constructed on the premises of an eminent agriculturist, the late Mr. Johnstone of Hillhouse, a few miles west from Edinburgh. Mr. Johnstone at one period had eighty cows, and the quantity of urine produced by them presented strong inducements for him to collect and apply it in the most economic method possible. He therefore dug out a dung-pit at a much lower level than the cow-houses, and the bottom of it was paved with stones. The plan pursued is to lay a good depth of earth, or more generally moss, in the bottom; at the mouth from which the carts take away the manure, a large quantity of earth is also laid, so that it may retain the fluid running towards the corner part of the pit. All the dung of the premises is regularly spread in the pit, and the urine, with other liquid refuse, is conducted in wooden pipes direct to the pit, by which none escapes in gutters. Besides, there is a large reservoir to receive the overplus liquid, when the dung and earth in the pit have been sufficiently saturated. Nothing, in fact, is allowed to be lost. When the dung is carted to the fields to form heaps for future use, it is there treated in a corresponding style of economy, on purpose to retain the moisture and fertilizing gases.

As straw is the basis of farm-yard dung, care should be taken to have it cut as close to the ground as possible; for it is evident that a few inches more of straw will ultimately increase the size of the dung-heap. It is calculated that for every ton of straw, three tons of farm-yard dung may be obtained, if properly managed. The weight of straw per acre runs from one to one and a half tons; and on an average of the different crops, about four tons of dung may be obtained from this. An acre of good turnips, with an adequate proportion of straw, is calculated to make upwards of sixteen cart-loads of dung; ten cart-loads, however, may be taken as a large average for these crops. Thus it may be presumed that two acres will manure one, and the land, without assuming any very great degree of fertility, should yield at least four tons of manure per acre. If due care be taken to add to this gatherings from the roads, and from refuse of every kind, the amount should be nearly sufficient for a full supply of manure once during every course of the four years' system of agriculture.

In applying manure, particular attention should be paid to free the land from weeds and stones, and properly to pulverize it; for it is only when in this state that manure will mix well with the earth. The time for manuring most common is at the conclusion of fallowing, or before the sowing of the fallow crops. If the land is manured alone

from the produce of the farm, ten or twelve tons per acre will be the most that can be allowed, if the management be a regular course of white and green crops. It will be found more advantageous to apply manure in smaller quantities at short intervals, than in larger quantities at long intervals. At whatever time the dung is applied, it should in the first place be scattered evenly over the land, and ploughed in as speedily as possible. Every instant in which it lies exposed to the air, it is losing its value.

LIQUID MANURE.

The value of the urine of cattle, as a manure, has been long known to the farmers in Belgium, who, by the proper management of this article alone, are able, with their inferior means and mechanism, to compete with some of the best of our farming establishments. Thirty years ago, (now forty,) the use of cattle urine was only beginning to be made known in this country. One of the earliest discoverers in this branch of rural economy was Mr. Charles Alexander, a farmer near Peebles, who describes his plan in a letter addressed to Sir John Sinclair in 1812, and which was published in the Farmer's Magazine. This intelligent agriculturist had been long impressed with the great importance of the urine of cattle as a fertilizer of the ground; and he set about to discover, by a well-conducted series of experiments, the best method of collecting and applying it.

He began by digging a pit contiguous to the feeding stall, but distinctly altogether from that which was appropriated for the reception of the dung. The dimensions of this pit were thirty-six feet square, and four feet deep, surrounded on all sides by a wall; and the solid contents were a 192 yards. Having selected the nearest spot where he could find loamy earth, and this he always took from the surface of some field under cultivation, he proceeded to fill it; and found, that with three men and two horses, he could easily accomplish twenty-eight cubic yards per day; and the whole expense of transporting the earth did not exceed £4, 16s. When the work was complete, he leveled the surface of the heap in a line with the mouth of the sewer, which conducted the urine from the interior of the building, on purpose that it might saturate the whole from top to bottom. The quantity conveyed to it, he estimates at about 800 gallons. The urine was supplied by fourteen cattle, weighing about thirty-four stones each, and kept there for five months on fodder and turnips. The contents of the pit produced 288 loads, allowing two cubic yards to be taken out in three carts; and he spread forty of these on each acre, so that this urine in five months, and from fourteen cattle, produced a compost sufficient for the fertilization of seven acres of land. He states further, that he had tried this experiment for ten years, and had indiscriminately used in the same field either the rotted cow-dung or the saturated earth, and in all the stages of the crop he had never been able to discover any perceptible difference. But what is still more surprising, he found that his compost lasted in its effects as many years as his best putrescent manures.

Since the period of these experiments, a better knowledge of composting from urine has prevailed. It is now well known that in all cases, moss, earth, peat, or any vegetable substance, is better than mere earth. If earth alone be employed, the process amounts to little less than a saturation, and nearly the same end could be gained by throwing rank urine upon the fields. If moss or any vegetable matter be employed, then the urine acting on the fibrous mass promotes fermentation and decomposition, and thus an additional value is given to the product. Mud dragged from the bottom of bogs or ditches, and replete with aquatic plants, or any other vegetable material, is therefore preferable to simple earth.

In the Flemish farm establishments, in which all the cattle are kept constantly within doors and stall-fed, the urine is collected into subterranean vaults of brick-work. These receptacles correspond in size with the extent of the farm and live stock, but in general they are about forty feet long, fourteen wide, and seven or eight deep. One aperture is left through which the urine and other ingredients are received, and another to pump it up by. As age and fermentation are found to add considerably to the efficacy of this manure, the best constructed cisterns are divided by a partition, with a valve to admit the contents of the first space into the second, where it remains till ready for use. The smallest of these cisterns will hold a thousand barrels of thirty-eight gallons each, and in that quantity, from two to four thousand cakes of rape seed, weighing two pounds each, will be

mixed, and frequently the matter from the common-sewers of the adjoining towns is added. The soil to which it is chiefly applied is that on which flax is grown, and the usual allowance is 2480 gallons, beer measure, to the English acre. It is stated that twenty-one acres upon a farm of 200, are abundantly manured for crops of flax and rape with the manure of forty-four head of cattle. So partial are the Flemings to liquid manure, that frequently after the farm-yard dung is fermented, they throw water upon it, and the washings of the manure are alone carried to the field. The earth immediately imbibes the liquid, which soon reaches the roots of the plants, and causes a rapid fermentation; whereas dung, in a solid state, is comparatively a long time before it fertilizes the soil. The straw, and other matter which remains after the dung is washed, is applied as manure for potatoes.

We do not by any means recommend the dissolution of dung in water, according to the last-mentioned plan of the Flemish farmers; but any method by which the liquid manure can be saved, receives our unqualified approbation.

Cattle fed upon common white turnips will each yield about two-thirds of the weight of the turnips in urine, or about a gallon for every twelve pounds; and it has been calculated, in Scotland, that the urine of six cows will enrich a quantity of land sufficient to top-dress an English acre of grass land. It has also been proved by experiment, that the quantity of urine passed by a moderate-sized person amounts to about half a gallon per day, which, by the Flemish mode of application, would be sufficient to manure half a rood of ground every year. Urine of every kind, when properly diluted with water, forms a food highly nourishing to plants. Sir Humphry Davy conceived that "it contains the essential elements of vegetables in a state of solution." His opinion, however, regarding the state in which it should be applied, is not in accordance with the practice of either China or Flanders, or of Mr. Johnstone of Hillhouse. Sir Humphry Davy says—"During the putrefaction of urine, the greatest part of the soluble animal matter which it contains is destroyed, consequently it should be used as fresh as possible." He again adds, "Though less active than fresh urine, it is a powerful manure." We were personally informed by Mr. Johnstone of Hillhouse, that from the circumstance of a considerable quantity of water flowing into his reservoir during rain, he considered the fermentation of it was necessary to increase the strength of the water and urine combined. In the advantage of mixing the urine with water, Sir Humphry Davy agrees; he says, "It should be diluted with water before being applied; because it contains too large a quantity of animal matter to form a fluid nourishment for absorption by the roots of plants."

Many farmers urge, as an apology for their negligence in not collecting fluid manure, that the washings of the farm-steading and dung-hill, though of a brown colour, are often so diluted with water as to be useless, and that carrying the water away from the dung-hill impoverishes it. The practice of Mr. Johnstone of Hillhouse was a direct reply to these objections. He allowed the urine of his live stock to flow over the dung, and to saturate the earth in front of it; and when this was effected, it escaped into the reservoir. The dung he applied to potatoes and turnips, and the liquid manure for the most part to clover grass. In one experiment, after a naked summer fallow, he reaped ten bolls of wheat per acre by it, the liquid being applied immediately before the sowing of the seed. He likewise tried it on oats and barley with considerable success; but the crops on which it acts most powerfully are clover and rye-grass.

Mr. Johnstone applied the manure at the rate of about 2400 gallons to the acre, being nearly the same as in Flanders; but from the want of rape cake, it is not so rich as the liquid manure of that country. In our presence he made his mower cut a swathe across an unwatered ridge of clover and rye-grass, and another corresponding swathe across the watered ridge immediately beside it, neither of the ridges being by any means at maturity. The swathe on the unwatered ridge weighed twenty pounds, and the swathe on the watered ridge weighed thirty-seven pounds, or nearly double. The succeeding crops, in the rotation of oats and turnips, have also when reaped, a most marked distinction as to strength and quality. He tried liquid manure upon young grass occasionally, from after harvest to April, but uniformly found the month of February, the best period for its application.

On a farm lately rented by Mr. Johnstone, belonging to Lord Meadowbank, the crops upon it, by the application of saturated earth and liquid manure alone, for some years previous to the expiration of his lease, were not surpassed by any in the neighbourhood. His successor, manuring his ground with dung alone, found his crops very deficient, and attributed their failure to the scourging effects which the saturated earth and liquid manure applied by Mr. Johnstone had ultimately upon the soil. But suppose turnips to be manured with saturated earth, only one crop intervenes between it and the application of liquid manure to young grass, which, as stated above, had a most beneficial effect. Now, it is a well known fact, that when a crop of clover is strong, the succeeding crop of oats will have a proportionate degree of strength. As only one crop intervenes between the application of saturated earth and urine, it is evident that this must produce a more fertilizing effect than only one application of putrescent dung to four crops. These are considerations worthy the attention of every individual whose interests are connected with the cultivation of the soil. There are many farmers in the neighbourhood of Edinburgh, where plenty of cow's urine is to be got at little expense, who now find it their interest to apply it to their young seedling grass in spring.

Liquid manure is no less valuable for the garden than the field. Sir George Staunton states, that the Chinese apply liquid manure to their fruit-trees, as contributing much to their growth and vigour. In many cities of that empire, it is sold in the streets for the purposes of garden culture, in quantities so small as an English pint. Columella relates, that in his time, "liquid manure had much improved the apples and vines of Italy." Its effects are highly beneficial to gooseberries and strawberries, when applied immediately before the breaking of the bud in spring. It makes potatoes, whether early or late, both large in size and very productive; the most efficacious time of applying it being in the drills, immediately before or after the brairding of the plants. The young shoots rapidly imbibe the nourishment, making the stems and tubers very luxuriant. They require no other manure; and a slight application is only necessary in the culture of the drills. To the cabbage and colewort tribe, it is equally valuable. We would impress on every cultivator of the soil, that it is for his own interest to collect this valuable liquid by every possible means; and as he has the experience of other countries to guide him, he need have no fears in applying it. There is no farmer but must have occasion to keep up the fertility of his land by the application of lime, bone-dust, rape-cake, and other ingredients, and a great part of this expense may be saved by collecting and applying what is absolutely wasting in his farm-steading.

NIGHT SOIL.

Such are the fertilizing effects of this manure, that it has been assumed the excrements of a man, when properly applied, can be made to produce sufficient corn and roots for his own support. This assertion is no doubt exaggerated, but the nourishment afforded by this manure is very great, and especially evident in the production of potatoes. From the fetidness of its smell, it is commonly allowed to become decomposed before being used, and vast quantities are carried off from large towns by sewers, and lost in the sea. It has been said that night soil communicates an unpleasant flavour to plants; but this objection can easily be removed, by mixing it properly with ashes or lime before being applied to the soil. In China, from the denseness of the population and from the labour being principally manual, it is the only manure in use, both for the garden and fields.

The night soil of Paris is now manufactured into cakes with a mixture of lime and ashes, and exported to Flanders and the Low Countries, where, after being converted into liquid manure, it is extensively used. It is particularly valuable as a top-dressing for grass lands. An instance of this is mentioned in the Norfolk Report, of a field newly laid down to grass, every part of which proved poor, except two acres on which four wagon-loads of night soil had been spread. The effect of the night soil was so great, that while the rest of the field was thinly covered, the grass on this part thickened and grew luxuriantly, and even in autumn had a fresh appearance. In Essex it is used mixed with five times the quantity of fresh earth. In applying it to potatoes and turnips, but a small quantity should be used, otherwise the plants will be apt to run

too much to stem and leaves. When plowed alone with a shallow furrow into soil, the grain has been known to run directly to straw, its immediate effects are so violent; but this does not continue beyond the first year. Night soil is sold in London at fifteen shillings a wagon-load of ninety bushels.

ASHES.

Coal ashes and cinders have little fertilizing effects in themselves; but being obtained principally from large towns, they are mixed with night soil and vegetable and animal refuse, and thus make valuable manure, especially for turnips. In cold poor clay soils, their effect is very stimulating, producing fine crops of wheat, barley, oats, and grass, but they are inferior as a manure for potatoes. The ashes of turf and timber, mixed in the same manner with animal and vegetable refuse, have nearly the same effects as the ashes of earth and peat, which we will allude to when treating of paring and burning. In the Low Countries and in England, the ashes of peat are used extensively, and with good effect, as a top-dressing for clover. The ashes in the highest repute in England are those made at Newbury in Berkshire. From the saline matter contained in the Dutch ashes, and the washings of chalk in those of England, they may be said to be rather mineral than vegetable manures.

Soot is a refuse of different kinds of fuel, and its strength is in proportion to the quality of the materials from which it is produced. It is used extensively around Edinburgh as a top-dressing for seedling grasses, being sown by a machine made for the purpose. Rye-grass is supposed to reap a greater benefit from its application than clover. The soils on which it has the most efficacious effect are said to be light gravel, limestone, and chalk, and it has been proved in Mid-Lothian to be of great use on cold clay soils sown with grass. It is sometimes sown with wheat and oats, to prevent the ravages of the wire-worm; and upon turnips, immediately after the brairding of the plants, it has had very beneficial effects. We have seen it applied on a field of potatoes, which had become sickly and yellow in colour, but with little apparent good. Soot may assist the crops amongst which it is more immediately applied, but its benefits will extend very little beyond the first year.

BONE-DUST.

Bones, which have now become a very important manure, are composed of earthy salts, chiefly phosphate of lime, with a little carbonate of lime, phosphate of magnesia, and about one-half of decomposable animal matter. Those of fat young animals are allowed to be the best.* They are less beneficial for clay lands than light soils, and less efficacious in wet than in dry seasons. In the improved districts of Scotland, bone-dust is coming into very general use as a manure for turnips, and mills for crushing bones are general in many parts of the country. There has been no improvement in Scottish agriculture so universally adopted as that of applying bone-dust to land intended for the production of turnips, and it seems better qualified than any manure hitherto tried for bringing waste land into cultivation. It is light and can be carted to a great distance at little expense, one wagon load of 100 bushels being found nearly equal to 40 cart-loads of farm-yard manure. It is asserted by some, that its efficacy remains during the whole rotation, and even after it. On pastoral farms it will be found exceedingly useful; as, raising a better crop of turnips, it will greatly improve the condition of the stock.

In corroboration of the above remarks, we quote the following:

"A farmer obtained a forty years' lease of a tract of poor land in a high situation near Rockdale in Lancashire, on which, after fencing and draining, he erected a bone-mill, and began manuring the land at the rate of from 100 to 130 bushels per acre. The consequence of this was, that he let off, in a few years, more land than paid the rent of the whole, and retained a large farm in his own hand."†

In the wolds of York and Lincoln shires, it is stated that "before bones were extensively used in turnip husbandry, many

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* The following table gives the ordinary proportions of the ingredients composing bone-dust:—

Earthy and saline matter,	40	parts in 100.
Cartilage and jelly,	40	
Fatty matter,	20	

† Journal of Agriculture.

thousands of acres were annually sown for that crop without any manure whatever. Turnips upon such unmanured land were consequently very indifferent, and the benefit of feeding sheep on their tops was very trifling. But since the use of bones has become general, the turnip crop has increased tenfold. All the succeeding grain crops have been much larger, and upon the four or five shift system, there is no doubt the land will go on progressively improving, requiring a less quantity of bones annually, from its increased fertility and power.*

From experiments made regarding the efficacy of bone-dust contrasted with farm-yard dung, on soils of a light sandy nature, the result has been uniformly in favour of the first, one and a half tons of bones being equal to twenty tons of dung. To ascertain the effects of large and small quantities, from 20 to 100 bushels per acre, in various amounts, have been applied, and it has been found that the crops are not increased when laid on beyond a certain quantity. By being applied in large quantities, although not immediately beneficial, bone-dust has been found to render land extraordinarily productive for a great length of time. We quote the following rules for its application:

"1. On dry lands, limestone, chalk, light loams, and peat, bones are highly valuable manure. 2. That they may be applied to grass with great good effect. 3. That on arable lands, they may be laid on fallow for turnips, or used for any other subsequent crops. 4. That the best method of using them when broad-cast, is previously to mix them up in compost with earth, and let them lie and ferment. 5. That, if used alone, they may be either drilled with the seed or sown broad-cast. 6. That bones which have undergone the process of fermentation, are decidedly superior in their immediate effects to those which have not been fermented. 7. That the quantity should be about twenty bushels of dust, or forty of large bones, increasing the quantity if the land be impoverished. 8. That upon clays and heavy loams, it does not yet appear that bones will answer. On this latter observation, however, a farmer near Nantswich in Cheshire remarks, that he "occupies a farm in the township of Pickmore, the soil of which is a clay loam scarcely twelve inches deep, the subsoil a gray sand mixed with coarse clay, on a bed of good clay marl. Two years ago he covered a field with bone manure, previous to which the grass was so sour as not to be worth ten shillings an acre; but it is now full of most excellent herbage, consisting of white clover and trefoil.' To this he adds, 'that on another of his fields with a clay soil, a small portion of it was manured thirty-two years ago by a former tenant with bones, and that although it has been twenty years in tillage, yet that part still shows a superiority over the rest.' At Clumber Park, the seat of the Duke of Newcastle, 600 bushels of small bones were in 1822 spread upon 24 acres of grass land in the dairy farm, consisting of dry, sandy, and gravelly soil, which had been laid down about ten years. Their effect upon the pasture improved the condition of the cows so materially, that about twice the quantity of butter was made from them as from cows grazed on land of a similar quality, but not boned; and this effect, it is said, still continues. The time for laying them upon the land as a top-dressing to grass, whether seedling or pasture, is generally recomended to be early in spring. Seeing that the fertilizing quality of bones is improved by fermentation, it has led to the supposition that they may be usefully applied in compost with earth and other substances; by this mixture it has been found from experiment that they soon become decayed and pulverized. It is stated in the Doncaster Report, 'that this method of using bones in the formation of composts is recommended by several intelligent farmers, thirteen of whom, solely from their own experience, describe its effects as superior to those of bones used singly. With some of these, it is the practice to mix fifty bushels of bones with five loads of burnt clay, or good earth per acre, by which dressing, the crops between fallow and fallow, except clover, appear to be increased one-fifth in value.'"*

Taking into consideration the great and increasing demand for bone as a manure, and the immense quantity of land under cultivation by it, it may be expected that the demand will soon exceed the supply. This, however, will only be for a limited

* British Husbandry.

* British Husbandry.

period; for if the demand continues, it may be anticipated that the importation of bones from South America, Africa, Australia, and many Asiatic countries, will yet form an important branch of commerce. By the application of bone dust, large quantities of waste land may be brought into use for dairy husbandry, and the cultivation of grain in consequence will be increased.

Among the substances which can be applied as manure, the following may be enumerated:—Hair, horn, woollen rags, oil and rape cake dust, sea-ware, kelp, refuse fish, blubber, train oil, &c. But, as well remarked by Professor Low, "it is not necessary to specify all the substances which can be applied as manures. The law is of general application, that all animal and vegetable substances can be used for this purpose; and the province of the farmer, therefore, is carefully to collect every substance of nature which comes within his reach, and if it does not of beneficial application in its separate state, to form it into a compost, or mingle it with the general mass collected in the farm-yard."

In concluding these notices of the various kinds of putrescent and nourishing manures, it is necessary to explain, that there is a limit beyond which manuring would be more hurtful than beneficial to land, at least as respects grain crops. If the fields be over-saturated with the rich juices of manure, the grain crop is apt to be injured, in much the same manner as a human being contracts disease by over-luxurious feeding. The crop being apparently unable to secrete the juices placed in the land for its use, it becomes affected with parasitical fungi, which develope themselves in the blades of the plant, and ultimately destroy the vegetation. This is observable in the case of *rust* in wheat, a disease arising, as is believed, from an over-fertile state of the soil. We shall afterwards give this subject the attention it deserves, in our section, on the Diseases of Crops; and, meanwhile, content ourselves with recommending, that manure should not be applied either in a too lavish or niggardly manner, but to that extent which will put the land in good heart, or in a properly balanced condition.

SALINE MANURES.

Common sea salt, when judiciously administered in moderate quantities on arable land, at the time of fallowing, has been found of great value for its manuring and cleaning properties. It promotes fertility, is a remedy against smut, preserves the seed from vermin, and is particularly useful in increasing the produce of grass crops. It is understood to act as a stimulus to vegetation, by enabling the roots of plants to take up more nutriment in a given space of time, and to perform their secretions and depositions with increased energy. From twenty to thirty bushels of salt are sufficient to sow per acre on fallow land, and to incorporate with the soil during subsequent processes of plowing and harrowing. In some instances, pasture and barley tilths are greatly improved by scattering upon them from twelve to sixteen bushels per acre; this will, at least, most effectually destroy all snails, slugs, and eggs of insects, on the land.

Lately, saltpetre and nitrate of soda have been warmly recommended as fertilizing and cleansing manures. On this subject we beg to subjoin the following extract from the letter of a correspondent in the Farmers' Magazine, dated February, 1840:

"Some time since, inquiries were made by some of your correspondents relative to the use of saline manures; those inquiries have not been replied to in a way likely to be satisfactory to the parties requesting information. I am induced in consequence, though not accustomed to such public exhibition, to offer a few plain remarks for insertion in your very useful Magazine, if you think them worthy of a place therein; the only recommendation in my power to give them is, that they are the results of ten years' experience of a plain practical farmer.

"Ten years ago I purchased fourteen pounds of saltpetre, and applied it to two stitches, or warps, (as we call them in Kent,) of corn, one of wheat and the other of oats; in about ten days, the effect produced was distinctly visible in the deeper green colour of the corn, and in a month, if the situation of the fields would have admitted it, the two warps might have been easily distinguished at the distance of a mile; at harvest the corn was about a foot higher than the adjoining warp, on which no petre was put. This was done about the first of May; the petre was sown on the corn, and nothing more done to it; the land a stiff, heavy, close soil. The follow-

ng year I purchased a ton, and applied it o wheat in the month of April, putting it n one warp and omitting one in several ields of similar soil to that mentioned above, nd the result was equally favourable. The ext year I purchased several tons, and mong other experiments applied it to one arp of wheat, being about the sixth part f an acre, doing nothing to the other part f the field; the warp with the petre was eaped by itself, and the adjoining one, ithout petre, was also reaped by itself; oth were carted and thrashed separately. he warp with petre yielded six and a half allons of wheat and four trusses of straw nore than the other, the soil as before, and he quantity of peter used one hundred eight per acre, sown on, and nothing more one to it afterwards; the other land on hich the petre was put appeared equally enefitted.

"I have continued to use saltpetre from he above time to the present, increasing ny purchases: last year, 1839, I bought bout twenty tons, which was put on nearly 00 acres of wheat, being about three-ourths of my whole growth, and I have no eason to regret the outlay. I have not sed nitrate of soda before last year, when purchased one ton, and put it on the oorest field then in wheat, on which o manure had been previously put, con-aining twelve acres, sowing with it one arp in two, at a cost of 57s. per acre; on he other warp was put saltpetre, amounting o the same sum per acre; the result was fine piece of wheat, but the warp with itrate of soda was decidedly the best.

"I have now, sir, thus far given you my oings with petre, &c., and will now en-leavour to answer such questions as would robably suggest themselves to me, suppos-ng myself the inquirer; in doing which it vill not be necessary to travel through all hat has led to the conclusion arrived at: aving no object but the public good, you nay rely nothing shall be offered intention-lly wrong."

The following practical observations and irections are added:

"I have used from half a hundred-weight to two hundred-weight per acre. The intelligent farmer will readily deter-mine, from the state of his field, the ap-pearance of his crop, &c., the best quantity o put on, not exceeding the greatest men-tioned.

"As soon after the 25th of March as the land is dry enough to bear a horse well, and when the weather is fine, and has been so for a few days, as long after and as soon before a shower as may be, is best; it may be applied for a month after the above time with success.

"It should be sown like corn. Late experience induces me to say, lightly harrow the land after sowing, if wheat, if oats, dispense with the harrowing; in either case, leave it rolled down. If it is desirable to sow clover, or any other artificial grasses, it may be done at the same time the petre is sowed, and both harrowed in together; the small seeds will be assisted by the petre in getting out of the way of the fly.

"Wheat will most likely yield the best profit, for this obvious reason, a slight improvement in that crop amounts to the greatest sum, other corn not being so valuable. It is particularly useful to wheat that has expended itself during a mild growing winter; such wheat seldom goes on well without some assistance; gets bunchy, and generally much scattered. The application of petre will in most cases prevent the above and carry it through; in this case a large quantity is necessary, but should not be applied until the first symptoms of declining present themselves in the wheat.

"Oats are much resisted by the application of petre, and will, through increase of crops, pay for doing, next to wheat.

"Barley, (I grow but little,) as far as my experience will enable me to say, it does less good to than to oats.

"Beans, in my land, receive but very little benefit from petre.

"Peas—The same results as beans.

"Tares, in some instances, have been much benefitted, in others but little; cannot recommend turnips; never saw it applied to them.

"Clover—The increase of crops not sufficient to repay the outlay.

"Grass land or meadow—The same remark as above.

"Nitrate of soda may be sown in the same way as rough petre. From observation, and one year's experience, I should think nitrate of soda will answer every purpose of rough peter, at less than three-fourths of the expense—my purchases of soda will consequently be greater this year than last."

For the Southern Planter.

Apples.

WINCHESTER, Va., Aug. 11th, 1859.

MR. EDITOR:

Permit me to correct an error of friend Taylor's, (in June No.) respecting my Apple. I am well acquainted with the Ross Green. There are some old trees in my neighbourhood of this fruit, but nurserymen have ceased to propagate it. My Apple is not the Ross Green, but decidedly a superior fruit in every respect. The original tree is standing upon the farm of Mr. John Hott, about eight miles north of Winchester. As friend Taylor concedes the right to me to name the Apple, I had some idea of calling it the "Hottentot," but feared the compliment would appear equivocal; but "what's in a name?—an Apple by any other would *eat* as sweet." And from the extraordinary keeping qualities of this Apple, if it is not precisely the same variety that Sir Isaac made all his calculations by, I have strong reason to believe it identically the same that Dido found the bee in, because I have noticed that bees, wasps, and hornets are "dre-ful" upon them.

Yours respectfully,

H. M. BAKER.

An Atmospheric Dryer.

A substance capable of drying the walls and the atmosphere of damp houses is important and valuable. Such a substance is the chloride of calcium. It is a salt which has such an affinity for moisture, that it attracts no less than 124 parts of water for every 100 parts of itself, from the atmosphere or other sources. It will even dry damp clothes if placed near them in a room, and will remove the sweat from damp walls of buildings. As damp houses are generally unhealthy, causing chills and fevers and rheumatism, it is a most useful substance, we believe, for the remedy of such evils. If placed in sheet-iron pans in close proximity to damp walls, it soon becomes saturated with the moisture, and, as a consequence, the walls soon become dry. A moderately dry atmosphere is undoubtedly the best preservative, in cold weather, against sudden chills, and it is well known that a damp atmosphere feels more chilly than a dry one, even when the latter is several degrees lower in temperature. It is also very dangerous for any one, and especially a person predisposed to lung diseases, to sleep in a damp apartment. Now, to remedy the difficulty, take one pound of dry chloride of calcium, spread it upon an iron pan, and it will soon absorb the moisture, and render the room safe and comfortable. In many cases it may thus be employed as an excellent sanatory agent, and it is for this reason we direct public attention to it. It may also be used over and over again by driving off the water which it absorbs, by heating the iron pan containing it over a fire.

Scientific American.

Carats Fine.

The term *carat* or *karat*, originally designated an Abysinian bean. Being very uniform in size, and undergoing scarcely any loss by drying, they came to be used as the standard of weight in Africa for gold, and in India for diamonds. Each carat was divided into 4 grains, of which 74 are nearly equal to 72 grains troy. This system of carats and grains is still used in the valuation of diamonds. But in the case of gold, the term *carat* implies, not so much any actual weight, as a fractional division, of which 24 go to make a unit. *Twenty-four carats fine* expresses the unity of pure gold, and signifies, not the specific weight of any given mass, but only that, in the 24 imaginary parts into which it may be supposed to be divided, there is no alloy.

The gold assayer takes his unit or *integer* 6 or 12 grains troy. This small quantity is most convenient for purposes of assay, and these particular numbers are used for convenience of calculation. This 6 or 12 grains is called, by the English assayer, an *assay pound*, and is, by him, divided into 24 carats, and each carat again into quarters and sixteenths. The assayer of silver takes 18 to 36 grains troy for his assay pound, and divides it into 12 ounces, each ounce into 12 pennyweights, and these again into half pennyweights—making, for the silver assay pound, 480 divisions or *reports*. On the continent of Europe the division of the assay pound for gold is different from the English.

In the English mint, the term carat expresses no given weight, but merely degrees of fineness, of which 24 indicates purity.

The carat is sub-divided into quarters, and these again into eights, making to each carat 32 parts, 768 of which represent pure gold.

These varying, complicated and arbitrary systems are the relict of an age which delighted in intricate and perplexing mysteries. They are gradually yielding before the scientific demand for uniform and universal formulæ. Instead of each trade having its own peculiar weights and measures, there must come to be one standard for all business, and ultimately one for all the leading nations of the earth. Instead of one measure for cloth, another for length, and a third for land; one measure for wine, another for beer, and another for grain; one weight for the apothecary, and another for the grocer; one standard for France, a second for England, and a third for America, there will be one uniform standard for all, based upon the *decimal* system.

Richmond Dispatch.

Benefit of Drought on the Soil.

A drought acts upon the moisture in the earth as follows: During dry weather, a continual evaporation takes place from the surface soil, above that supplied by rain and dew, which creates a vacuum (so far as the water in the surface soil is concerned,) that is at once filled by water rising from the subsoil—extending deeper and deeper as the drought continues and the moisture is exhaled—a circulation of water in the earth the reverse of that which takes place in wet weather. This progress to the surface of the water in the earth, manifests itself strikingly in the drying up of springs and wells, and streams which are supported by springs.

Not only is water thus brought to the surface of the earth, but also all that the water holds in solution. There are salts of lime and magnesia, of potash and soda, or indeed whatever the subsoil or top strata of the earth may contain. The water on reaching the surface is evaporated, but leaves behind its lime and potash, its phosphates, silicates, carbonates, and salts—all indispensable to the growth of the vegetable products of the farm. Rain water, as it falls, will dissolve but a very small portion of some of those substances; but when it sinks into the earth, it then becomes strongly imbued with carbonic acid from the decomposition of vegetable matter in the soil, and thus acquires the property of readily dissolving minerals on which before it could have little effect.

Several experiments tried by Prof. Higgins, go to show this action of drought in bringing mineral waters from a depth to the surface of the soil. In one case he placed a solution of chloride of barium in the bottom of a glass cylinder, and then filled it with dry soil. After long exposure to the rays of the sun, the surface of the soil was tested with sulphuric acid, and gave a copious precipitate of sulphate of baryta. Chloride of lime, sulphate of soda, and carbonate of potash, were experimented upon in like manner, and upon the application of proper tests, the surface of the soil showed their presence in large quantities, drawn up by the rising of water from underneath, as in the case of drought.

The parched earth—all vegetation dwarfed and withered by the heat—seems suffering under a curse, but it is only an affliction for the present—"a blessing in disguise" for the future. "The early and latter rain," may produce at once abundant crops, but dry weather is needed to bring to the surface from the depths of the earth, where else it would be forever unemployed, food for future harvests. It is Nature's ordinance for keeping up the fertility of the cultivated soil.—*Country Gentleman.*

Plants in Rooms.

In the crowded city, amid its dust, smoke, turmoil and troubles, it is pleasant to find a memento of the country in the opening rose and the modest daisy. When we see a pot of flowers adorning the window of a room, however humble in appearance the domicil may be, the feeling arises spontaneously in the mind that they are fostered by the gentle hand of some one whose tastes are true and tender. A few words on the culture of plants in rooms may be beneficial to many persons at this particular season of the year. They should be placed in a situation where they can receive an abundance of light and air; otherwise they will become sickly. Exposure to the dews at night (where this can safely be done in cities,) then taking them in next morning, greatly promotes their health.

Plants are frequently injured by injudicious watering. Some persons seem to sup-

pose that deluges of water afford a sure remedy for all the evils to which plants are subject. This is a mistake. True, they require a considerable amount of moisture, but not one half the quantity which is oftentimes applied. Evening is the best time to water them, and in every case, cold water from a cistern or a pump should be avoided. The water should be warmed by exposure to the sun, or in some other manner, up to the temperature of the atmosphere before it is used. Many plants are greatly retarded in their growth by cold water being poured upon them. The quantity to be applied varies with the size and nature of the flower; the ground should be thoroughly moistened, but not soaked. If the leaves should become infested with insects, some tobacco juice, mixed with water and sprinkled over them, will soon destroy these. The great feature in cultivating plants, to promote their health, is that which is equally efficacious with human beings—cleanliness.—*Scien. Amer.*

Value of Scientific Instruction to Farmers.

No mistake is more common than to suppose that science means scholastic puppyism. Every practical farmer who understands cause as well as effect, is a scientific farmer. Indeed, every man, whatever may be his calling, who understands what he performs, and does not blindly follow mere empirical recipe, is a scientific man; while those who do not, are simple quacks. A mere farm-laborer, who works like a machine, obeying orders, is valuable as a laborer; but it is a great error to call such an one a practical farmer, simply because he can handle a tool and show warts on his hands. Science means knowledge reduced to a system so as to be easily taught and readily understood; and any farmer, whatever may be his expertness as a plowman, who cannot tell why he plows, except by answering, that crops grow better from such practice, makes a mistake when he calls himself a practical farmer. He should understand so much of nature's laws as to avail of them most profitably; and those who speak of errors in the application of chemistry or natural philosophy to farming, as science, do not know the meaning of the term.

By referring to our definition, it will readily be seen that no such thing as a scientific error can exist. It is the absence of science that causes errors, and not its practice. If nature's laws were clearly understood, what farm would be without under-drains? What field would be manured with inappropriate substances not deficient in the soil, and not required by the crops? Who would believe that redundant amounts of ammonia were more valuable than inorganic constituents in a proper state of progression, such as are found in the ashes of every plant? Who would repudiate the subsoil plow or an under-drain? Who knows that under-drained soils never suffer from drouth, and that sub-soiled meadows never run out, and who clearly understands the causes why these *two* facts always prevail?—*Working Farmer.*

The Old "Red Cent."

As the "old red cent" is about being called in some of our cotemporaries are writing its history and obituary. The cent was proposed in 1782, by Robert Morris, the great financier of the revolution, and was named by Jefferson two years later. It began to make its appearance from the mint about 1792. It bore then the head of Washington on one side, and thirteen links on the other. The French revolution soon after created a rage for French ideas in America, which put on the cent, in lead of the head of Washington the head of the Goddess of Liberty—a French Liberty—with neck thrust forward, and flowing locks. The chain on the reverse was replaced by the olive wreath of peace. But the French Liberty was short-lived, and so was her portrait on our cent. The present staid, classic dame, with a fillet around her hair, came into fashion about thirty or forty years ago, and her finely chiseled Grecian features have been but slightly altered by the lapse of time.

A Farmer's Story.

At the Woodbury plowing match, a few days ago, Mr. John Daw told the following anecdote:—Having drained a field where nothing had ever grown before, I was standing near looking at a crop I had there, when a neighboring farmer came up and said to me, "That is a bootiful crop! how did ee get it, sur?" I replied, "Brains." (Laughter.)—"Wat! manure the field wi' brains?" (More laughter.) The fact was, I had drained the field; so I said, "Yes." (Renewed laughter.) He replied, "Lord, your honor, where did ee get um?" (Roars of laughter).—*Shelbourne (Eng.) Journal.*

Plaster or Gypsum.

The precise manner in which it acts upon plants has never been accurately ascertained. It is quite probable, nevertheless, that it enters into a reciprocal but rather slow action with the humus contained in the soil to which it is applied, and this latter substance decomposes the acid of the gypsum, and forms carbonic acid, or, perhaps, some more compound substance. On this subject a late writer remarks: "It is not as yet known what is the nature of the matter thus formed, and, in all probability, never will be, on account of the rapidity with which it decomposes. It is probable that the sulphur, thus deprived of oxygen, blends with the lime, and with a portion of the hydrogenated carbonic; and that this combination produces the fetid odor which is disengaged when the gypsum is combined with substances in a state of putrefaction. From all appearances we are led to believe that this carbonic acid and its new combinations are peculiarly adapted for the nourishment of certain plants. Hence it happens that the effect of gypsum is proportionate to the quantity of humus contained in the soil over which it is spread. To the practical agriculturist, it is of comparatively little consequence how gypsum acts, so long as its application is known to produce certain beneficial results on specific crops. Many of the hypotheses, presented in explication, are doubtless erroneous. Dr. Franklin and Judge Peters were early advocates for the use of plaster, but it was a long time before they succeeded in convincing the farmers of Pennsylvania of its utility. This was effected in the following manner. A quantity of finely pulverized plaster was taken by Franklin to a side hill, in the vicinity of Philadelphia, and there applied on a field carpeted with young grass, in such a manner as to distinctly represent the letters composing the words, 'THIS HAS BEEN PLASTERED.'"

The effect was very soon apparent, the superior vigor and luxuriance of the grass where the plaster had been applied rendering the sentence traced on the field distinctly legible at the distance of many rods. In compost, gypsum is of great value. Its affinity for ammonia renders it a powerful fixer of that product of putrefaction, and is one of the most valuable articles that can be used to obviate the losses consequent upon the excessive fermentation of stable and other putrescent manures in the spring The composition of gypsum, according to Buckhottz, is thirty-three parts in one hundred of lime, forty-three of sulphuric acid, and twenty-four of water of crystallization. It requires four hundred and sixty-one and a half parts of water to dissolve one part of gypsum; but it may here be remarked that the data relative to this point vary considerably, scarcely any two specimens of the mineral giving precisely similar results.

Scientific Artisan.

To Preserve Ice and Always Have Ice Water.

Mr. Editor—Prepare a double green baze or blanket or flannel bag in the shape of a pudding bag. It may be lined inside, to keep the fuz out of the water, with a layer of muslin, and covered outside with any material for show. Put a sufficient quantity of ice in a pitcher of water and cover it with this bag; it preserves the ice better than any other mode, and if you use ice enough, you may always have cold water. I have covered my ice water in this way at bed-time, and found ice in the pitcher in the morning.

I got the idea or pattern from an Irish gentleman many years ago, and named the article Paddy's Night Cap. It is better than any patent ice pitcher, and can be made for a mere trifle.

Remarks.—If a small quantity of ice is put into a pitcher of water it melts rapidly, but a large quantity soon reduces the temperature of the water, so that it acts as a preserver of it with a cold medium, and in this way, under "Paddy's Night Cap," it is better preserved than in an ice pitcher.

Philada. North American.

Coffee, its Cost and Culture.

It is believed by many that coffee can be cultivated in some of our Southern States as successfully as in Brazil, Java and Jamaica; if so, it is high time that some of our planters were entering upon its culture, as it costs our country no less than $15,500,000 annually for the beans of this plant.

The coffee-tree lives to a great age, provided that the land is kept well drained. The trees begin to bear when three years old, and is at its full bearing when seven years old. The tree is allowed to grow in height from six to seven feet; the top

branches are pruned off when the tree is five years old, so that by the time it is seven it resembles a spread umbrella. Each branch droops downwards, and thus gives the pickers a good chance to pick the berry. The coffee-tree in Brazil bears two crops each year, the large crop in spring, and the small one in the fall. The first crop is picked when the berry is red, resembling a cherry. The second crop is in general small, and allowed to remain on the tree until fully ripe and dry. This crop, cured in the husk, is far superior in quality, and is called "pearl coffee." The blossom is beautiful, small and tender. It remains on the tree from three to four days. If the weather is warm, with showers, during those few days, the crop is sure; if cool at nights, it often fails. When the berry is taken home from the field it is carried to a mill-house. The mill consists of three small rollers. The berry is put into a hopper, and a constant stream of water falls on the rollers during the time the mill is at work. By this process the outside hull is taken off and the berry is separate from it, and the coffee falls into a brick tank, where it is washed perfectly clean, and then put on a place covered with tile or brick raised in the centre, that the water may drain. It is then taken to the curing loft, where it is turned four times a day, until the husk is crisp and dry. Then by putting it through large fanners the inside hull comes off, and leaves the berry ready for hand-picking for market.—*Scientific American.*

Woman in the Garden.

Much in these days is said about the sphere of women. Of this vexed question, we have nothing now to say. The culture of the soil, the body and the soul, are our themes. Rich soils, healthy bodies, pure, cultivated souls, these are what we are aiming at. And to this end we recommend that every country woman have a garden that she keep and dress with her own hand, or at least, that she supervise and manage. The culture of strawberries, raspberries, blackberries, gooseberries, currants and garden vegetables are as delightful and profitable as anything in which woman can engage. She may sprinkle her garden well with flowers. All the better for that. A snow-ball in this corner, a rose in that, a dahlia bed there, and a moss border here, will not be out of place. Only let the substantial and useful constitute the chief part. A touch of the ornate, like a ribbon on a good bonnet, is not in the least objectionable. In all the schools the girls study botany. In families the women ought to practice botany. It is healthful, pleasing and useful. The principles of horticulture are the principles of botany put into practice. Farmers study agriculture, why should not their wives and daughters study horticulture? If any employment is feminine, it would seem that this is. If any is healthy, this must be. If any is pleasurable, none can be more so than this. A rich bed of strawberries, a bush of blackberries or currants, a border of flowers produced by one's own hand, what can well afford a more rational satisfaction? We say to all our country sisters, have a garden, if it is only a small one, and do your best with it. Plant it with what pleases you best, with a good variety, and see what you can do with it. What woman cannot raise beets, tomatoes, melons, onions, lettuce, and furnish her own table with them? What woman cannot plant a raspberry bush, or currant, or gooseberry, and tend it well? Come, good women, study your health, your usefulness and happiness, and your children's also.—*Valley Farmer.*

Sanitary Precautions.

In the height of summer all persons are especially called upon to look around their dwellings, and consider whether there is not something unfriendly to health that might and ought to be removed without delay. Constant attention is requisite, that nothing offensive be suffered to remain within doors. Liquor in which vegetables have been boiled, soap-suds, dirty water of every kind, should be immediately thrown away; also cabbage-stalks, potato-peeling, and offal of every kind. The liquor in which greens have been boiled, if suffered to remain even a few minutes, or thrown down a scullery drain, emits a most unpleasant and unwholesome smell, which pervades the whole house. Many very cleanly people are not attentive to this particular. Among other things that require attention, fallen leaves should be frequently swept up and properly disposed of. In doors every room should be swept and dusted daily, care being taken not merely to make a decent surface, but thoroughly to cleanse under beds, drawers, tables, and other furniture, and to clean out all closets and lumber holes.

Tobacco and its Uses.

Some time since Blackwood published a curious article on tobacco and other narcotics. The paper is very lengthy, and gives an interesting history of the much used and greatly abused weed. The consumption in this country is immense. In Europe, from the plains of Castile to the frozen Archangel, the pipe and the cigar are a common solace among all ranks and conditions. In vain was the use of it prohibited in Russia, and the knout threatened for the first offence, and death for the second. In vain Pope Urban VIII. thundered out his bull against it. In vain James I. wrote his "Counterblaste to Tobacco." Opposition only excited more general attention to the plant, awakened curiosity regarding it, and promoted its consumption. So in the East; the priests and Sultans of Turkey and Persia, declared smoking a sin against their holy religion, yet, nevertheless, the Turks and Persians became the greatest smokers in the world. In Turkey the pipe is perpetually in the mouth; in India all classes and both sexes smoke; in China, the practice is so universal, that "every female, from the age of eight or nine years, wears as an appendage to her dress a small silken pocket, to hold tobacco and a pipe." It is even argued by Pallas, that the extensive prevalence of the practice in Asia, and especially in China, proves the use of tobacco for smoking to be more ancient than the discovery of the New World. "Amongst the Chinese," he says, "and amongst the Mongol tribes who had the most intercourse with them, the custom of smoking is so general, so frequent, and has become so indispensable a luxury; the tobacco purse affixed to their belt, so necessary an article of dress; the form of the pipes, from which the Dutch seem to have taken the model of theirs, so original; and lastly, the preparation of the yellow leaves, which are merely rubbed to pieces and then put into the pipe, so peculiar—that they could not possibly derive all this from America by way of Europe, especially as India, where the practice of smoking is not so general, intervenes." The largest producers as well as the greatest consumers of tobacco, are the people of the United States—the crop of 1850, according the last census, amounting to two hundred millions of pounds. One of the remarkable circumstances connected with the history of tobacco, is the rapidity with which its growth and consumption have increased, in almost every country since the discovery of America. In 1662, the quantity raised in Virginia—the chief producer of tobacco on the American shores of the Atlantic—was only sixty thousand pounds; and the quantity exported from that colony in 1689, only one hundred and twenty thousand pounds. In two hundred and thirty years, the product has risen to nearly twice as many millions. The extension of its use in Great Britain may be inferred from the fact, that in 1689 the total exportation from the United Colonies to England was one hundred and twenty thousand pounds—whereas it now averages about thirty millions pounds annually. To this might be added the contraband, as the heavy duty of three shillings per pound is a great temptation to smugglers.—*Lynchburg Virginian.*

Pleasant Homes.

The homes of America will not become what they should be, until a true idea of life shall become more widely implanted. The worship of the dollar does more to degrade American homes than anything else.

The chief end of life is to gather gold, and that gold is counted lost which hangs a picture on the wall, which buys a toy or book for the eager hand of childhood. Is this the whole of human life? Then it is a mean, meagre, and most undesirable thing. A child will go forth from a stall, glad to find free air and a wider pasture. The influence of such a home upon him in after life, will be just none at all, or nothing good. Thousands are rushing from homes like these every year. They crowd into cities. They crowd into villages. They swarm into all places where life is clothed with a higher significance; and the old shell of home is deserted by every bird as soon as it can fly. Ancestral homesteads and patrimonial acres have no sacredness; and when the father and mother die, the stranger's money and the stranger's presence obliterate associations that should be among the most sacred of all things.

I would have you build up for yourselves and for your children a home that will never be lightly parted with—a home which will be to all whose lives have been associated with it, the most interesting and precious spot on earth. I would have that home the abode of dignity, propriety, beauty, grace,

love, genial fellowship and happy associations. Out from such a home I would have good influences flow into neighborhoods. In such a home I would see ambition taking root, and receiving all generous culture. And then I would see you, young husband and young wife, happy. Do not deprive yourselves of such influences as will come through an institution like this. No money can pay you for such a deprivation. No circumstances, but those of utter poverty, can justify you in denying these influences to your children.—*Timothy Titcomb.*

Origin of the Horse.

The native country of the horse cannot with certainty be traced. He has been found, varying materially in size, in form, and in utility, in all the temperate, in most of the sultry, and in many of the northern regions of the Old World.

In the sacred volume, which, beside its higher claims to stand at the head of the Farmer's Library, contains the oldest authentic record of past transactions, we are told that, so early as 1650 years before the birth of Christ, the horse had been domesticated by the Egyptians. When Joseph carried his father's remains from Egypt to Canaan, "there went up with him both chariots and horsemen." One hundred and fifty years afterwards, the horse constituted the principal strength of the Egyptian army. Pharaoh pursued the Israelites with "six hundred chosen chariots, and with all the chariots of Egypt."

If we could believe the accounts of the uninspired historians, Sesostris, (the monarch probably whom Joseph served,) had twenty-seven thousand chariots of war; and Semiramis, the founder of Babylon, had one hundred thousand chariots, and a million of horsemen; but this was probably a great exaggeration.

Fifty years after the expulsion of the Israelites from Egypt, and in 1450 years before the birth of Christ, the horse was so far naturalized in Greece, that the Olympic games were instituted, including chariot and horse races. We have, therefore, sufficient evidence that the horse was, at a very early period, subjugated to the dominion of man, and unfortunately, for the worst of purposes—the business of war.

From the records of the Old Testament, we are likewise enabled to ascertain the precise period of time, when in Egypt and Canaan, and the neighboring countries, this animal began to be domesticated. Nineteen hundred and twenty years before the birth of Christ, when Abraham, having left Haran, in obedience to the Divine command, was driven into Egypt by the famine which raged in Canaan, Pharaoh offered him sheep and oxen, and asses and camels. Horses would doubtless have been added, had they existed, or had they been subdued in Egypt.

When fifty years afterwards, Abraham journeyed to Mount Moriah, to offer up his only son, he rode upon an ass, which, with all his wealth and power, he would scarcely have done, had the horse been known.

Thirty years later, when Jacob returned to Isaac with Rachel and Leah, an account is given of the number of oxen, sheep, camels, goats and asses, which he sent to appease the anger of Esau, but not one horse is mentioned.

It is not until twenty-four years after this, when the famine devastated Canaan, and Jacob sent into Egypt to buy corn, that horses are first heard of. "Wagons," probably carriages drawn by *horses*, were sent by Joseph into Canaan to bring his father to Egypt. It would seem, however, that horses had been but lately introduced, and were not numerous, or not used as beasts of burden; for the whole of the corn, which was to be conveyed some hundred miles, and was to afford subsistence to Jacob's large household, was carried on asses.

It appears, then, that about 1740 years before Christ, horses were first used in Egypt; but that they soon afterwards became so numerous as to form a considerable portion of the Egyptian army; and when the Israelites returned into Canaan, the horse had been introduced and naturalized there; for the Canaanites "went out to fight against Israel with horses and chariots very many."

The sacred volume, therefore, clears up a paint upon which no other record throws any light—namely, the period when the horse first became the servant of man, at least in one part of the world, and that, the most advanced in civilization, and before Greece was peopled. A long time must have elapsed before man was able to ascertain the value and peculiar use of the animals that surrounded him. He would begin with the more subordinate—those which were most easily caught and most readily

subdued; and the benefits which he derived from their labors would induce him to attempt the conquest of superior quadrupeds. In accordance with this, the writings of Moses show us that, after the ox, the sheep, and the goat, man subdued the ass, and last of all, the horse became his servant; and no sooner was *he* subdued, and his strength and docility and sagacity appreciated, than the others were comparatively disregarded, except in Palestine, where the use of the horse was forbidden by divine authority, and on extensive and barren deserts, where he could not live.

When Sir Geo. Ousely traveled through Persia, and the different countries of the East, he examined, among other relics of antiquity, the sculptures on the ruins of Persepolis, and he draws from them a curious and interesting conclusion as to the manner in which the horse was gradually subdued. "There are no figures," says he, "mounted on horseback, although some travelers have mentioned horseback among those sculptures. One would think that the simple act of mounting on a horse's back would naturally have preceded the use of wheel-carriages and their complicated harness; yet no horsemen are found at Persopolis; and we know Homer's horses are represented in chariots, from which the warriors sometimes descended to combat on foot, but the poet has not described them as fighting on horseback. The absence of mounted figures might authorize an opinion that those sculptures had been executed before the time of Cyrus, whose precepts and example first inspired the Persians with a love of equestrian exercises, of which, before his time, they were wholly ignorant.

From Egypt the use of the horse was propagated to other and distant lands; and, probably, the horse himself was first transmitted from Egypt to several countries. The Greeks affirm that Neptune struck the earth with his trident, and a horse appeared. The truth is, that the Thessalonians, the first and most expert of the Grecian horsemen, and likewise the inhabitants of Argos and Athens, were colonists from Egypt."

Library of Useful Knowledge.

Cotton in England.

Cotton, as a raw material, admits of being wrought into garments for the poor at the low sum of twelve cents per pound weight; whilst a single pound of long staple cotton, worth eighty-five cents, can be made to furnish employment and wages to the extent of one thousand dollars for the rich. The material for a full dress of outer garments, if composed of wool, would cost not less than eight dollars, whilst the same quantity of material for cotton, and of more durable quality, would be two dollars to two dollars and a half. The laborer's wife may purchase a neat and good cotton for eight cents per yard, making a dress for fifty-six cents.

The cheapness and utility of cotton have commanded for it a preference which is almost universal, not only for decorations and clothing but for bookbinding, as a substitute for leather, and for other purposes. The waste cotton made during the process of manufacture, is wrought into coarse sheets and bed-covers, which are sold at from twelve to eighteen cents per pound. The residue of the waste is used for the manufacture of paper, the cleaner portion being for writing paper, and the sweepings from the floors of factories supply a large proportion of the paper mills of Lancashire with the raw material of the paper which is used for printing books and newspapers.

An advance of one English penny in the price of cotton amounts to twenty millions of dollars a year. The present stock in Liverpool is only equal to the consumption of three weeks. That from Africa, last year, would run the entire English mills just *one hour!* The entire failure of a cotton crop would entirely destroy, and perhaps forever, all the manufacturing prosperity England possesses; a reduction of the crop from three to one million of bales, would reduce the manufacturing and trading classes to irretrievable ruin; millions would be deprived of food, and, as a consequence, Great Britain would be involved in a series of calamities, politically, socially and commercially, such as cannot be contemplated without dismay.

In view of this state of things the manufacturers have formed themselves into a Cotton Supply Association, for the purpose of diffusing information on any new point for the culture of cotton. But they have already ascertained that obstacles exist, local or political, which would render it inexpedient to raise the necessary capital for an investment; they are looking eagerly, anxiously, to Africa and India; in the former there can be no hopes for immediate results. The remodification of the Government of India may possibly produce a change, and great

efforts will now be made to do something practical in the way of European settlers, tenure of land, improved modes of transit and bounties for encouragement.—*Horticulturist.*

How the Chinese Make Manure.

In connection with our remarks, last month, about poudrette, we wish to state how the Chinese manage the manure-heap. It has often been the wonder of farmers in this part of the world, how the Chinese, with but few domestic animals, have been able to keep their lands in a high state of fertility, and to sustain such an immense population. We do not now wonder so much, when we know what pains they take in the saving and manufacture of manures.

Having very few horses or cattle, and therefore little barn yard manure, they save all the human excrements. And not only the solid parts, but the liquid, which, being diluted with water, they apply to the roots of all growing plants. The country people visit the cities and large towns regularly, and carry off the contents of privies and urinals at a stipulated price, which they make into poudrette, somewhat in the manner we have formerly specified. The publicity of "necessaries," and the unblushing display of chamber vessels everywhere, at first shock Occidental sensibilities; but custom and the usefulness of the fertilizing materials thus saved, soon reconcile one to the singular usage.

Oil-cake is another of their manures, made from a bean. This bean is crushed, then steamed, and an oil pressed from it, and the cake which remains becomes an excellent fertilizer. It is often used in a liquid form, having been broken up and steeped, and then reduced by the addition of considerable water.

The Chinese use the sediment collected from the bottom of their canals, for manure. They dig large pits, into which they throw successive layers of canal mud, weeds, straw, garbage and all corruptible matters. When a pit has become full, it is cleaned out, and filled again in the same way, so that, in the course of a year, a large quantity of compost is secured. Nor is that all. Ashes of all kinds are preserved, and used with the greatest economy. The hair from the barbers' shops are saved, and sold at so much a pound. Boys go about the streets, with rake and basket, gathering up everything which can be converted into manure, certain of finding ready sale for it.—*American Agriculturist.*

Managing Windows for Air.

There is always a draught through keyholes and window crevices, because as the external air is colder than the air in the room we occupy, it rushes through the window-crevices to supply the deficiency caused by the escape of warm air up the chimney. If you open the lower sash of a window, there is more draft than if you open the upper sash. The reason of this is because if the lower sash be open, cold air will rush into the room and cause a great draft inward; but if the upper sash be open the heated air of the room will rush out, and of course there will be less draft inward. A room is best ventilated by opening the upper sash, because the hot vitiated air, which always ascends towards the ceiling, can escape more easily. The wind dries damp linen, because dry wind, like a sponge, imbibes the particles of vapor from the surface of the linen as fast as they are formed. The hottest place in a church or chapel is the gallery, because the heated air of the building ascends, and all the cold air which can enter through the doors and windows keeps to the floor till it become heated.

Special attention should be given to the ventilation of sleeping-rooms; for pure air, and abundance of it, are, if possible, more necessary when we are asleep than when we are awake. Sleeping-rooms should be large, high and airy, more especially in warm latitudes, and in situations where the windows have to be kept closed at night on account of malaria.—*Scientific American.*

Betsy Baker's Bonnet.

The collection in the rooms of the Rhode Island Society, for the encouragement of domestic industry, has received an interesting addition—a bonnet braided by Mrs. Betsy Baker, in exact imitation, braid, shape and trimming, of the first straw bonnet ever braided in this country. Sixty-one years ago, when this venerable lady was a blooming maiden, she determined to have a straw bonnet, not knowing any other way to get it than to braid it herself, Miss Betsy Metcalf, that was her maiden name, saw an imported dunstable straw bonnet in Col.

Whipple's store, and being a true Yankee girl, she set herself to work to imitate it. The interesting memoir upon straw braiding, contributed by Judge Staples to the last volume of the Transactions of the Domestic Society, shows how she succeeded. With no instruction, without the opportunity of unbraiding a specimen of the work to see how it was done, she persevered until she made a bonnet that was the envy of the other girls. Thence sprung a business which to day employs 10,000 people, and turns out 6,000,000 bonnets and hats annually, in the single State of Massachusetts.—*Prov. Journal.*

For the Southern Planter.

Important to our Agricultural Community.

As the season for saving the corn crop approaches we would call the attention of Planters in every section of the country to whom the transport by navigable rivers is available, and indeed of all, to the opening of a market for a portion of the produce which the majority of them have hitherto little better than wasted, namely, their shucks, which are frequently left on the stalk. If the object to which we allude be cherished, it will become an important source of revenue to them.

It should always be the policy of the Planter to encourage the consumption of his products in manufacturing processes, though it be a portion of his provender, because, whatever portion can be used for other purposes than provender, will necessarily enhance the value of the remainder; and with very little extra exertion he can double his product of provender. We therefore urge upon their consideration the propriety of devoting all their shuck crop to manufacturing purposes. Let it be remembered that every barrel of corn will yield from 50 to 60 lbs of shucks. And we understand that parties are making arrangements to prosecute very extensively the preparation of shucks for mattresses, and will shortly be prepared to contract for all that can be delivered to them in New York or this city. They are now making arrangements to be able to supply the best and cheapest Baling Presses to all who are disposed to put them up for them.

HENRICO.

Box Edging.

Few people except professed gardners, know how this handsome border ornament ought to be planted. It is usually stuck in a few inches and left struggling on the top of the ground, with three or four times as much *top*, and three or four times less *bottom*, than it ought to have. Box grows nearly as well from the branches as the roots. Now, the trench in which the edging is to be planted should be full spade deep on the border side, being a few inches shallower on the alley side—the soil should be made fine—and the box inserted to the bottom of the trench, packed in tightly with soil, leaving only from one-and-a-half to two-and-a-half inches out of ground. There will be no danger of it not growing, or producing full foliage at the ground. Of course no one would think of planting box without a *line*.

Trimming box edging is rarely performed either skilfully or judiciously. Instead of cutting off the top squarely, and below the preceding year's growth, let it be pruned to an angle, like the letter A, taking care not to cut below the new growth, and you will, through the whole season, have a beautifully green, thrifty edging.—*Germantown Telegraph.*

Another Cure for Hydrophobia.

A correspondent of the St. Louis *Republican*, says:

"Eighteen years ago my brother and myself were bitten by a mad dog. A sheep was bitten at the same time. Among the many cures offered for the little boys, (we were then ten or twelve years old,) a friend suggested the following:

"Take the root of the common upland ash, peel off the bark, and boil it to a strong decoction; of this drink freely. Whilst my father was preparing the above, the sheep spoken of began to be affected with hydrophobia. When it had become so fatigued from its distracted state as to be no longer able to stand up, my father drenched it with a pint of the ash ooze. Four hours after the drench had been given, to the astonishment and joy of all, the animal got up and went along quiet with the flock grazing. My brother and myself continued to take it eight or ten days—one gill three times a day. No effect of the dreadful poison was ever discovered on either of us."

The Southern Planter.

RICHMOND, VIRGINIA.

Preparation for the Wheat Crop.

All lands which may be fallowed within the next six weeks, will, of course, require no farther plowing. The early fallows will probably have so strong a covering of grass and weeds, as to make it necessary either to re-fallow them thoroughly, or else to harrow well before sowing the wheat, which should be "put in" with a single plow. Lands are benefitted by the covering and shading of pea-vines, and clover, in so great a degree, as to make it desirable not to turn these crops in at a very early period—but naked fallows are best made as soon in the season as is practicable. In proof of this opinion we may mention the fact, that on a small field belonging to the former Editor of this paper, the wheat growing on one half of it, which was fallowed in May, 1858, manifested a superiority over that growing on the other half, (fallowed the September following,) equal, at least, to an application of 100 lbs. guano to the acre. We supposed, when looking at it, that one half had had a liberal supply of guano, while the other part of the field was unassisted by manure of any kind. Of the modes of fallowing, we believe *deep* plowing to be best for *stiff* clay soils—while depth of furrow is not required by light lands. At the same time, we would recommend width of furrow sufficient to cover up with dirt, any grass or weeds on the surface—for the double purpose of getting them out of the way, and fertilizing the soil by their subsequent decomposition.

Stiff lands require to be so plowed as to prevent, as far as is possible by plowing, any redundancy of water during the winter season, since wheat best flourishes on dry soils. This end may, in a great measure, be attained (in the absence of thorough draining) by plowing deep, and putting the land in beds. All water falling on the surface must be gotten rid of, either by conducting it into drains of some kind, which will *hurry it off*, or else by absorption, or evaporation. If the pores of the ground are closed by water, there must of necessity be much less aeration of the land than usual. The crop must, in consequence, suffer by the cutting off of this important source of supply for both carbon and nitrogen—besides, the risk of "winter killing" is greatly increased, since the soil will be colder, and more liable to freezing and thawing in rapid succession, and every farmer knows that wheat is always most "winter killed" in wet spots. Again: If manures are used, the crop will be only partially, if at all benefitted by them, because we have just seen that two most important agents in the decomposition of manures (by which they are reduced to a condition for assimilation by plants) are cut off, viz: air and heat. The crop will mature later, (to say nothing of the greater risk of rust, &c.,) and the ground will, in the spring, be in bad condition for the reception and germination of clover seed, for the evaporation of the water on the surface will cause it to *bake* hard, while the heat, which the soil would otherwise get the benefit of, is lost to it by this process of evaporation.

On all tenacious soils—unless they are of so undulating a character as to have sufficient natural vents for the water which falls on them to run off speedily,—we think beds should be thrown up of such a width as will best assist drainage. We have plowed our own land in beds of various widths, and prefer to have them, in places requiring much drainage, 15 feet wide—but we think this width too narrow for most lands, since the numerous water-furrows are objectionable, unless they are an absolute necessity. They will interfere with harvest operations. We abhor the old-fashioned "single beds," since the many water-furrows not only occupy a considerable space in a large field, but they have a slovenly and unsightly appearance. We never put a bed in any place where we think we can avoid risk to land or crop by its absence. But on slopes even, we consider "head," or "catch drains," necessary, to arrest the volume of water running over the ground, before it traverses the *whole* surface, because thereby the danger of washing is greatly diminished—the amount of rain-water is *hurried* and *forced* into the channels of these artificial outlets, and the land thus sooner becomes dry and warm. Besides, no part of the arrable soil will then receive more water than falls upon it, and, consequently, there will be better *aeration*,

and less retention and evaporation of water.

Water-furrows should terminate in drains of sufficient capacity to empty them speedily, and prevent any backing or overflowing. We have found the method of plowing flat lands proposed by Mr. Edmund Ruffin, a great assistance in draining, and have been pursuing that course since the publication of his plan and diagram in the "Transactions of the Virginia State Agricultural Society." We recommend it to the attention of every man who has flat land to plow.

The preparation of seed requires care. If seed-wheat is repeatedly fanned, and the mill *blown hard*, it may be rendered free from much cockle and other impurities. The cleanest and best of the crop should be selected for seed, after which everything but the pure grain should be taken out as far as practicable. Get rid of as many of the light and defective grains as possible.

Of the manner of sowing. We believe the drill is the best of all methods for putting in the crop. It is claimed for this mode of sowing, that it is a means of getting rid of "underling" heads—the straw is of equal length, and there is much less danger of winter killing, in consequence of the dirt's falling after freezing around the roots, which is almost equal to a working—while it insures a good covering to the roots. The next best method of seeding, is covering with the single plow. The lap of the furrow producing what the English and Scotch farmers call ribbing, by means of which nearly all the advantages of drilling are attained.

In the application of fertilizers, there can be no doubt of the economy of using those of concentrated strength in the drill, with the wheat, at the time of sowing. If this be done, we strongly recommend the use of plaster with them. Ashes, also, (although apparently incompatible with guano,) are a great help to the wheat crop, when mixed with it. True, they will cause the escape of Ammonia from guano—but this loss may, in a great measure, be avoided by not mixing them until ready for sowing, and as soon as the mixture is made it may be put into strong cotton bags. The escape of ammonia *under ground* makes no difference, in our opinion, as it is soon fixed by the clay. We have tried this plan with good results, and seen it turn out well on the farms of several other persons.

Sowing grass seed with wheat. A nice and thorough preparation of the surface soil is necessary for the reception of grass seed. The seed should be sown after harrowing has been well done, and covered lightly. The covering may be efficiently and neatly accomplished by running over the ground "Dewey's Gleaner," or spring-tooth rake. Some of the best crops of clover we have ever seen, were seeded in the autumn with wheat. Timothy may also be seeded in the fall. We have had the pleasure of seeing one "fine stand" of timothy this season, which was seeded with the last wheat crop. The best time for sowing these grass seeds, is with the late sowed wheat. We generally have wet weather early in November, after a "dry spell" in October; and the best time for putting in clover and timothy seed, is after the rains of November, as soon as the ground is in proper condition for harrowing. Should they be sown early in the fall, they are apt to be killed out in October.

Veterinary College of Philadelphia.

We have received in pamphlet form the first annual announcement of the above institution. We cannot better express our sense of its great importance, than by laying before our readers the programme of the fourthcoming course of lectures, the list of the Faculty, the expenses of the student, &c., &c.

The subject is of universal interest to our agriculturists, and we tender them our hearty congratulations, that it is at last about to be redeemed from the neglect and indifference to which it has been so long abandoned.

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"VETERINARY COLLEGE OF PHILADELPHIA.

"This Institution, chartered by the Pennsylvania State Legislature, 1852, will be put into operation the present year at Philadelphia, where it will be permanently located.

"The necessity for such an Institution in this country has long been felt, but for the want of qualified Veterinary Practitioners, it has been deferred to this late day.

"Philadelphia, the great emporium of medical science on this continent, has been chosen as the most suitable place in which to rear up an Institution, for the promulgation of a sister science. The reputation of her Medical Schools, extends over the whole civilized world. The facilities for Anatomical investigations, Clinical instruction, &c., &c., are at least as great as those of any other city in the Union. The Museum of the College already embraces a collection of Pathological Speci-

mens, in point of excellence far surpassing those of many European Veterinary Colleges of many years standing. Over one thousand preparations have already been deposited in the College Museum, the skeletons of the pacing horse "Hiawatha," the trotting horse "Blue Dick," a Shetland Pony, formerly belonging to Welch's Circus Company, &c. A Mule, a Cow, a Hog, and a Dog, each neatly mounted in wires, add interest to this valuable collection. The Lecture room is conveniently and comfortably fitted up. The Dissecting rooms are sufficiently large, and afford every facility for pursuing Anatomical investigations, material in abundance always at hand, without extra charge. The Library contains a number of the most valuable Veterinary works published in this country and in Europe.

"In establishing Veterinary Colleges in this country, a new field is opened to the votary of Veterinary science for extensive investigation, wherein to build up fame and fortune.

"A man with but ordinary abilities, with proper energy, can distinguish himself in the world by embracing this profession, while in most others he would only arrive at mediocrity; here is an unbeaten path for him to pursue, which, if faithfully and honestly followed, will lead to usefulness and honour.

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"Gen. George Cadwalader; Prof. William Gibson, M. D.; John Philips, M. D.; Alfred L. Elwyn, M. D.; Hon. Frederick Watts; Gen. George M. Keim; James Gowen, Esq.; Hon. George W. Woodward; Sketchley Morton, Esq.; Alonzo Potter, D. D.; James Bryan, M. D.; L. L. Ward.

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"FACULTY.

"W. W. Fraley, V. S., Professor of Meteria Medica and Therapeutics.

"T. J. Corbyn, V. S., Professor of Pathology, Surgery, and Practice of Medicine in reference to all domestic Animals.

"G. W. Bowler, V. S., (of Cincinnati,) Prof. of Medical Chemistry and Pharmacy.

"R. Jennings, V. S., Prof. of Anatomy, Physiology, and Operative Surgery.

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"SESSION OF 1859–60.

"The regular Lectures of the course will commence on the first Monday in November, and continue daily for sixteen consecutive weeks. The lectures embrace all the several departments of Veterinary Medical Science; as taught in the regular Veterinary Institutions of Europe.

"The lectures of the Faculty, embrace:—

"I. MATERIA MEDICA.

"The commercial, Physical history, properties and modes of action of the individual articles of the Materia Medica.

"II. PHARMACY.

"The mode of preparing medicines for use, together with their doses and therapeutic effects on horses, cattle, &c.

"III. THERAPEUTICS.

"The treatment of the various diseases incidental to the Horse, the Ox, the Sheep, Hog and the Dog, &c.

"IV. ANATOMY.

"1st. Osteology, or a description of the bones; 2d. The Ligaments; 3d. Myology or muscles; 4th. Neurology or an account of the brain and nervous system; 5th. The general structure of the body, the various tissues, &c., &c.

"V. PHYSIOLOGY.

"The functions of life, the circulation of the blood, function of the Heart, Arteries, Veins and Capillaries, with the composition of the blood, &c.

"VI. PATHOLOGY.

"The effects of diseases upon the animal economy, change of structure arising from morbid action, causes, symptoms, and development of diseases.

"VII. SURGERY.

"Local or Surgical Pathology; embracing an account of such diseased conditions as may demand surgical intervention.

"The lectures will be illustrated by drawings, diagrams, wet and dry preparations, bones, skeletons, preparations in wax, papier mache, and plaster, and the usual appliances for demonstrating this science.

"Medical and surgical cliniques, will be given Wednesdays and Saturdays of each week during the session, patients will be placed in charge of the students under the direction of the faculty, thus giving them an early opportunity of acquiring practical as well as theoretical knowledge, in fact every facility will be afforded to perfect their education.

"REQUIREMENTS OF STUDENTS.

"Each student will be required to attend two full courses of lectures previous to graduation, one of which must be in this Institution, in addition to which he will be required to study at least two years under some respectable practitioner of veterinary medicine, either before or during his term of college instruction.

"APPLICANTS FOR GRADUATION.

"1. Each candidate shall have arrived at the age of 21 years.

"2. He shall have attended two full courses of lectures; one of which must be in this Institution.

"3. He will be required to present a thesis written in his own hand, on some Veterinary subject, which must be presented at the time of making his application.

"4. He will be required to furnish evidence from his preceptor that he has received the necessary office instruction, and that he has attended two regular courses of lectures.

"5. A two-third vote of the Examining Committee, composed of not less than three medical practitioners, and the same number of Veterinary Surgeons, whose names shall be affixed to the diploma, will be necessary to entitle the candidate to the degree of Veterinary Surgeon.

"For the encouragement of those whose means are too limited to allow of the usual expenditure, six students will be admitted annually on the payment of thirty dollars each for the first course, exclusive of the matriculation and graduation fees, and for the second course the sum of twenty dollars. These arrangements will be strictly confidential, and no distinction will be made between the beneficiary and other students. Persons making application on these terms, will be required to do so in writing, accompanied by testimonials of character, want of means, &c., previous to the opening of the session. If more than six applications are received, the successful candidates will be duly notified.

"The regular session will commence on the first Monday in November, 1859, and continue four months.

"FEES:

First course,	$100 00
Matriculation, paid once only,	5 00

The first being in this College.

Second course,	$50 00
Graduation,	25 00

No fees for lectures after second course.

"Good board may be obtained form $2 50 per week upwards.

"Further information may be obtained on application to

"R. JENNINGS, V. S., DEAN,

"*No.* 1526 *N. Fourth St., Philada., Pa.*"

Descriptive Catalogues,

Nos. 2, 3 and 4, of Fruits, Ornamental Trees, Shrubs, Vines, Roses, &c., and Dahlias, Verbenas, Fuchsias, Petunias, Heliotropes, Miscellaneous Bedding Plants, Camellias, Geraniums, &c., &c. With other Green House and Hot House Plants, cultivated and for sale by Thorp, Smith & Hanchett, at the Syracuse Nurseries, New York.

The Proprietors in their introductory say:

"The extent of this establishment,—now one of the largest in the United States,—the thorough manner in which its business is conducted, the excellence and variety of its productions, the moderation of its prices, the convenience of its location, the completeness of its arrangements, and its facilities for the prompt execution and ready transmission of orders, give it claims upon the consideration of the public second to none other in the country."

We are indebted to them for the following:

"HINTS ON THE TRANSPLANTING AND MANAGEMENT OF FRUIT TREES.

"1. Let the hole be dug from twelve to eighteen inches deep, and large enough (the larger the better) to receive the roots without cramping; throw back and scatter the subsoil, and partially fill the hole with good surface earth, so as to fit it for the tree to stand about as deep as when in the nursery.

"2d. Prune off the ends of all the roots, leaving them fresh and free from bruises, and put the tree in the place prepared—cover the roots lightly with rich, mellow earth, pour on water, and work the tree gently up and down, alternately adding earth and water until every cavity is well filled. Or better, work the earth thoroughly around the roots with the hands.

"3d. Pack the earth firmly by pressing it with the foot from the circumference of the hole, towards the body of the tree, then throw in one-third of a wheel-barrow load of well-rotted manure, cover it with about two inches of earth, and press the whole well down, leaving it a little crowning about the tree. If planted in Autumn, the earth should be heaped from eight to twelve inches high around the body of the tree. This serves the three-fold purpose of supporting it in an erect position, protecting it from mice, and preserving the roots from the action of the frost. In the following Spring the earth should be removed.

"4th. Trim up the tree to four or five limbs, suitable to form a top, and cut each of the side limbs back to a bud within four or five inches of the body, leaving the central or leading limb from eight to twelve inches long. But when there are no side limbs suitable for this purpose, the tree should be divested of all its branches, and headed back to a height proper to form the top. If planted in Autumn, this pruning should be deferred until early in Spring; but it should by no means be neglected altogether as nothing so much conduces to the success of transplanting, and to the subsequent beauty and prosperity of the tree. This direction is applicable to fruit trees of all kinds.

"5th. For an orchard, the soil, before planting, should be made mellow by repeated plowing, and kept constantly cultivated for several succeeding years. For this purpose potatoes, beets and other low-hoed crops, are best, as they give the trees the frequent benefit of the plow, the cultivator and the hoe, and leave them in the full enjoyment of the necessary stimulants of air and light.

"PRECAUTIONS.—First. If the trees come to hand while the earth is too wet to receive them, bury their roots until the condition of the earth is more favourable. Second. If the roots become dry from too long exposure, place them in water, and let them remain from twelve to twenty-four hours. Third. To protect them from drought, nothing is so effectual as to spread a covering of straw, loose litter, or leaves, about their roots, after the transplanting is completed. This keeps the earth light and

moist, and renders the too often injurious process of watering unnecessary. It should be practised, however. only in Spring, as in Autumn it would afford lodgment for mice. Fourth. To prevent injury from these little depredators, stamp the snow around the bodies of all young trees several times during the winter. It may be done most effectually during a thaw."

Hungarian or Honey Blade Grass.

Some of our exchange papers speak of this grass as a humbug. So far as the exorbitant price demanded for it is concerned, we endorse their opinion; and would not advise any one to purchase it, except on a very small scale. We have not attempted to raise any of it on our own farm, but have seen some half dozen patches growing on the farms of our neighbours. These gentlemen have not yet acquired sufficient experience with it to be able to speak very strongly in favour, or in condemnation of it.

Of course we can say nothing of it, as an article of food for stock, compared with other well known grasses; but we have been agreeably surprised at its general appearance and luxurianee of growth. If any of our Virginia or North Carolina friends have tested its merits in such manner as will entitle them to speak of it impartially, we shall be glad if they will furnish us the result of their experience.

Beautiful Specimens of Fine Fruit.

Mr. H. J. Smith has presented us with two varieties of pears grown on dwarfed stocks on his premises, which are equal in size, appearanee and flavor to any specimens of the same varieties we have ever seen. He has fourteen varieties of dwarf pears, all of choice kinds and prolific bearers. On one tree, about six feet high, a visitor at his garden counted ninety-six pears, of healthful appearance and vigorous growth. He has high celebrity for the production of the best fruits and vegetables.

The Farmer's Journal.

Mr. Pleasants, who has ably conducted the editorial management of the *Southern Farmer*, has associated with him Mr. Smyth, and the name of the paper will in future be "The Farmer's Journal."

We hope these gentlemen will be eminently successful in their enterprise.

Mr. Pizzini's Candy and Ice Cream Palace.

A very elegant and handsome new store has just been opened by the enterprise of this gentleman, on Broad street, in this city.

Mr. P., if *not a farmer*, deserves to be considered at least in the light of a relative to that honorable class, as his saloon is a good market for strawberries, milk, &c., which are generally *improved* in quality by his skillful treatment of them. We enjoyed the pleasure of an inspection of his beautifully freseoed saloon, together with an abundant supply of eatables and drinkables, which his hospitality furnished to the editors of this city. As sincerely as any gentleman "connected with the Press," do we wish him prosperity and contentment—"*the best of everything*" *he has already.*

For the Southern Planter.

WARREN Co., N. C., Aug. 12, 1859.

Will some farmer give us his experience with the following articles as manure for wheat, viz: "Rhodes' Super-Phosphate of lime," and the *Mixture of Peruvian and Sombrero Guanos, in equal quantities?* State what quantity of either is advisable to use on fair corn land; and if he has a decided preference for one of these articles as superior to the other, mention which he prefers. A SUBSCRIBER.

We invite responses from our friends to this query. Also, reports as to the "Comparative Economy of using 'Manipulated' and 'Peruvian' guanos."

Agricultural Fairs of Virginia, 1859.

The *Central Society* will hold a Fair on their new and handsome grounds near this city, on the 25th, 26th, 27th, 28th and 29th of October.

The *Seaboard Society*, in Norfolk, 8th, 9th, 10th and 11th November.

The *Lynchburg Society*, in Lynchburg, commencing October 18th.

The *South-Western Society*, at Wytheville, 12th and 13th of October.

The *Virginia State Society*, associated with the *Union Society of Virginia and North Carolina*, will hold a Fair on the ground belonging to the latter, near the city of Petersburg, on the 1st, 2d, 3d and 4th of November.

We trust that the interest hitherto manifested by the citizens of our good old Commonwealth in these Exhibitions, of not only the various fine animals owned within our borders, but of her own 'fair women and brave men,' together with the evidences of her industry, skill, liberality

and good taste, will ensure successful Fairs in all these places, and that the articles, of every class, exhibited may be characterized by excellence and variety, besides being too numerous to mention.

Among the new business enterprises of our city, we are glad to learn that a large *Paper Mill* is to be erected speedily, and also a *Sugar Refinery*.

Mr. F. G. Ruffin has a large mill *in operation*, grinding and preparing the ingredients of his "*Phospho-Peruvian Guano.*"

Thus it will be seen that purchasers can procure *at home* articles which are always wanted and which many of us have to *send after*, in order to procure them. We hope these new enterprises may be eminently successful and prosperous.

Our thanks are hereby tendered to the following gentlemen, for pamphlets sent us:

Messrs. A. Frost & Co.—Descriptive Catalogue of Dahlias, Verbenas, &c., and Fruits; cultivated and for sale at "Genesee Valley Nurseries," Rochester, N. Y.

Messrs. W. M. Hoyt & Co.'s Catalogue of Fruits, Trees, Shrubs and Evergreens; for sale at "East Avenue Nurseries," near Rochester, N. Y.

To the President of the Agricultural and Mechanical Association of St. Louis, Missouri—for Schedule of their Premiums, amounting to $20,000.

Edward Warren, M. D.—for the *Medical Journal*. Published at Edenton, N. C., at $3 per annum, in advance.

Finch's Grease Extractor.

We have received from Mr. Edward T. Finch a phial of his preparation for removing paint, tar, wax, and any kind of grease, from silk and woolen dresses. Price 25 cents.

As we made trial of the article with the intention of speaking plainly our estimation of its merits—whether good or bad—we take pleasure in assuring our readers that it is no humbug, but really a very effective application for the removal of grease spots from woolen clothes, and we doubt not from silk goods also, though of this we cannot speak from experience. Try it.

Fine Sheep.

We call attention to the advertisement of Dr. John R. Woods' fine sheep, in our advertising columns. To those who are acquainted with him, no other recommendation than his name is needed; others, we would refer to the published results of the Annual State Agricultural Fairs, for the high estimation in which his stock generally, and his sheep particularly, have been held.

He has just imported a Cleveland stallion, considered by his purchasing agent the best to be bought in England, and by many good judges superior to the noble animal "Napier," which he was so unfortunate as to lose on his homeward passage last year.

From the American Agriculturist.

Agricultural Exhibitions should be Something More than mere Shows.

It is a matter of great importance, that our agricultural exhibitions should not be mere gala-days, fo. sight-seeing and gossiping. The holiday uses of the occasion is all well enough, but the managers of these fairs should bear in mind that they have a more sober aim. They will profit our husbandry just as they are made to disseminate the correct principles that underlie our farming interests. There needs to be some reform in our premium lists, that shall reward the *principles* rather than the *facts* of husbandry.

A large crop of corn, one hundred bushels to the acre, or more, is a good sight, and worthy of reporting. But the statement which involves the principles by which such a crop was grown, is worth much more to the world. That will teach other farmers how to raise maximum crops of corn, at the least expense. A fat ox is worth going to see, but what we are most anxious to know, is, whether the flesh and fat has been laid upon the bones so as to pay expenses. The men who make a living by fattening cattle, cannot afford to make playthings of them. If our agricultural societies can show that beef can be made for eight cents a pound, when it is selling for nine and ten, farmers have a rational motive for producing beef. The whole details of the process will be read with the liveliest interest, and will be of direct pecuniary value in the community. But if, in the same state of the market, it costs eleven and twelve cents a pound to make fat beef, who is benefitted by the ex-

hibition? The premium should be offered and paid to the man who will best illustrate the principles of producing beef *economically*.

And so, in all departments of the exhibition, the chief attention should be given to the economy of production. We exhibit annually the best products of our farms and orchards, our meadows and pastures. The multitudes gather from the farms and the villages to behold the fine horses and cows, the splendid fruits and vegetables, and the irreproachable butter and cheese. They wonder and admire, and are, doubtless, stimulated to do something better in their husbandry, but without receiving any definite information, as to the best methods of realizing their wishes. They have set before them, in these fairs, good examples of stock raising, fruit growing, and field cultivation, but they get few of the secrets of that skill which is everywhere visible. To multitudes, these fine fruits and products are as great a mystery as if they were the results of legerdemain. Neither themselves nor their neighbors ever secured such results, and they do not understand the philosophy of a hundred bushels of corn to the acre, or of Duchesse pears weighing a pound and a-half a-piece. The fair does not give to them a single new principle, nor suggest to them a better method of cultivating a single crop.

The time has come, we think, when agricultural societies, while they pay no less attention to *things*, should pay far more attention to *principles*. It should be a leading aim with the managers of these institutions, to instruct the communities in which they are located, in the principles of husbandry.

The addresses, the reports, and the statements of exhibitors, where these are required, need to be more carefully prepared. Too often the address is from a gentleman, eminent only in political life, and as ignorant of farming, or any other industrial pursuit, as he is of Sanscrit. The best occasion in the whole year, with its audiences of thousands, and its glowin inspiration, is absolutely thrown away. The reports are often made up by a fourth-rate lawyer, whose chief qualification for the office is, that he has little business of his own to attend to. The statemen s, if made by practical men, are often defective in essential details, so that they are no guide to inquirers after the *principles* of husbandry.

We call for a reform in the management of societies, so that the whole exhibition shall be a contribution to the science of agriculture. We want to understand the experience and the practical skill that has produced the crops, much more than to see the results of this skill.

Galloway Cattle.

We believe we are almost the only friend of the Scotch race of cattle, called Galloway, (sometimes called "polled" or no horns,) that they have in Maine. At any rate, neither the cattle nor the friends of them are very plenty among us. At our suggestion the Trustees of the State Society, willing to encourage the breeding of all useful animals in the State, very readily made a class of them in their list of premiums. A few were exhibited, but they had to take a by-corner of the field, and the committee who examined them, and awarded premiums on them in accordance with the schedule, made the remark in their report, that they could not recommend them for general distribution about the country, or words to that effect.

On that point we take issue with them. We are willing to accord to the other breeds of cattle, all the merits that belong to them. We have in times past, bred Durhams and Herefords, and other breeds. Indeed, we were the first who ever introduced a thorough-bred Durham into the State.

These and other breeds have their good qualities and their failings, and we have long since been taught by the lessons of experience, (and some of them were rather dear,) that you cannot get all the properties you want in a stock of cattle in one hide. That God has made different races of what we call farm stock, and that the art of man has formed from them varieties which we call breeds,—that the farmer must consider what his wants are, and the capacity of his farm is, and choose such races or such breeds as may be best adapted to the circumstances. He may, therefore, cultivate one, two or more of these breeds or races.

We have also become convinced from experience, that, in a large part of Maine, the Scotch cattle, such as Galloways, (those which have no horns, and the West Highlanders which have horns) are the best adapted for raising beef of the very best

quality in the world, quickly and cheaply. As yet, none of the West Highlanders have been introduced. Of the Galloways there are a few, and with all due deference to our respected friends of the committee, we shall do what we can to have more of them. Adapt your stock to your wants and your means. We know that the rearing of large, stately oxen for the lumber market and other markets, is profitable; and we say to those in a condition to do it, and have the taste for it, go on and prosper in the business. But, that the beef that these animals make, is the best and most profitably raised is a mistake. For heavy teams of excellent workers, they are what you want, but the rearing of beef is an object too, and that animal which will afford you the best quality at the least cost, is found in the Scotch cattle. We know this from experiment with all the breeds, (except Devons and West Highlands,) and our experience is but a corroboration of those who have had older and still more experience. This is often expressed on the other side of the water.

The Mark Lane Express, speaking of the late show of the Highland Agricultural Society, at Aberdeen, says that at dinner, Mr. Torr, in some remarks, said—"Whatever you do don't neglect the native breeds of Scotland. Depend upon it, the nation does not possess more valuable animals than these native breeds." The Express adds—"We fancy he was speaking here to the merits of the polled beasts, but the Highlanders are, in their way and for their purpose, as worthy of proper cultivation."

Mr. Howard, Editor of the Boston Cultivator, who has recently been in Scotland, examining and purchasing cattle there, says, in regard to the above remark in the Express: "We second these observations, being satisfied from what we saw of these breeds in Scotland, that they are very valuable, and we hope to see some fair trials yet made of them in America."

If great Britain does not contain "more valuable animals than these native breeds," we certainly should not despise them.

[*Maine Farmer.*

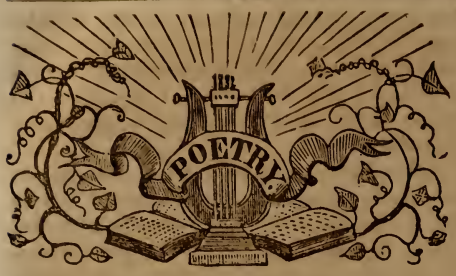
Cellar for a Farm-House.

There are few departments of the farm-house that are of more importance than the cellar, yet it is perhaps more generally neglected than any other part of the premises, being out of sight, it is left to take care of itself, and will seldom bear very close inspection. There should be a reform here, and I will state what I consider the proper mode of constructing a good and convenient cellar.

After settling in your mind the proper height of the cellar, (which should not be less than seven nor more than eight feet high,) dig one foot deeper than you intend the bottom when finished; then dig under at the bottom all around from four to six inches, and lay a course of flat stones projecting beyond the outside of the main wall at least four inches, to prevent rats from working under. Lay your foundation in water lime mortar, carrying it up in the same as far as you can be safe from frost; and the remainder in quick lime mortar. Lay the wall in two distinct courses of stones, and do not allow the inner and outer stones to touch each other, but fill the middle with mortar to make a solid wall. Make your windows with double glass shashes, and you need have little fear that frost will penetrate to injure anything.

If your cellar bottom is dry, porous, gravelly soil, you do not need a drain, but that is seldom the case. The sure way is to dig a drain from one side to carry off superfluous water, and if a wet, clayey bottom, lay drain tile around or through it, so as effectually to draw off all the water, and then cover the bottom between and over the tile with small stones to the depth of one foot, and cover the whole with water lime cement. In situations where there is no fall for draining, the sides may be plastered with cement, to keep out water as much as possible. Lay timbers down while the mortar is soft, for sills to be used for divisions, and make simple board partitions, as they are less expensive than brick, and answer equally well in most cases.

The cellar should be divided into at least four apartments, viz:—a milk room, fitted with shelves for the milk pans; store room for provisions, with cupboard, &c.; a larger apartment for the storage of fruit, cidar barrels, &c.; and a dark room for potatoes and other vegetables, as they keep better, when excluded from light. Have ample arrangements for lighting and ventilating all the apartments, (except the dark one,) at all times, and you have a place for everything necessary about a cellar, and with but little expense after once built.—*Gen. Far.*



The Day is Done.

The day is done, and the darkness
Falls from the wings of Night,
As a feather is wafted downward
From an eagle in his flight.

I see the lights of the village
Gleam through the rain and the mist,
And a feeling of sadness comes o'er me,
That my soul cannot resist:

A feeling of sadness and longing,
That is not akin to pain,
And resembles sorrow only
As the mist resembles the rain.

Come read to me some poem,
Some simple and heartfelt lay,
That shall soothe this restless feeling
And banish the thoughts of day.

Not from the grand old masters,
Not from the bards sublime,
Whose distant footsteps echo
Through the corridors of Time.

For, like strains of martial music,
Their mighty thoughts suggest
Life's endless toil and endeavour;
And to-night I long for rest.

Read from some humble poet,
Whose songs gushed from his heart,
As showers from the clouds of summer,
Or tears from the eyelids start;

Who, through long days of labour,
And nights devoid of ease,
Still heard in his soul the music
Of wonderful melodies.

Such songs have power to quiet
The restless pulse of care,
And come like the benediction
That follows after prayer.

Then read from the treasured volume
The poem of thy choice,
And lend to the rhyme of the poet
The beauty of thy voice.

And the night shall be filled with music
And the cares, that infest the day,
Shall fold their tents, like the Arabs,
And as silently steal away.

LONGFELLOW.

To a Friend Gathering Wild Flowers.

Where thorny ramparts seem to chide
The hand which steals the flow'ry wreath;
I've seen thee thrust the thorn aside,
To pluck the flow'r which blush'd beneath.

And thus, Maria, as the whirl
Of life leads on the changing hour,
Remember still the sweets to steal;
Elude the thorn to pluck the flower.

When fortune shows a dubious sky,
The East may smile, the West may lour;
Still to the brighter turn the eye,
Elude the thorn to pluck the flower;

In pity to its child below,
If Heaven the cup of comfort sour,
The lesson learn, but ease the woe:
Elude the thorn to pluck the flower.

But there—ah, shun the sweets which grow
Where pleasure paints her poison'd bowers;
Dark are the streams, which gently flow,
And rude the thorns which guard her flowers.

And seek thy sweets on holier ground,
And where Religion's altars rise:
Her's are the thorns which never wound,
And her's the flower which never dies.

A World of Love at Home.

BY J. J. REYNOLDS.

The earth hath treasures fair and bright,
Deep buried in her caves;
And ocean hideth many a gem
With her blue, curling waves;
Yet not within her bosom dark,
Or 'neath the dashing foam,
Lies there a treasure equaling
A world of love at home.

True, sterling happiness and joy
Are not with gold allied;
Nor can it yield a pleasure like
A merry fireside.
I envy not the man who dwells,
In stately hall or dome,
If mid his splendor he hath not
A world of love at home.

The friends whom time has proved sincere,
'Tis they alone can bring
A sure relief to hearts that droop
'Neath sorrow's heavy wing.
Though care and trouble may be mine,
As down life's path I roam,
I'll heed them not while still I have
A world of love at home.