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.*

VOL. XI. RICHMOND, APRIL, 1851. No. 4.

R. B. GOOCH, EDITOR. P. D. BERNARD, PROPRIETOR.

LECTURE ON HAIR, WOOL AND SHEEP BREEDING.

The following interesting lecture upon the new science of "Trichology," was delivered in this city, a few days since, before the "Central Southern Rights Association of Virginia," by PETER A. BROWNE, Esq. LL. D. of Philadelphia. It has been furnished to us for publication at the instance of friends who, having heard it themselves, were unwilling that a paper so full of curious and profitable matter should be kept from the public. We need not say that we are happy that our pages have been made the medium of its publication.

The lecture abounds with curious and valuable information upon a subject of great importance and intimate concern to every farmer—and to the welfare of the State at large—wool raising and wool manufacturing. It also possesses another recommendation, which we cannot refrain from noticing, viz: It is almost entirely freed from *scientific technicalities*, which few readers can comprehend, and is couched in plain English phrase that all who peruse can understand. We trust every reader will give it careful attention, believing that no one can do so without being amply repaid.

LECTURE.

Nothing which belongs to the study of Nature is insignificant. The naturalist surveys, with interest, *all* the works of the GREAT CREATOR;—with the telescope, he measures the parallax of the distant stars, and with the microscope, he examines the minutest part of the smallest leaf, crystal or infusoria. Nothing, for him, is too large,—nothing too small, which God has placed within his reach. If that Mighty Being who created the heavens and the earth, did not consider it beneath *His* dignity to make so minute, as a microscopic object, surely it would be great presumption in man to consider it too small for his examination. We are, therefore, of opinion that making collections of pile, and examining hair and wool under the microscope and with the trichometer* are exceedingly interesting.

The natural history of man has, within the last ten years, attracted more attention than at any former period of time. It is not to be wondered at, that we should be desirous of knowing the *race* from which we and our immediate ancestors sprung; but, as almost all very ancient history is involved in fable, it often happens, that no positive testimony as to the origin of nations can be obtained; wherefore it is proper and laudable, by fair arguments, founded upon circumstances, to assist the archaiologist in his valuable researches. To do this the ingenuity of modern times have pointed out several methods. Professor Samuel G. Morton has chosen the department of craniology. With great industry and perseverance, he has collected a vast number of human scults, of all nations and of all ages; and by their examinations, by the measurement of their facial angles, and by ascertaining the capacity of the cavity for the repository of the brain, he has drawn certain conclusions, which have been published, and read with great interest. Professor Samuel S. Haldeman has spent much time in studying the mechanism of the organs of speech, and in a series of very interesting lectures, delivered before the University of Pennsylvania, has laid down rules by which it may be discovered, from the national method of pronouncing certain sounds, which people are allied and which are not, and even which race is the oldest. Mr. Flourens, a celebrated French naturalist and anatomist, has devoted his energies to the scrutiny of the human skin and its coloring matter; showing wherein they agree and wherein they disagree, in the different races. Other writers have taken an account of the customs, manners and even the prejudices of men, to discover their national connection. I have made an extensive collection of national pile, both ancient and modern, and by studying the shape, direction, inclination and organization, am enabled to divide the whole human family into species.

All these studies are intensely interesting, especially as it is evident, that it is upon the combined evidence, to be adduced from the

* An instrument invented by me to ascertain the the ductility, elasticity and tenacity of a fibre at a single operation.

whole of them, that the question of races must, ultimately, be determined.

The peculiar state of the hair of the head, and often of the body and limbs, likewise, is intimately connected with the *health* of the individual. All cutaneous diseases affect the pile, in a greater or less degree; besides which, there are *diseases of the hair*, some of them of a most frightful character, as for instance, plica polonica, favus, &c. &c. To understand these diseases perfectly, the physician should examine the condition of the pile, and particularly of its root, before he makes out his diagnosis. But no physician can be a competent judge of a *diseased* hair, if he is unacquainted with the character of a *well* one.* Hence it is obvious that the medical student, and even the medical practitioner, is benefited by studying the organism and properties of these integuments. Fortunately I have made a collection, not only of diseased hair, but of the hair of the sick and diseased; which I have examined myself, and submit to the inspection of those who take an interest in such subjects.

I think that there is difference between the hair of the sane and that of the insane; and, with a view to test the accuracy of the position, I have made very large collections of the covering of the head of the last named unfortunate fellow-beings, in no less than five lunatic asylums in the United States, including those sufferers of every variety and stage of that infirmity. To the physician and philanthropist this is a most interesting cabinet.

This is not a tithe of the contributions that the new science of "Trichology" has made to her sister sciences, but we must speak of her assistance to the *arts*.

How is it with Agriculture? Is sheep breeding and raising important? If history tells the truth, there never has been a nation who has fostered it, that has not become opulent. Let others talk of the gold mines of California; our theme is the *golden fleece!* To glean a few grains of metal at the former, hundreds and thousands of our countrymen have sickened, pined, and perished in a distant land; who would have been better,—far better, employed, in a healthy climate, feeding and tending their flocks; and who, while enriching themselves, would have added to the national prosperity and independence.

Cotton was grown in Georgia as early as 1787, but was not seriously thought of as a great American staple until about 1790. From Oct. 1st, 1790, to Sept. 30th, 1791, the United States exported 189,316 lbs. of cotton. In 1835, the lands used in the United States for the cultivation of cotton were estimated at three hundred and twelve millions of dollars. Sheep breeding, for fine wool, dates as late as 1800, and yet it would not be hazarding too much to say that, even now, the raising of sheep and the wool interest, are as important in the United States as was the cotton interest in 1835, and I venture to predict, (let who will sneer at it,) that in thirty years from this time, *wool will become as great an American staple as cotton.*

Until the census is published, we have no very accurate means of ascertaining what is the number of sheep in the United States; but we suppose it may safely be put down at thirty-five or forty millions. Now if we value these at two dollars a piece, which considering that individuals of good breed are often sold for several hundred dollars, is moderate enough, we have seventy or eighty millions; then if we add three shillings per head for the land and buildings necessary for their shelter and support, we have one hundred and five to one hundred and twenty millions. But there are many persons who hear me, who, recollecting with what avidity everything was received, in 1835, that was calculated to improve the growth of cotton, will be at a loss to discover why what is advanced by trichology, in regard to breeding and raising sheep and improving the quantity and quality of wool, is now heard with such apparent indifference. Is the examination of a subject which regards thirty-five or forty millions of domestic animals and one hundred millions of real estate so insignificant?

The General Government through the Patent Office, a few years since, sent a special agent to Europe to collect specimens of all the fine wools. He brought back with him samples from Russia, Hungary, Silesia, Prussia and Saxony. They were divided into parcels and sent to the Governors of the different States. The one sent to Pennsylvania lately came to my hands. I measured the wools and compared them with the growth of our own country, and had the pleasure of announcing what had never before been known, or even *suspected*, viz:

That we can raise as fine wool in the United States as any country in the world, and finer than any except Saxony.

This important information, showing that the United States has it in her power to create *another great staple*, equal in importance to her cotton, was published in "The Plough, the Loom and the Anvil,"—was read,—has never been contradicted—and is now almost forgotten!

Let us now examine this subject in another point of view. Let us assume that the number of sheep in the United States is thirty-five millions. In Germany the average annual produce of fleece is put down at a trifle over two pounds. In England, where the wool is coarser and less valuable, the average is four pounds. Our average is put at from two and a half to two and three quarters, but I am persuaded that it is underrated, for I have in my cabinet specimens of fine wool, grown in the United States, from three and a

* Example, the crisped state of oval hair in plica polonica.

half to four and even as high as five pounds. But suppose we say three pounds; this will give us an annual produce of one hundred and five millions of pounds: which, at forty cents a pound, will make forty-two millions of dollars. And observe, that in this calculation nothing is said about the increase of lambs. The annual production of all the gold and silver mines of North and South America was estimated by Baron Humboldt at nine millions of pounds sterling—at present, (except the recent discoveries in California,) it is less than five millions of pounds or twenty-five millions of dollars.

Mr. Hughes, a London wool broker, upon his examination before the House of Lords, in England, in 1828, on the subject of wool and woollen manufactures, thus delivered himself:

"Other countries are making rapid strides to compete with us, [England,] particularly North America. Within the last twelve months there have been upwards of five thousand bags of *foreign* wool, shipped from the port of London alone, for that country, for the purpose of being manufactured. They [the people of the United States] are now making very rapid strides and I have no hesitation in believing that, in a few years they will be independent of us for *coats*, as they now are for *hats*."

I did every thing within my power to have our fine wools exhibited at the World's Fair; had I succeeded, the House of Lords might have learned that Mr. Hughes was a *prophet;* and that the time *has* arrived when the American people can not only be independent of Great Britain for their own coats; but that they can furnish wool, of the growth of the United States, fine enough for the most fastidious of Europe.

England cannot raise the fine wool required for manufacturing broadcloths. Lest we might be suspected of prejudice, hear what is written by *one of her own subjects.*

In "the industrial resources of Ireland," by Robert Kane, M. D. Honorary member of the Royal Dublin Society, &c. we find the following: "The woollen manufacture has been, at all periods, considered as of high importance in this country, [Ireland;] so that, at certain times, it was deemed necessary [by England] to take measures to *moderate its prosperity*[!]* A very large quantity of wool is grown in Ireland. The total number of sheep being 2,091,199. A great deal of this is sent to France, where it is manufactured into 'mousseline de laine.'" After noticing the difference between wool that will felt and full, and fleece [hair] which will not, he proceeds thus: "In moist, cold climates, such as the British islands, the *natural* wool is, universally, long stapled and *unfit for felting;* whilst in dry climates, with hot summers, the wool is short stapled and *felts strongly.* The wool produced *not merely in Ireland,* BUT IN ENGLAND, also, is thus *exclusively adapted to the worsted trade.* For woollen cloths and similar goods the wool *is imported from the Continent.* It has often been an object with the English wool growers and landed proprietors to *produce this felting wool, in England,* and thus get rid of the necessity of purchasing abroad; BUT IT HAS BEEN FOUND IMPOSSIBLE, AFTER THE MOST EXPENSIVE EXPERIMENTS, in *importing sheep of particular flocks.* It has been found that in two or three generations, of *even the pure breed,* the influence of the climate and food *totally changed the character of the wool,* and brought it to the same quality as that of the native animals."

We repeat, then, without fear of contradiction, "England cannot produce the fine wools required for manufacturing broadcloths," but she will continue to manufacture these cloths as long as she can find sale for them; consequently she must import fine wool from some other country. Why should not *this* country be the United States? Why not Virginia? Can any one give a reason? If we can produce as fine wool as any other country, why may she not import our *wool* as she does our *cotton?* How will it be if we can produce *finer* wool than any other country? And we can produce finer wool than any except Saxony.

Perhaps some may imagine that even if they did take our wool it would be a small account; let such persons read the following document:

Account of Foreign Wool imported into England from 1801 *to* 1845, *inclusive;* (*from Fisher's Industrial Record, v.* 1. *p.* 207.)

Year.	lbs.	Year.	lbs.
1801,	7,371,774	1822,	19,058,080
1802,	7,669,798	1823,	19,336,725
1803,	5,904,740	1824,	22,564,485
1804,	7,921,595	1825,	43,816,966
1805,	8,069,793	1826,	15,989,112
1806,	6,775,636	1827,	29,115,341
1807,	11,487,050	1828,	30,236,059
1808,	2,284,482	1829,	21,516,649
1809,	6,758,954	1830,	32,305,314
1810,	10,914,137	1831,	31,652,029
1811,	4,732,782	1832,	28,142,489
1812,	6,983,575	1833,	38,076,413
1813,	records dest. by fire.	1834,	46,455,232
1814,	15,492,311	1835,	42,604,656
1815,	13,640,375	1836,	64,239,977
1816,	7,517,886	1837,	48,379,708
1817,	14,061,722	1838,	52,606,196
1818,	24,749,570	1839,	57,364,772
1819,	16,100,970	1840,	52,959,221
1820,	9,775,605	1843,	49,343,693
1821,	16,622,567	1845,	65,079,524

Vast as this consumption appears to be, the United States has the capacity to supply it, after all our own manufactories are supplied; and one would think that it would be highly gratifying to the owners of unseated lands in the United States, in Virginia, to have it proven to them, that they can be turned into sheep-

* This puts us in mind of British writers talking of the *arrogance* of New England in attempting to manufacture.

walks and thus rendered exceedingly productive to their proprietors, and beneficial to the nation. We wish all our hearers could examine my specimens of the *finest kind of wool*, raised upon old, worn-out, tobacco lands, in Bedford County, Virginia. They far surpass any fleece that England ever has, or ever can, produce and will not lose by a comparison with the finest wools of the most favored country on the continent of Europe. Messrs. Robert Allen, Stuart Patterson, H. W. Chaplin, Thos. Patterson and Robert Kelso, and others, the producers, deserve a vote of thanks from the Virginia Legislature, for their exertions to improve this branch of American industry.

But let us not forget that sheep breeding and raising, to be prosperous and profitable, must be pursued with *some degree of art*. A plain, unsophistical witness was once asked in court, "*what he followed?*" He answered that it was "*the art* of ditching." This man was right, for there is *an art* in *every* occupation, not excepting, even the digging of a ditch.

One portion of the *art* of sheep breeding consists in selecting the *proper breed of sheep for the particular location of the former*. We have already seen that neither England nor Ireland can raise *the fine-woolled sheep* Doctor Kane says that it has been found to be *impossible*, after the most expensive experiments.—He attributes the failure to *climate* and food. The *natural* food depends upon the *soil* and climate; so that he might have said "*soil* and *climate*." If it depends upon *climate* it is fortunate for us, that in this widely extended continent we have almost every variety of it; but still, it is a most important point for the farmer to know which breed of sheep will thrive best and produce the finest wool, in the particular district where Providence has cast his lot. And we confess that upon turning over the leaves of the volume of the Cabinet of American Wools, we were forcibly struck with the correctness of the remark first made at the late Pennsylvania Agricultural Convention, that two parallel lines might be drawn over the map of the United States, including within them the geographical (and perhaps the geological) district best calculated for rearing *the fine-woolled sheep*. We also remarked that there was another extensive district of our country, easily pointed out, which is admirably calculated for raising the fleece, which, in England, is called "*long wool*," but which is properly "*hair*." If this information turns out to be correct, (if it is so, only to a limited extent,) then my collection of wools, made for a different purpose, will have shed more light upon the connexion of climate and soil with wool growing, than all the learned disquisitions and opinions that have ever made their appearance before the public. Two things, we think, are certain; 1st. That the wool staplers and manufacturers will find it their interest to consult this record, for the best information, where they may find the finest fleece; and 2d. The new beginner in sheep breeding may also there learn where to apply for the best breeds.

But, perhaps, after all that has been said, some persons may believe, that while this information may be well enough for the *sheep breeder and wool manufacturer* that to the public, in general, it is comparatively useless. But the true patriot, particularly if he be a politician, (in the proper sense of that word,) is deeply interested in knowing what are *all* the great and leading interests of his country.

Every moral, sensible and well educated citizen has a right to expect, that he will be, at some period of his life, called upon to act as a member of one of those deliberative bodies that make laws for this free and happy country; but how can he, *understandingly*, give his opinion upon a measure connected with the industrial interests of the country, unless he possesses, at least, a general knowledge of the subjects alluded to in this paper?* Besides, in an economical point of view, does not every man, and even every *woman*, wish to know, why it is, in these modern times, that having paid a high price for flannel, and having been subjected to the expense of making it into a garment,—that after having been sent two or three times to the laundress, it has shrunk so much as to be almost, if not entirely, useless? Would it not be a comfort to know, *why* the Welsh flannels, (formerly held in such high repute,) have so depreciated? and to be assured that, we have the capacity of producing, in the United States, a *wool that will not shrink?* The author of the "Industrial Record," speaking of Thompsonville, in Connecticut, says that they manufacture carpets, annually, to the amount of 480,000 yards. To enable them to do this, they use 1,000,000 and upwards of pounds of wool, all of which is, he says, imported from either the Mediterranean or South America. But I contend, (and you agree with me in this opinion,) that EVERY POUND OF THIS WOOL OUGHT TO BE RAISED IN OUR SOUTHERN STATES. The sheep that produces *that* fleece thrives *there*, and its breeding and raising, from Delaware to Georgia, would be a source of immense profit.

But here we feel called upon to notice an error into which the editor of the work above quoted has, inadvertently, fallen. He asserts that the importation of the Mediterranean and South American wool, at seven cents a pound, does not interfere, in the slightest degree, with the domestic wool grower, who, (he says,) cannot afford to raise wool at so low a price, when, with the same food and expense, he can raise fleeces worth, on an average, thirty cents a pound. But he seems to have been entirely unaware of the fact, that the *places* where these

* The members of the Central Southern Rights Society of Virginia, have solemnly pledged themselves, to each other, and to the people, to foster articles of home growth and home manufacture, it has therefore become their *duty* to investigate this subject.

hairy fleeces can be grown, are unfit for the breeding and raising of the *fine woolled sheep*. He seems also to have lost sight of the fact, that the sheep, whose wool is worth (as he says,) thirty cents a pound, produces, on an average, only three pounds of fleece; whereas of the hairy fleeces, bred in the United States, I have in my cabinet specimens that produced 17½ lbs. Now a schoolboy can cypher this out, to show that this latter wool is the most profitable:

3 lbs. of fine fleece at 30 cents,	$0 90
17½ lbs. of hairy fleece at 7 cents,	1 22½
Balance in favor of the hairy fleece,	$0 32½

To raise one million of pounds of fleece at 3 lbs. a sheep would require 333,333 sheep.

But to raise one million of pounds of *hairy* fleece, at 17½ lbs. per sheep, would require only 57,140 sheep.

Difference 76,193 sheep, the feeding and taking care of which, would cost $171,420.

Our brethren of the Eastern parts, of the Southern States, should, therefore, turn their attention to breeding and raising *the hairy sheep*; and Congress should encourage them to do so, by laying a duty on foreign wool, though worth only seven cents a pound.

There is a woollen mill in Lowell, Massachusetts, (the Middlesex Company.) Their wool comes from the States of Vermont, New Hampshire, New York, Ohio, Pennsylvania, Illinois, Missouri and Wisconsin. The quantity of cloth there manufactured in 1845, was equal to the produce of 400,000 sheep. The broadcloths and cassimeres, annually made, exceed 114,000 yards of the former, and 620,000 yards of the latter, and the sales exceeded $800,000 per annum. And there is no reason why the city of Richmond should not follow the example.

The area of this State has been variously stated from sixty-five to seventy thousand square miles, exceeding that of England and Wales, which, together, are only fifty-seven thousand eight hundred and twelve, yet *they* have a population of ten and a half millions and raise thirty-two millions sheep! The total area of the six New England States, viz: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island and Connecticut, is only sixty-three thousand and twenty-six square miles.

The climate of Virginia, though various, is, in general, good. It lies between parallel lines of latitude, which, on the Old Continent, include Morocco, Syria, Asia Minor, Greece, Sicily, Naples and the southern part of Spain. Some of these places, famous for producing fine *hairy* fleeced sheep, and one of them, at least, viz: Spain, renowned for rearing the fine *woolled* Merino breed.

The citizens of Virginia, descended from the hardy and liberty-loving Saxon race, are peculiarly an agricultural people; their great staples have been, hitherto, tobacco, wheat, Indian corn, and in the southern part of the State, cotton; but they *must*, at no distant day, make *fleece* one of their *great staples*. Providence has so decreed it, and, therefore, the sooner it is accomplished the better for the community. I am prepared to prove by specimens that *Western* Virginia can produce as fine *wool* as Saxony, and I have not a doubt but that in regard to the *hairy fleece Eastern* Virginia will be able to compete with, if not excel, the Mediterranean and South American fleeces.

The easy means or transit of the former of these productions to *Richmond* by navigable streams and artificial means, points out *that* city as the emporium of this valuable commodity; and the exportation of it, either in a raw or in a manufactured state will greatly improve the commerce of the metropolis.

But this is not all; *Richmond* is destined to become one of the greatest *wool manufacturing* places in the Union. Let us take a *comparative* view of her *water power*. As Patterson is one of the best known and most appreciated we will commence there.

Patterson has a fall of sixty-six feet, which is capable of being used three times. The amount of cubic feet of water per second is thirty. On an average of two and a half feet of head discharged from the side of the forebay, the bottom of the aperture being three feet. One square foot, drawn in this way, is estimated as equal to a thirteen horse-power; so that the horse-powers may be put down at eleven hundred and seventy.

Now, counting 225 spindles to a horse power, Patterson has a water-power only sufficient to drive 261,251 spindles or their equivalent.

The James river at Richmond, in 1849, was gauged by Mr. E. H. Gill, a skilful engineer, who found the discharge to be 2,444 cubic feet per second. The fall of the first three miles is eighty-one feet.

Now, if we adopt the same rule for this place as for Patterson, allowing three falls, of twenty feet each, and admitting the average head of two and a half feet, an aperture of twelve square inches will discharge eight cubic feet per second, which will make the James river power, at its lowest stage, equal to 2,673,375 spindles.

To this immense amount of water-power Richmond can add her inexhaustible supply of fuel. Virginia coal, equal, in quality for all manufacturing purposes, to any found in England, may be had in Richmond for three to three dollars and fifty cents a ton, cheaper than any part of England. The appropriation of a *portion*, (a small portion only,) of the water-power of Richmond to the *manufacture* of the *wool* grown in her own *State*, would not only encourage a large portion of their farmers and planters who raise sheep, but would feed and clothe a portion of the *city population*, by employing them in and about the manufactories.

In this country this is a very desirable employment, for while in England a male spinner in a woollen mill receives only ninety-four

cents, and in France from forty to fifty-nine cents, in the United States he receives one dollar and eight cents.

At the same time the necessaries of life are twenty-five per cent. cheaper than in England.

The objection to manufactories, as injurious to the *morals* of the operatives, has been so triumphantly contradicted by the history of Lowell that at this day nothing need be urged upon that head.

But every projected operation which may act upon the *health* of the community deserves to be strictly inquired into; and, we think, that considering that in a country like this, where temperature is so continually and so materially changing, for the greater part of the year every man, woman and child in Virginia should be clothed in flannel next the skin; and, therefore, the production of a large supply of *home made flannel, from home-bred sheep, whose fleece will not shrink*, would be a national blessing.

But the most important information, as regards the art of sheep breeding and raising, consists in the *crossings*, and those which it is *proper* and those which it is *improper* tomake. This information will form the subject of a distinct and entire lecture, which I will read to-morrow evening.

We hope in our next number to be able to give to our readers a very full synopsis of Mr. Browne's second lecture. It will throw much important light upon sheep breeding and wool growing.

We are pleased to learn from Mr. Browne that he has a work nearly ready for press which will be of great value to the sheep breeder and wool raiser. His views of the crossings of stock appear satisfactory and conclusive, and are well worthy the careful study and consideration of every farmer and stock raiser. In our next number we shall notice more fully the object and design of Mr. B.'s book.

OBITUARY.

We extract from the Baltimore Clipper, of March 22, the following just tribute to the memory of the late John S. Skinner, the well known Editor of *The Plough, the Loom, and the Anvil*, whose sudden and painful death was occasioned by falling into the cellar of the Baltimore Post Office:

"Between two and three o'clock yesterday afternoon, he entered the Baltimore Post Office to transact some business, and on leaving stepped toward the side door on North street, but unfortunately mistook for it the door which leads to the basement, and opening it hurriedly, made one step and plunged head foremost down the flight of steps to the bottom, making, in the fall, a complete somerset. The clerks and carriers (one of whom saw him open the wrong door, but had not time to warn him of the mistake before he fell,) immediately ran to his assistance, and found him speechless! As soon as possible they took him up and carried him into the Postmaster's room, placed him on a comfortable cot, and called in a number of physicians, among whom were Drs. Buckler, Riley, and McKenzie, who did everything that the best medical science could suggest; but his skull was found to be badly fractured at the base, and his injuries of such a character as to leave no hope of his surviving. He remained totally insensible until twenty-five minutes past seven o'clock last evening, when he ceased to breathe. His afflicted wife was present soon after the accident occurred, as were also Ex-Mayor Davies and other relatives, whose grief at the sudden bereavement may well be imagined.

"Mr. Skinner was no ordinary man. He was known throughout the whole Union for his talents, untiring industry, and strict integrity. For twenty years he was the able Postmaster in this city, having been commissioned by President Madison, and continued until nearly the close of General Jackson's second term.* It is a singular coincidence that he should have met his death in the office the affairs of which he so ably managed for many years, but from which he was removed more than fifteen years ago.

"General Harrison coming into the Presidency, he was appointed Assistant Postmaster General, the duties of which he ably discharged until removed by another Administration; since which he has been engaged in editing and conducting *The Plough, the Loom, and the Anvil*, an agricultural journal of the highest character. His death will be a severe loss to the agriculturists throughout the country, as he was an able and zealous advocate of their every interest.

"In this city, where he was universally known and highly esteemed for his social qualities, unassuming demeanor, and generous impulses, the news of the accident which befell him, and the subsequent announcement of his death, created the most profound sorrow."

COLIC IN HORSES.

Colic in horses is readily cured by tying a small piece of tobacco on the bit of the bridle. The cure is effected when the tobacco is dissolved in the saliva. We have seen horses cured in this way when swelled up badly and in great agony.—*Exchange paper.*

*Mr. S. was removed from office by President Van Buren—not by General Jackson.

From the Richmond Enquirer.

THE NECESSITY OF LEGISLATIVE AID TO AGRICULTURE.

The Legislature of Virginia has been engaged for many years in an effort to develope the resources of the State by making roads and canals to bring to market its agricultural and mineral productions. Is it less important to afford aid and encouragement to production itself than to the means of transporting production? Is it not of equal interest to the State, that our exhausted soils should be improved and restored to fertility, as that the virgin lands should be provided with a road to the sea shore for their exuberant crops? Does not the farmer, who finds at the end of a year, that his hard toil is only rewarded with ten bushels of corn to the acre, appeal as strongly to the sympathy and justice of his government, as the occupant of Western land who gathers fifty? The latter cries aloud to the former, nor are his cries in vain, to assist him with roads, with canals, with tunnels, with bridges, with railroads that shall perforate or scale the Blue Ridge and the Alleghany, that he may bring his produce into the markets of the world. The former appeals to the sense of right and justice of the representatives of all parts of the Commonwealth to afford some assistance; that he may be enabled to apply to his worn and weary fields, improved modes of culture; that after the example of other countries and other States, he may find a remedy for exhaustion, some medicine for over-wrought and diseased soils; that science and experience may be united in exploring his lands, their constituent elements, their geological, chemical and agricultural features; that what is wanting to them may be known, and that the treasures they conceal may be brought to light. This knowledge would save millions now expended in groping in the dark, amid empirical efforts at improvement, and would create millions to add to the wealth of the commonwealth. This is a species of knowledge in which all are interested, from the seaboard to the Ohio. This is an improvement which concerns all trades and professions; for, certainly with us, agriculture is the great basis of all prosperity. Even education, on which we expend, perhaps, a hundred thousand a year, would be more efficiently promoted by devoting a large portion of the sum to agricultural improvement. If the income of the farmer is increased, the schools and colleges immediately feel its influence. Put it in his power to educate his children by the improvement of his lands, and he will not be in want of the Literary Fund. Teach him to make two blades of grass to grow where one grew before, and he will add another student to your schools and colleges.

One single discovery in agriculture, the value of fossil shell marl, is now educating thousands of children, giving comfort, ease and even luxury to large numbers of our population, diffusing refinement and a more elevated civilization, and pouring a rich treasure into the coffers of the State. The recent assessment of lands shows an increase in value, east of the Blue Ridge, of twenty-three millions since 1838. Between 1819 and 1838, there was a decrease in the same districts of sixteen per cent. To those acquainted with this part of the State, it is well known that a large portion of this increase is due to this discovery, and the general stimulus given to improvement, which was the consequence of it.—Much of the result may be attributed to the general diffusion of information on the subject by the able and energetic man who made it. Virginia owes more to him than any man now living. By his efforts the ebbing tide of her prosperity was arrested, and it now rolls on, slowly it is true, but surely, with a strong and steady wave to the flood. Tens of thousands of acres of exhausted lands have been restored to fertility, and many citizens who were preparing to join in the exodus from the land of their fathers, driven forth by imperious want, have been enabled to remain and grow rich on their paternal estates. Farms which had been reduced to sterility, where a struggling nature continued with difficulty to conceal her nudity with broom-straw and hengrass, now bloom with verdure and rejoice in beautiful, vigorous and abundant crops.

We hazard nothing in saying that, if the Legislature had extended efficient aid to agriculture a half-century ago, and this discovery had been then made and its value made known, the tide-water country would present a very different picture from that which is exhibited in the recent assessment. Its wealth and population would have made an easy settlement of a question which now exacerbates the public feeling, and perplexes and disturbs the mind of the State. But the last assessment does not show the true increase in the value of the real estate of the East; for the high price of labor, owing to the

large demand in the South, has had the effect of depressing the estimate put upon the lands. The profits of land, other things being equal, are highest when labor is low; and, consequently, as the value of the one ascends, the other descends. The arc of the pendulum of price has land upon one end and labor on the other. There has been a much greater enhancement in in their true value than it would appear from this assessment.

Any important discovery in agriculture, which is available to us, must have a similar effect. Who can calculate the addition made to the wealth of the world by the discovery of the value of plaster of Paris, (sulphate of lime,) as a fertizer? It is not too much to say that it is worth more to the human race than the acquisition of a territory of the magnitude of a great empire for their peaceful possession.

Who can appreciate the great results of the chemical analysis of soils? It constitutes a new era in the science of agriculture. It is a step from the known into the unknown, which may bring to light facts and principles that may overthrow all the systems of culture now existing. It may be, and not improbably will be, as the falling apple of Newton. A specimen of the soil of a field or of a district is presented to the chemist. He takes it to his laboratory, and by the magic of his science, a magic which in other ages would have condemned him as a magician, he takes it to pieces, separates the elements of which it is composed, and presents you with all the constituents. Here is so much lime, clay, sand, potash, magnesia, iron, with humus and all other ingredients. The nature of the soil is now known, and you perceive what is valuable, what is wanting and what is injurious in it to fertility. It may be very productive in some crops and worthless for others. Land, apparently very sterile, may need only one ingredient, and that of small cost, to render it highly valuable. Some substance may be detected, poisonous to crops and which may be easily remedied, when once known.

A specimen of a soil of good appearance was given to Sir Humphrey Davy, from Lincolnshire, in England, as remarkable for sterility. On analyzing it he found sulphate of iron. He recommended a top-dressing of lime; and the sulphate of iron was forthwith converted into the sulphate of lime; a noxious substance was at once changed into an element of fertility. It was the boast of Franklin that he had stripped lightning of its perils and had chained the thunderbolt. Chemistry does more. Poisons are changed by its alchemy into the means of subsistence.

The Hon. Reverdy Johnson purchased, in 1849, a small farm, near Baltimore, in the last stage of impoverishment. Such was its reduced condition that the last crop of corn was not more than one peck to the acre. He states that all the vegetable matter growing on the two hundred acres of cleared land, including briars, sassafras and other bushes, if carefully collected, would have been insufficient for the manufacture of one four-horse wagon-load of manure. He applied to Dr. David Stewart of Baltimore, an able chemist, who rode out to the farm and procured specimens of the soil, which he carefully analyzed. He found that it contained an abundance of lime, potash, magnesia, iron and organic matter, duly mixed with alumina and sand. One element only of a fertile soil was wanting, phosphoric acid; and of this, there was no trace. He recommended an application to the soil of the biphosphate of lime, a preparation of bones, as the best mode of supplying the deficient element. The remedy was given at an expense of ten dollars per acre. It was the one thing needful. Health was restored to the exhausted patient, and the grateful soil yielded last year twenty-nine bushels of wheat per acre to the proprietor. Nothing else was applied, indeed nothing else was wanting. Here was a beautiful triumph of science. There is no doubt about the facts; the experiment came under the observation and attracted the attention of hundreds. It was detailed to the writer by Mr. Johnson himself, and various others worthy of perfect reliance. It has been made known to the country in the American Farmer.

In each of these cases, a mere practical farmer would have groped his way in the dark, ready to be led astray by any *ignis fatuus* in his efforts to find some means of improvement. He might have applied lime or stable manure. The first would have been worthless, if not injurious, and the second would have given no results commensurate with the expense. The same is probably true of guano, for though the best specimens contain as much as twenty-two per cent. of phosphates, yet the expenditure would have been out of proportion to the result, if enough had been applied to give a sufficiency of phosphoric acid. Give us light, was the prayer of

Ajax to the Gods, amid the fearful struggle of battle. That prayer is as appropriate to the agriculturist as the warrior. Let us have the lamp of science to light the laborer in his toil, that he may not expend his efforts in vain. Give us an analysis of our soils, that we may know of what they are composed, that labor and capital may not be thrown away in the attempt to improve them. Give us an agricultural survey that the general capacity and deficiency of the different sections may be known to the people.

The art of culture is to a great degree a chemical art. Is the soil diseased, has it been exhausted of its alkalis, and consequently, is it now suffering with acidity as in all the tide-water country? Chemistry prescribes the remedy with as much certainty and upon the same principles that a physician gives potash or soda to neutralize the acidity of a dyspeptic stomach.—Do you employ plaster of Paris, or ashes or manures of any kind, it is chemistry that explains their action, the best mode of application and their effects. The earth is a great laboratory, in which chemical action is ever in progress, forming new combinations and decomposing old ones, destroying and giving life, preparing nutriment and sometimes poisons both for the vegetable and animal creations. He must understand something of this laboratory and of the agencies that are brought into play, who would draw from it the maximum of productions. The poor Mexican, toiling for his daily bread, trampled under foot for ages the gold of California. He knew not that he was surrounded with treasures, which would gladden the sovereigns of the earth. Like the Mexican, we have also labored in ignorance and darkness, and have walked over mines less glittering, though perhaps not less valuable. The veil is now partially torn from our eyes, and we see some of the rich stores which have been so long hidden. But we feel that we are still in the same situation as Sir Isaac Newton, who seemed to himself in his advanced age to have been wandering only on the shore of the great ocean of knowledge, gathering a few beautiful pebbles here and there, while the great deep lay unexplored before him.

Those who doubt the utility of legislative aid to agriculture, would do well to consult the history of our sister States, and of other countries in reference to this subject. Our neighbor, Maryland, has just commenced this system by employing a State Chemist, and she can even now point to the report of this gentleman, as affording "demonstration strong" of the wisdom of the measure, and the economy of the expenditure. In the midst of a great variety of the most valuable information which he has presented in his report, he makes known one fact, which is merely cited as an example, that is worth more to the farmers of that State, than the expense of his office for a century to come. He found in a large district, a red and yellow clay subsoil, containing from eight and a half to twenty bushels of lime per acre, for every inch in depth, besides also magnesia, and sometimes potash. The surface soil was very deficient in these very elements—deep ploughing there is all that is necessary to give to these lands whatever lime is necessary, without the expenditure of any thing, either for its purchase or transportation.

W. B.

From the Genesee Farmer.

CORN-GROWING.

Messrs. Editors,—I have a desire to communicate to you, and through the medium of your valuable paper to others, the method I have successfully practised in growing corn for several years past—not that I claim to have made any important discovery in its cultivation, but simply to have combined and practised the experience and recommendations of men wiser and more experienced than myself. The soil that I have tilled is a gravel loam. I have, usually for corn, turned over in the month of April, or early in May, a clover sod, by ploughing carefully and deep—a little deeper than ever before ploughed. I have spread the manure upon the ground before ploughing. I dig up the grass around the stumps and then thoroughly harrow until the surface is well pulverized and mixed. To mark the land for planting, I have used a light pole about thirteen feet long, twelve feet of which is divided into three equal spaces, four feet apart, (the distance I have between the rows) and to it I attach, by means of ropes, four pieces of chains, which I have found to make the best marks to follow in planting. Two men or boys, by each taking an end of the pole, can mark both ways ready for planting, several acres in a day. The benefit of thus marking I have found to be saving of time, straighter rows, and

a uniform distance between them, and also the entire independence of the planters of each other, so that boys who can plant only a part of a row and keep up, can do so correctly. I grow the large dent corn which is adapted to this climate. Four kernels are usually dropped in each hill and slightly covered with not more than two inches of earth. As soon as the corn has come out of the ground so as to be seen and follow the rows, I prepare a composition by mixing equal parts of slaked lime, ashes, and plaster, of which about a gill is dropped upon every hill of corn, and which is quickly done by suspending a pail or other vessel across the shoulders by a strap of leather, or rope, walking nearly erect, and with a small shingle dip out of the vessel and throw it upon the growing corn. Should the leaves be open and the preparation drop into them it does not injure the corn. I have found this composition thus applied, to cause the corn to grow rapidly and vigorously. And also what to me has been a great benefit, crows have never pulled up any after its application, although they had began to pull before. As soon as the rows could be easily traced, I have gone between them with a horse, and a cultivator so constructed that all the earth was moved and cleaned of whatever was growing, thirty-five inches wide. The cultivator has flat teeth, shaped like a common flat-iron, with a shank from the wide end eighteen inches long, and fastened on the top of the frame by screws and nuts. I have found that passing once with it has been as effectual as twice with any cultivator I had previously used. After passing both ways through the corn as above mentioned, I leave it till about the first of June, when I again go through the field in the same manner, and then thoroughly clean the hills with the hoe and hand, leaving the ground level. About the first of July I again clean the hills, after having been through as often as necessary with a horse and cultivator. The average yield per acre, in favorable seasons, when harvested, has been one hundred, or more, bushels good, sound ears of corn. The cultivator is gauged by a wheel so that it can be used without disturbing the sod. The benefits of level culture I have found to be that corn resists the winds better, extends without interruption its innumerable fibrous roots all through the earth, so near the surface that they derive every benefit from heat and moisture. I have often dug between the hills when the corn had attained nearly its growth and set for ears, without finding any space that the roots did not occupy.—I had designed to have written more, but my article would be too long.

ORANGE H. WAIT.

WHAT IS THE BEST FRUIT ROOM?

A correspondent in Ohio has written us a long communication detailing his experiments in keeping fruit under different circumstances and asking a minute plan for a fruit room.

Our views on this subject may be very concisely given. The best possible place for keeping fruit is a perfectly dry cellar or building below ground, which should have all the qualifications necessary for a wine cellar—that is, it should not have a particle of dampness about it, very little light, and the temperature should vary as little as possible all the year round. In such a cellar, fruit may be kept perfectly sound for double the usual length of time, either in barrels, or boxes, or bins, or upon shelves. Wherever a proprietor has a dry, gravelly soil, such a fruit cellar may be constructed with very little trouble. In such places a pit may be dug and lined with logs, if they are cheaper than stone or brick walls.

It should be remembered that it has lately been discovered that all rottenness in fruit is owing to the attack of a fungus, which propagates itself and spreads rapidly from a decaying fruit to a sound one. Hence the necessity of examining fruit in fruit rooms frequently and taking away all such as show the least signs of decay.

When we were in the gardens of Mr. Rivers, in England, we saw an admirable fruit room for preserving fruit. It was an old vault in the side of a dry bank. Fruit kept there with the least possible care, and we tasted a very good winter pear, quite sound and perfect, which had remained on the open shelf in this fruit room from November till the month of August.—*Downing's Horticulturist.*

SALT AND ASHES.

See that your sheep are liberally provided with this mixture at all seasons.—One quart of salt and three of ashes. Place it where it will be easily accessible, and it will prevent many unpleasant and painful evils. Salt and charcoal for hogs.—*Germantown Telegraph.*

From the Albany Cultivator.

MANURES—TOP-DRESSING.

We are indebted to Hon. John W. Proctor, of Danvers, Mass., for a copy of an essay on Top-dressing Grass-Lands, written by Charles L. Flint for the Transactions of the Essex County Agricultural Society. The length of the paper precludes the possibility of our publishing it entire, and we therefore give the following extract, which contains many useful suggestions:

It is a very common practice to suffer the manure from the barn to lie exposed for months to the winds and rains of summer and winter. Many farmers have no arrangement by which the liquid and most valuable part of stable manure, is saved, and yet, under all these disadvantages, they are too apt to congratulate themselves on having so many loads of manure. They do not consider that it is the quality, and not the quantity, which adds richness to the soil. The practice of digging a cellar under the barn, is becoming more common among enterprising farmers, and it may be said that the increased value and quantity of the manure, is enough to pay far more than the interest of the extra expense. Sheltered manure is far more valuable; but in cases where this has not, and cannot well be done, much of the real value may be saved by forming the yard so that nothing may escape. Let peat mud and loam be thrown in to absorb what would otherwise be lost. Plaster, occasionally thrown into the yard, is like money—I will not say in the savings bank, but rather put to compound interest.

In Flanders, where the greatest economy is practised, the liquid of a single animal is estimated at from ten to fifteen dollars a year. This, applied as a top-dressing, has a surprising effect. No one should neglect to form a compost heap; it may be so made as to form an extremely valuable article for top-dressing. A quantity of meadow mud, should be dug out in the autumn, for this especial purpose. That this is indispensable, will be seen from the fact that two cords of peat mud, added to one cord of good stable manure, will make a compound of three cords as valuable as clear barn manure.* This has been tried repeatedly, and is constantly done by those who are ambitious to excel in farming. To this compost should be added, from time to time, all the animal and vegetable matter adapted to enrich the soil; woollen rags, the remains of fish, the blood and flesh of animals, the hair of animals; all these make an exceedingly rich manure. A most intelligent gentleman, connected with a wool factory, informs us that a cord of matter collected at the establishment, is worth at least five or six cords of the best stable manure for a top-dressing. This we cannot doubt, for here are the blood, the wool, pieces of the skin of the animal, and many other substances, all collected together. A fermentation takes place by which the richest gases are formed. Such a compost heap, with an addition of loam and mud, would be invaluable for a top-dressing. But though, in most cases, all these substances cannot be procured, many of them can and should be saved by every one who is desirous of improving his lands. Those who are near the sea, or near the market, can procure an abundance of fish to add to the compost. Nothing is better for soils than this. Ashes should also be added, and when additions of manure are made, they should be covered with mud or loam to prevent waste.

We need not enter more minutely into the details of forming the compost heap; it is sufficient to say, in a word, that everything capable of fermentation may be added to it. The lower layer should be of loam or mud. Nothing is more common among farmers, on the death of a horse, or any other animal, than to throw the body away. It is estimated by some, that the body of a single horse, when divided and mixed with peat, mud and loam, will make a compost worth fifteen or twenty cords of the best and richest manure. This is perhaps too high an estimate, but animal substances ferment rapidly, or rather they may be said to putrify without fermenting, so quick is their decomposition. Leaves, grasses, moss, straw, and other substances of like nature may be used, and when they are well fermented, the heap should be thrown over; and if it is made long and narrow, so as to expose the greater surface to the air, it will be better. Whenever such a compost has been used as a top-dressing, it has produced the most astonishing effects. Many experiments have shown that this is the best way of using such a compost. In the fertile county of Hertford, in England, it is seldom used in any other way. It cannot be too highly recommended.

Animals fed on rich food make the most valuable manure. This will serve to show why the manure from the pig-stye is so fertilizing. Swine are fed on a great variety of rich food. The actual profit of raising them in some places, arises mainly from the amount of substances they will mix together and make into good manure. Let the stye be supplied at intervals with mud, loam, and other vegetable matter, and farmers will not complain of the cost of these animals.

Liquid manures are highly useful to grasses. Care should be taken to apply them, also, to the compost heap. The richness of manure from the stye, is owing mostly to the great quantity of liquid matter; hence the importance of adding a great variety of vegetable substances, loam, and mud. In a word it may be said that all liquid manures contain a large amount of nitrogen, which is an important ingredient of ammonia. The importance of saving

* Peat varies much in its value as a manure. Some may be worth what it is here estimated at; but we think it put too high to be received as a general rule.—Eds.

the liquid of stables, either with the compost, or to be applied by itself, may be seen, also, in the fact that the exceeding richness of guano and the ordure of all fowls and birds, is due to the union of liquids and solids. Spent ley from the soap boiler, is also a good, powerful liquid application. It shows its good effects for years, when properly applied.

After fermentation has taken place in animal manures, in the compost heap or elswhere, they may be spread without much loss by evaporation; and hence it matters not whether the top-dressing is applied in the autumn or in the spring. Plaster is better spread in the spring, when the moisture of the earth makes it immediately available. Not so with other manures. Some prefer the autumn for spreading these, while others prefer the spring just before the thick grass surrounds and protects them from the sun and wind. The soil in autumn is not injured by the loaded cart, as it is apt to be in the spring. Others still apply them after the first mowing, and before the summer rains. The new crop preserves the manures from drying up and wasting. This, however, is ordinarily too busy a season to attend to it with convenience.

MECHANICAL IMPROVEMENT OF SOILS.

There are two modes of improving soils. I have spoken of the composition of soils. You see how they vary, and what differences there are in the qualities of soils, and what it is that constitutes equality of soil, and what the relation between these and the chemical composition of soils. But how are soils to be improved? There are two methods, the mechanical and the chemical. Of the mechanical method I shall now speak, and of the chemical in my last lecture. Among the various mechanical methods of improvement there are three principal kinds. The first is deep ploughing; that, in almost all cases, is found to be important and profitable In all countries where I have been, in all parts of Europe which I have visited, experience has shown that the soil generally is not ploughed to a great depth; three, four, or five inches is almost the maximum depth of exhaustion. It is very often the case that persons exhaust land until they can raise no more crops, and are then compelled to leave. The person who succeeds, seeing the system of tillage that has been practised, instead of adopting the former system of shallow ploughing, goes down deeper, and turns up a new soil altogether. Very likely in this new soil are found accumulated the materials which the other soil once contained. The manure that has been put on and accumulated below is turned up, and the new comer gets, perhaps, not only a good virgin soil, but much of the money that the old farmer has buried there. This is no hypothetical case. If it were, I would not state it, for speculation and hypothesis are good for nothing. In the neighborhood of Edinburg there are farmers of the greatest skill and who make a great deal of money; and, as a general rule, you may judge of the skill of a farmer by the number of sovereigns that he has pocketed at the end of the year; it is a very good test. One of these farmers, after hearing one of my lectures, in explanation of this simple principle, told me that, though he lived so near Edinburgh, the thing had never occurred to him before, nor had he heard of it; and he immediately went to work to carry out the principle, and, by ploughing down, he had brought to the surface a fresh soil, and was then growing luxuriant crops where he had the land entirely exhausted. Therefore it is quite true that in the under or subsoil there accumulate many substances which have drained through from the upper soil, which make it fully as rich as the upper soil once was, and that the farmer takes the cheapest steps to reclaim poor land, exhausted by severe cropping, who ploughs deep.

This must be sufficient to show the value of the subsoil, when turned up and mixed with the upper. I need not dwell on this; but I have this remark to make. It happens sometimes that various substances accumulate beneath, which are injurious to the plant, and in order that they may not injure the upper soil, it is not always advisable to bring up. There are districts, in my country, where the subsoil is a white clay, which is so barren that if brought up it might destroy the upper soil, and therefore it is carefully avoided. This is the case in many parts of the world. It is quite proper not to do so; but not an unfrequent resort with us, as a means of deepening the soil, where the subsoil is impervious or noxious, is to cut it through, so that the water sinks, and, as it sinks below the level of the soil, the rain falls, filling up all the pores in the soil to a certain point, which, with the fresh air, effects a chemical action on these substances, changes them chemically, and gives them either a nourishing quality or modifies the subsoil so that, when brought up, it will not be injurious or noxious to plants

This is the object of subsoil ploughing; this is common in England; after draining in stiff clay soils. But the practice is also adopted were the land has been long drained. In Scotland, the farmers plough from seven to twenty inches deep, and experience has shown that lands thus treated not only retain everything put on them in the form of manure, but are capable of growing crops for a longer time, without exhaustion, than if they did not plough so deep.—*Johnston's Lectures.*

To spin and weave, to knit and sew, was once a girl's employment; but now to dress and catch a beau is all she calls employment.

From the Genesee Farmer.

THE BREEDING AND REARING OF DOMESTIC ANIMALS.

The farmers of the United States possess every advantage to excel in the breeding and rearing of domestic animals. They have an abundance of land for tillage, meadow, and pasture; and climates admirably adapted to the production of grass, roots, and grain. Horses, mules, neat cattle, sheep, and swine, are healthy, sufficiently long-lived, and profitable, when skilfully managed. In nearly one-half of the States, a good mule is worth $100, and an ordinary one of fair size is worth $70; while the cost of rearing until he is three years old, is no more than to keep a steer to the same age. As a mule will perform hard labor twenty-five or thirty years, or more than twice as long as a horse, particularly at the South, the demand for these field servants keeps pace with the wonderful consumption of calico, shirting, and other cotton fabrics. Mules are wanted for growing tobacco, which two-thirds of the men, and boys over ten years old, either chew or smoke, or both, every day in the year. For the culture of corn, as well as sugar cane and rice, mules are much preferred to horses; the latter, however, sell high in the Southern States, for carriage use and riding. The wife of almost every planter who is doing well, keeps her carriage and a pair of horses worth from $200 to $500; and every son and daughter big enough to ride, wants a saddle-horse besides. As population and wealth increase throughout the country, the demand for fine animals of all kinds augments in an equal if not a greater ratio. Ordinary cows sell in Georgia at from $6 to $10 a head, extraordinary ones bring readily from $50 to $150 each. We saw a native cow sold at the latter price at the State Fair in 1849, not so good as we have bought in Erie county for $13.

No other department of rural industry pays so well at this time as the breeding and rearing of superior stock. This is a branch of business which nearly every farmer thinks he understands perfectly, but after all, the results of his practice prove that he is mistaken. A large share of the best stock imported into the United States has deteriorated from the carelessness or ignorance of those into whose hands it has been committed. Until the art and science of breeding and keeping domestic animals are more generally studied, and more highly esteemed, the number of first rate horses, mules, neat cattle, sheep, and hogs, will be comparatively small. We have recently estimated, in a public document, the number of horses and mules in the country at six millions, and we are confident that their average value might be increased, by a course of skilful breeding, in a few generations, $30 a head. This would be equivalent to creating a capital of $180,000,000. A horse or a mule worth $90 is as easily kept when reared, as one worth but $60; and the same rule applies to the rearing and keeping of swine, sheep, steers for the shambles, working oxen, and dairy cows. The farmers of Belgium and Holland make more beef, according to the area under cultivation, than is produced elsewhere in Europe, and they market most of their cattle before they are three years old. Every calf designed for meat, should be ready for the butcher by the time a thousand days have passed over its head; and it should never form less than a pound of good meat in twenty-four hours, for its owner.

How can a farmer use the digestive organs of a calf 1000 days to the best advantage? An engineer is required to study every part of the machinery under his control. He must be familiar with the building and strength of each tube, valve, cylinder, and joint, in the most complex steam engine, to work it with the largest profit. What is a calf, colt, pig, or lamb, but a small locomotive in the hands of an agricultural engineer? How few engineers of this class have carefully investigated the nature and strength of the complex machinery which elaborates milk, butter, cheese, wool, meat, or produces the valuable physical powers of the ox, mule, and horse? The time has come when the anatomy and physiology of these wealth-creating animals should be universally understood. Their internal organization and external symmetry, their intrinsic value and productiveness, as well as beauty, can never be fully appreciated before science enlightens the understanding of the stock-grower. That all kinds of food in all sorts of conditions may be given to cattle, sheep and hogs, with equal benefit and profit, no one pretends; but when we presume to say how animals shall be fed, and what they should consume, there are almost as many opinions as farmers. Where butter is high, and calves are reared on skim-milk and butter-milk, experience in Europe has confirmed the teachings of science, that

molasses, used to sweeten milk deprived of its butter, is the best substitute in the system of the calf. Bread and sweetened water may not be so nutritious in the stomach of a growing child as bread and butter, but it is better than bread and pure water. Both molasses and sprouted barley have been successfully used in England in fattening bullocks and feeding milch kine. Many say that to malt barley sufficiently to develope its saccharine properties, increases its fattening powers, perhaps by rendering all its starch, gluten, and other protean compounds more easily digested.

Who has ever spent a dollar to learn what part of the nutritive matter that enters the stomachs of his horses, cattle, and hogs, passes through their systems undigested? Who can say how much is wasted in generating extra heat, by reason of the fact that animals are exposed to severe cold and storms in winter? All experience confirms the statement that, in a degree, external warmth is equivalent to food.—The living locomotive must have a given degree of internal heat, or all the machinery stops forever. The heart ceases to beat, and the lungs to inhale a single breath, if the fire within or the solar warmth without be too feeble for the purposes of life. A comfortable degree of external heat united with proper ventilation, for the benefit of all bipeds and quadrupeds, is a matter of universal interest. Warm houses, barns, stables, and pig-pens, with an abundance of good food, and that skilfully prepared and economically consumed, are points often overlooked even by intelligent persons.—The keep of animals governs their gradual improvement or certain deterioration. Attentive and proper feeding, with the judicious selection of males and females in propagating any race, constitute the cardinal points in stock-raising. One should be careful to provide a plenty of pasture, and that fresh and sweet, for consumption in spring, summer, and autumn, and a plenty of well cured forage for winter. Pastures and meadows have been sadly neglected, and their failing productiveness has attracted our attention in all the States we have visited, which are not a few. They greatly need a liberal covering of stable manure, re-seeding, and a good scarifying with a sharp harrow. Many need draining, and still more irrigation, which adds wonderfully to the growth of grass and the improvement of grazing and meadow lands. Water in springs, brooks, and creeks, abounds in the mineral and organic food of plants; and in thousands of ravines, dams and ditches may be cheaply constructed, to turn it over extensive fields.

The soiling of cattle is gaining in public favor every year, where it is tested by experience. By feeding stock in small enclosures, a large share of the fence now required in this country, may be dispensed with—an object of no inconsiderable importance. All good farmers recognise the necessity of either making or purchasing an annual stock of manure; and with this they can cut grass, clover, corn, or other forage, enough from an acre to keep one and perhaps two cows the year round.—The droppings of horses and cattle on pastures, while feeding, are found to be of little value; too much manure is applied at one place, and none at all over many square yards. Sheep distribute the raw material of crops more evenly, but not so well as it can be done by the husbandman. Stock-growing, manure-saving, and the economical production of grain and grass, must be blended into one system of tillage and husbandry. Much of the manure now manufactured is poor stuff, and really not worth over half what it costs. Not a little trash is hauled ten miles out of the city of Washington, to fertilize poor soils, which is of as little value for manure as a load of pine chips. Good manure is worth its weight in timothy hay, and often its weight in corn. The science of producing manure is quite as important as that of transforming grass, grain, and roots, into meat, milk, wool, and the flesh of horses and mules. The best manure sold in Washington brings four dollars a barrel, and it is worth that to make into wheat at a dollar a bushel. This fertilizer comes from the Pacific, on the coast of Peru, and from small islands covered thirty feet deep with guano, which is there estimated at thirty millions of tons. Manure of equal value per cwt. can be made at home, provided farmers will give instructions to their legislators to foster agricultural science.

As a general rule, it is safe to say that one-third, if not one-half, of the fertilizers voided in stables and barn-yards, are never carried out upon the fields whence the crops that fed the animals were taken. To waste manure and impoverish land, is not the way to produce cheap beef, pork, butter, cheese, and wool, for any considerable number of years. The manure of a fattening pig is worth nearly half as much as his food, provided one knows how to use

it to the best advantage. Meat sells at about the same price in Belgium that it does in the State of New York, and of course grass is worth about the same.—The manure of a cow in Belgium is often sold at from $12 to $15 a year. How can this raw material of crops and beef be more valuable there than here, provided our crops and beef fetch as much per 100 lbs. as theirs do? They send vast quantities of meat to London, and so do we, more or less. The truth is, we have yet to learn the money value of good manure, the art of saving it *all*, and the economy of selling fat heifers and steers when two years old, and fat pigs when from nine to twelve months old. A calf can extract more meat from 100 lbs. of oat, corn, or barley-meal, well cooked, by 40 per cent. than a six year old cow or ox can. Pea and bean porridge for pigs and calves, will make them grow rapidly, and are much used for that purpose on the continent. One that has plenty of rich manure can make cheap oats and corn for feeding all domestic animals; and if these are the best, they will pay a round profit.

Too little attention is paid to the saving and liberal use of grass seed by dairy-men, wool-growers, and such as make a business of rearing horses, mules, hogs, and neat cattle. After all that has been said about making two blades of grass grow where only one grew before—a proverb older than the time of Jacob, in all probability—the neglect of grazing lands is a prominent defect in modern husbandry.—Go where you will, and you shall find mean cattle, hogs, sheep, and horses, where pastures and meadows yield little food for domestic animals. To pay high prices for improved breeds, and then run them down in size, form, and value, by injudicious keep, is the height of folly. Hence, instead of commending Short Horns, Herefords, Devons, Ayrshires, or any other race, we content ourselves with urging the necessity of providing an abundance of food, adapted to the constitution and habits of the animal, which may be regularly consumed every day in the year. Sheep that have a feast three or six months and are then half starved an equal length of time, never clip even wool. The staple is materially affected by all changes of this kind; and every dairyman knows that to give cows only half allowance ten days in June, will diminish the yield of milk, butter, and cheese, for six weeks thereafter. Many interesting experiments on this point have been tried in Europe, the results of which are highly instructive. The transformation of grass, roots, and grain, into milk, meat, and wool, is now treated of as a branch of *manufactures*, in which labor and capital must be vastly more concentrated, to give the highest attainable profit. Instead of being so anxious for an illimitable "range for stock," as Western and Southern growers demand, bring the whole operation into a narrow compass, and add four-fold to the natural productiveness of the soil, and at the same time make one animal worth three or four common ones.

From the Richmond Whig.

ON MIXING PLASTER AND GUANO.

The mixture of plaster and guano, and plaster and putrescent manures, has been a standing recommendation in the agricultural papers for the last six or seven years. The writer of this, believing such combinations to be absolutely injurious, recently took the pains to investigate the matter, and succeeded in obtaining a number of important facts. The result was, that in nearly every case the action of guano was impaired by the addition of plaster, very much in proportion to the quantity of plaster employed. When mixed together in any thing like equal proportions, the effect of the guano was entirely destroyed. In one or two instances, when plaster had been liberally used with stable manure, the effect was equally injurious.

The professed object of this combination is, by means of the plaster, to arrest the escape of certain ingredients which enter into the constitution of the other substances, which would otherwise pass off into the air; in ordinary phraseology, to "fire" the ammonia. That the ammonia is "fired" most effectually, there can be no doubt; for the roots of the plants are never able to disengage it, at least in its original form.

When two substances are brought in contact, between which a chemical action takes place, a new and entirely distinct substance is the necessary result. This is obvious to every person in the least acquainted with chemical affinities. What the quality of the substance thus formed may be, as a measure, it is impossible to predict, *a priori:* it may be valuable or worthless, but it can only be ascertained by experiment. In the case under discus-

sion, the principle combination is supposed to be between the sulphuric acid of the plaster and the ammonia of the guano, which produces sulphate of ammonia.—There are also other combinations which it is not important to specify. So that in applying this compound to the soil we are in reality using neither guano nor plaster, but an entirely different substance—something of our own manufacture; and yet we are expecting a separate, as well as combined, action from each of the original components. And if disappointment ensues, instead of taking any blame to ourselves for such a violent interference, we cast it on the guano, and are ready to pronounce it a humbug.

If there be any of your readers who design using guano according to the mode I have ventured to condemn, I hope they may be induced to re-consider the matter. They cannot do better, I am persuaded, than to act on the good old maxim of "letting well enough alone" That there have been some respectable imitations of guano may possibly be true; but whoever succeeds in improving the quality of genuine Peruvian guano, needs not despair of emulating the hues of the rainbow, or adding perfume to the violet.

T. S. P.

Petersburg, March 10, 1851.

From the Ohio Cultivator.

CULTIVATION AND MANAGEMENT OF THE FLAX CROP.

The extraordinary demand that has arisen for the article of flax seed, during the past two seasons, through the multiplicity of our oil mills and the scarcity of seed in our principal markets, have influenced many farmers to think favorably of this crop who are practicably unacquainted with its most successful methods of management. Hence any information on this department of farming, that would be considered by practical men of a reliable character, must at this time be desirable.—Having had much experience in the management of flax, and having cultivated some seasons as high as fifty acres and worked the whole of the fibre into a marketable article of flax and afterward into small cordage and twines, practical farmers who may have a desire of embarking in this business, either for the seed alone or for the seed and fibre, may put any suggestion we make to a practical test, without any apprehension of the result proving disastrous. The only motive which prompted us to prepare our thoughts and experience on this subject for the press is to enlighten public opinion on a subject that has hitherto been much neglected by those who have contributed to the agricultural literature of Ohio.

Flax requires a rich, deep and friable soil; and one which rests on a subsoil composed mainly of a permeable clay loam is preferable to that which is more porous in its character. This applies with greater force in the latitude of Ohio than further north, for the obvious reason that the drought affects the flax crop in the lines of latitude lying between 39 and 42 degrees, to a much greater extent than between 44 and 46 degrees. The great difficulty that the flax grower will have to contend with in Ohio is the flamage that the flax will be apt to sustain in average seasons by drought. By carefully observing the few hints that may be gleaned from the following remarks, this evil may in a great measure be obviated.

The great starting point is to have the natural quality of the soil in every respect right for the crop. A rich and strong loam abounding in vegetable mould and resting on a tolerably retentive clay subsoil is, above all others, the best suited for the production of a large average yield of seed and a uniformly strong and valuable yield of fibre. This kind of soil comprises perhaps one-fourth of the arable land of Ohio, and in the central, northern, and western portions of the State especially the suitable quality of land for this crop abundantly abounds. Indeed, almost any soil that will produce a large return of cultivated grasses without much extra cultivation, by being brought into perfect state of tilth, is adapted to the profitable production of flax.

The course of cultivation most likely to afford an abundant yield of seed and fibre is to break up an old sod field, one in which the cultivated grasses preponderated would be preferable, and plant it with corn, and cultivate it thoroughly, so as to destroy all weeds, and the following year sow it with flax. Corn, when properly cultivated, is the best preparatory crop for the flax that can be cultivated, with the exception of potatoes.

The proper system of culture to practise in all cases where an abundant yield of seed is desired, is to plough the land for the flax crop in the autumn, to the depth

of at least six inches, and if this has been neglected it should be done during the winter months, so as to get the benefit of the ameliorating action and influences of frost and atmosphere, by which the entire soil will be changed in its mechanical combinations, so as to make the roots of the plants easily accessible to the full depth of the soil. The roots of the flax plants will extend into the soil, if in a suitable state of culture, to the depth of at least one-half the stems or straws. By good cultivation, and other influences being equal, the stems of flax would average at least three feet in height, and hence the importance of deep cultivation for this crop. This particular feature of the business can however be best ascertained by a practical series of experiments, and in no instance will the labor and money expended in this way be found unproductive in profits to this and succeeding crops.

Where autumn or winter ploughing has been adopted, the only preparation required for the seed is to plough a very light furrow, then harrow once or twice with a small tooth harrow to level the surface and bring the whole into a perfectly fine tilth. If the soil be cloddy after the spring ploughing and harrowing, it should be either rolled before the seed is sown or else a thick brush harrow should be employed to pulverize the surface.

The period for sowing the seed is usually protracted some weeks beyond the one which would best secure a full average crop. As seasons very much differ, no precise period can with safety be given, but experience has proved in numerous instances that a safe and unerring rule in all cases will be found in sowing the flax crop just before the forest trees put forth their leaves and when the indigenous fruit trees of the country are showing the first evidences of blossoming. Every day that the sowing is protracted beyond this point will the crop be seriously affected, especially if the season be very dry.

The quantity of seed ordinarily sown in this country is from two to four pecks per acre. A more fatal mistake than this, however, could not be made. At least two bushels of seed should be sown per acre, and on many soils from nine to ten pecks would be preferable to a less quantity per acre.

We have frequently harvested thirty bushels of flax seed and four hundred pounds of clean scutched flax from an acre of land prepared on the foregoing principles, and the quantity of seed sown was never less than at the rate of nine pecks per acre.

Without prolonging our remarks any further at this time, we would simply say that the subject will be continued until the ground has been fully occupied, including the preparation of the fibre for market.

W. G. EDMUNDSON.

Columbus, Ohio.

ILL SUCCESS IN FARMING.

There is more truth than poetry in the following, which is extracted from the leader of the *London Times*, of January 18th. It comes at the conclusion of a long article on Protection, Free Trade, Agricultural Clubs, &c.—We particularly mention where it was found; because there are some who believe in the far-famed Leviathan, and think that nothing but what is good can be issued by the *Times*. To such as the advice here given may apply, we wish profit from the perusal.

"It is something that with all the ups and downs which farmers, in common with all other people, have had in these five years, and which they had had in every previous year, they have had a fair average of success, and are still in condition to continue their struggle with the thorns and thistles ever fated to infest the surface of the ground and the lot of mortal man. The secret of agricultural ill success, and the secret of nearly all agricultural complaint, is to be found much nearer home than in equal laws and unrestricted competition. Under the same laws, and on the same soil—under no appreciable difference of circumstances, one farm will exhibit a good and profitable cultivation, and the next the very reverse. Our agricultural correspondent has pointed this out with a carefulness of observation, which can hardly be questioned, and which Lord Beaumont corroborates, so far as regards that portion of Yorkshire with which he is best acquainted. If there are men who will undertake farms above their capital—who borrow capital for the purpose, and are obliged to repay it when they are most in want of it—who adopt a style of living in proportion to their farms, not their actual means—who forget that they are engaged in a business which requires both application and skill, and who expect to make blunders with impunity, and be extravagant without loss—such men will experience the uniform fate of all who trade on similar principles, and just as two shopkeepers in the same business and the same street, will one grow rich and the other find his way into the *Gazette*, so will it be with two

farmers in the same parish or the same valley. Even if they all equally complain in bad times, we shall beg leave to wait for a more unquestionable test than the momentary feelings of disappointment. Agriculture, we have no doubt, will be as profitable as ever it was in the run of years, and after a little readjustment to the various changes of the times, some of them *against*, and some of them as decidedly *for* the tenant-farmer."

For the Southern Planter.

EXPERIMENTS WITH GUANO.

The following essay was prepared at the request of the Wardsfork Club; since reading it, several friends, who heard that it contained in a condensed form the result of a great many experiments with guano, have applied for it. In searching for the essay as presented to the Society, I have only been able to find the first draft, which is somewhat variant from the one read. I have determined, as the most convenient mode of furnishing it to those who desired to read it, to offer it for publication in your paper, with a slight hope that it may be useful to others.

Being requested by the Club to submit my views on guano, I must premise, that neither my own experience, nor the experience of any one farmer, for the short period of time that guano has been introduced amongst us, is sufficient to enable us to form a correct opinion of its value. The accurate experiments of the English, Scotch, German and French farmers ought to be collated and brought to bear on the question of its efficacy.

If there is any reliance in human testimony, it ought to be put down as a *fixed fact*, that guano is a fertilizer. I have examined more than one thousand experiments, and in more than ninety-five in the hundred, its use resulted in increased production.

The only question of interest is, does it pay--does it reimburse with profit the investment made in it?

There are evidently two extreme opinions on the efficacy of manures. Those who with Liebig and Petzhold reject the carbonaceous and gaseous matters, as useless or of little value, and those who entertain the common prejudice against guano and other special manures that they are applied in too small quantities to do good.

By the aid of analysis and experiment the constituents of plants have been ascertained; and the modern theory of agricultural chemists is, that no plant can grow on a soil that does not contain the same substances that are found in the plant; the idea is, that in the growth or organism of plants they possess no power of making new elements, or of transmuting one element into another, that the plant appropriates, or as it is more technically called, assimilates the food, fitted to its organs, found around it, and can do no more; and has no power of creating matter.

Now according to this theory, the necessities of most cultivated plants, as found by analysis, favor the idea of great value in guano.

Its prominent constituents are, phosphate of lime and ammonia. As I am not expected to occupy much time, the club will have to take my authority for the statement, that I have examined several hundred experiments, with a view to ascertain what are the most efficacious constituents of manure, and although there are exceptions, yet as a general rule, those manures that showed the greatest increase of production, contained the most ammonia and phosphate of lime. The grain of cereals it is said cannot be produced without phosphorus, as proved by Boussingault's experiments with plants grown in land without it.

Now, very few manures contain either phosphorus or ammonia in such large proportion as guano. Horse dung about three-quarters of one per cent. of ammonia, good specimens of guano, about ten per cent. Guano contains some twenty-five per cent. of phosphates, fresh stable manure three-tenths of one per cent.—Very few manures in nature contain much phosphorus. We have a cheap sulphuric manure in gypsum. Ashes, mica, felspar, and many clays furnish potash. Carbonate of lime, hornblende, &c. furnish the lime of plants; but very few minerals contain phosphorus in any of its combinations. Native phosphate of lime, or the mineral *apaite*, is found in few places; some little has recently been carried from Spain to England for manure. Most of the phosphorus of plants is taken from a disseminated condition in good soils; and unfortunately this rarest of all manures, goes to form the bones of man, and by the custom of civilized and christian communities, these bones are buried beyond the reach of vegetation of plants.

But to approach the subject more practically, I condensed the results of forty-seven experiments, (selected at random,) made with great accuracy and precision, from the transactions of the Highland Agricultural Society, made by different persons on a variety of soils. Most of these experiments were reported in prize essays; nine of these experiments were with guano, dressed on grass; eight resulted in profit, and only one in loss—average profit, (after deducting for loss) £1 7*s*, or upwards of five dollars on a Scotch Imperial Acre.* The profit in this experiment, as in the others herein after named, was the nett profit, after deducting cost of manure, and ascertained by comparing the crop, with the crop on a portion of the land not dressed with any manure. Five experiments with oats; three resulted in profit, and two in neither loss or profit; average pro-

* The Scotch Acre is 1.29 English, nearly one-third larger.

fit, £1 2*s* 2*d*, per Scotch acre. Five experiments with potatoes, none resulted in loss; average profit per imperial acre, £4 7*s* 3*d*. Eleven experiments on wheat; five resulted in loss, six resulted in profit; average profit on the whole, 12*s* 7*d*, (twelve shillings, seven pence,) per Scotch acre. Seventeen experiments on turnips; all resulted in profit; average profit, £3 0*s* 6*d*. In the great bulk of experiments I have examined, guano pays better on turnips than any other crop, and a heavy yield of turnips contains by analysis, more phosphate of lime than any other; it pays but poorly on wheat, although I was surprised to find that it is generally applied in Scotland as a top dressing, or slightly ploughed in—if top-dressed, generally sowed during rain. The Club will be surprised to learn, that guano in a majority of experiments I have referred to, is beaten in productive effect by nitrate of potash, (salt-petre,) and nitrate of soda, and very often by sulphate of ammonia on *wheat* and *oats*. At the same time, from two hundred and fifty to three hundred lbs. of guano, in nine experiments out of ten, beat from twenty to thirty tons of farm-yard manure, on most of the cultivated crops; but from the Scotch experiments, what are called special manures, (those above mentioned—saline manures,) take precedence of guano on the cereals.—It ought perhaps, however, to be stated, that Henry Coleman, in his work on European Agriculture, writes rather disparagingly of the nitrates, and thinks they serve mainly, to increase the amount of straw, without a correspondent benefit to the grain; I consider it however, much safer to rely upon the accurate Scotch experiments, than upon the general, and perhaps loose opinion of the distinguished author above referred to. I will mention as I pass on, that guano compares well with any manures on grass, as a top-dressing.

Many of the Scotch experiments have been conducted with the special object of ascertaining the *permanent effect* of guano. In these experiments, the comparison is made with twenty or thirty tons of farm-yard manure, and three crops taken off of each parcel of land; that is from the one dressed with guano, and the other with farm-yard manure. The guano beats the first year, the farm-yard manure is a shade better in the second crop, (generally oats or clover,) and but little difference in the third But I have noticed some five or six experiments in which the comparison was made with the produce of a plat of land without any manure, and with this, the guano maintained its superiority the first, second, and third year. A theoretical view confirms the idea of the lasting effect of guano. Two hundred and fifty lbs. is the ordinary dressing for an acre of wheat; this contains sixty-two lbs. of phosphate of lime. Now, if the wheat drew altogether from the guano and nothing from the land, a fair crop (from the analysis of that plant,) would not contain more than twenty lbs. of phosphate of lime, and as this substance is permanent and not subject to evaporation, the residue, after supplying the wheat crop, is left for the uses of subsequent crops. I have carefully looked through the last Patent Office Report (for 1849 and 1850,) through the numbers of the Southern Planter for two years back, and Professor Mapes' and Skinner's, and several other agricultural papers, and although the experiments mentioned in these papers show favorable results for guano, yet I have not met with a solitary satisfactory experiment; that is, where a comparison was made with *nothing*, or *farm-yard manure*, and the produce of straw, and grain, accurately measured or weighed and the nett product, after paying for investment and application, of each, contrasted. I have therefore not collated these experiments.

The field for accurate experiment on Indian corn and tobacco, may be said to be untrodden, new and full of interest. There were eight or ten experiments reported at our last meeting of the effects of guano on tobacco, but no member weighed the *guano-dressed tobacco*, but merely spoke of its general appearance.

The ash of Indian corn contains a large amount of phosphoric acid—tobacco comparatively little. The ammonia of guano would probably have a fine effect on tobacco, as most nitrogenous manures favor the growth of leaf.

I must express an impression (although a mere theory,) I have, of the value of the nitrates as a manure for tobacco. These substances, even when applied to other crops, have a decided tendency to increase the leafy or carbonaceous part of the plant, and as tobacco contains more nitrate of potash, than perhaps any other plant, it must exact a good deal of this substance from any soil in which it flourishes.

There is great encouragement to use special manures on tobacco; it pays better *per acre*, than any other crop. Fifteen bushels is a fair crop of wheat per acre. Now, if the guano increases the crop thirty per cent., at $1, the increased product is worth $4 50. Eight hundred pounds is a good crop of tobacco per acre; at $7 per hundred, it would be worth $56. Thirty per cent. on this is $16 80.

There are occasional drawbacks on the profits from the use of these condensed or special manures that ought to be calculated.

1. Drought has a considerable effect on most of them.

2. The diseases to which the wheat crop, the tobacco crop, and the potato crop are liable. If the wheat crop fails from rust; the tobacco crop from fire, or rot; or the potato crop from disease, the planter at least loses the volatile parts of these manures, besides his loss of labor in cultivating his crop.

Another ingredient in the calculation of the profit of guano, is the probable error in the average of experiments, by occasionally mixing the dishonest statements of those interested in the guano trade, with others that are

true. It is the interest of some to exaggerate its efficacy, of none to depreciate it.

The frauds practised in England, by adulterating guano, have been so frequent and foul, that it ought to be a warning to our Legislature to enact the strictest inspection laws; and turn out every incompetent inspector, should one be unfortunately appointed. To repeal the inspection law for guano might inflict a blow upon the prosperity of our State, that would be felt through all time. Adulterated guano might destroy the reputation of the genuine article as a manure, and it might fall into disuse.

GEORGE W. READ.

OLD HORSES.

Another great mistake is made by many persons in considering that old horses should be indulged by an extra allowance of rest compared to that which is permitted the young ones of their stud. The incentive to such practice is amiable, but it is at the same time a mistaken one. Old horses cannot bear entire rest; they may be favored as to the frequency of calling forth great exertion from them, but a couple of days of entire rest brings on all their old aches and pains arising from work, blows and falls. Exercise is life to them; it keeps the vital functions going, and the limbs, that regular and daily exercise keeps pliant, become stiff and rigid by continued absence of motion; any exertion under such circumstances is attended with pain, and if an old horse is still in a state to work without pain to himself, the only way to enable him to do so is to keep him going. If a young horse should be stiff the day after hunting, in him all the vital functions are in such full play that rest will restore his limbs to their wonted elasticity; not so with the old one; his flagging energies must be quickened by motion, or swelled legs, general stiffness, and consequent disinclination to motion, from the pain it creates, is the certain consequence. In corroboration of what I state I will refer to machiners, in other words, stage-coach horses; many a team of these, composed of four highly bred old cripples, would gallop over their five or six miles of ground at the rate of 14 miles an hour, and return in the same stage in the evening without, figuratively speaking, turning a hair, or requiring a touch of the whip; and would do such work better by far than young ones, and why they would do so arose from the following causes: being old cripples as they were, they could be got, in stable phrase, "of a pretty good family;" that is, so very highly bred, that, had they been young, or at all sound, they could not have been purchased at coach price, and, if unbred, they could not have stood the pace. Such highly-bred horses had years of hard keep in them; the work they had all their lives been at kept them clear in their wind, and a fast pace had from use become natural to them. If these same horses were put to a long stage, where they worked two days and rested one, the two horses rested would, so far from being in the best state of the four to commence their stage, come out of the stables as stiff as if they had no joints to their limbs, nor till they had hobbled and cantered a couple of miles could they settle to anything like a trot. Old hunters are, in a mitigated way, similarly affected by absence of exercise. We all know that aged horses will stand more work than very young ones; but neither will stand great exertion and long rest alternately.—*The Hunting Field.*

From the Alabama Planter.

GOOBERS OR GROUND PEAS.

Messrs Editors,—Perhaps nothing has been more injurious to the South than the idea that no product was really worth a planter's attention other than corn or cotton—that ground peas, potatoes, beets, carrots, parsnips, turnips, garden vegetables and the like, were too small things to engage the attention of a *southern planter.* A few sweet potatoes have a passing notice; and at random, a little patch is sown with turnip seed and a few collards planted out. This is about the extent of effort, if it can be dignified with the name of effort, in this way.

Now, this is all wrong. Some little improvement is indeed making, and I trust it is but the beginning of better days in this respect. Even this dry season, I know a gentleman who planted about an acre in goobers. Some part of it was shaded and some trodden as a part of a yard. He turned his hogs on it before commencing digging, and for some ten days the hogs and negroes contended who should get the most. When done the negroes had about forty bushels. The owner thinks that the product was at least sixty bushels They sold readily in Macon, Miss., at one dollar per bushel.

The best plan I have seen devised yet for gathering goobers, is to let one hand take a spade or strong iron shovel, run it down beside the hill, take it up and throw dirt and peas into a sieve that another standing by holds, who sifts out the dirt and casts the peas into a basket at hand. In this way a hand will gather four or five bushels per day.

I. D.

MASSACHUSETTS LEGISLATIVE AGRICULTURAL SOCIETY.

On Tuesday evening, Gov. Lincoln had been expected to preside at the 3d meeting. But Hon. E K. Whitaker, for the Committee, read a letter from him, regretting that previous engagements prevented his attendance.

General Dearborn, Mayor of Roxbury, was invited to take the Chair, and preside for the evening. Mr. Dearborn spoke for nearly an hour. He said we were indebted to General Washington, more than to any other man, for interest in agriculture. From some inexplicable cause, the National Government had not done its duty in fostering this great interest. Massachusetts may claim to have entered upon this cause nearly as early as any other State. Not enough had been done by government. It was left for individuals to advance the cause. Immense advances have been made abroad. If the same intelligence is devoted to agriculture that has been to mechanics, jurisprudence, &c. the result would be as creditable. We require seminaries where every branch of industry may be represented.

Hon. B. V. French being called upon, said he had nothing new to offer. If it was desired, he could repeat some of his former remarks. He detailed the practice of Mr. Smith of Deanston, thorough draining, and also his introduction of the subsoil plough with which he ploughed 16 inches in depth. Mr. F. said he had benefited his own lands by opening trenches, filling with stones and building his stone walls on the top of them.

Gov. Hill of New Hampshire, said he had for several years been interested in the matter of subsoil ploughing. He has sixty acres on which he has used the subsoil plough with marked effect. The lightest soils may thus be made most valuable for cultivation, because they can be cultivated at the least expense. Capital may be as well employed here as 1000 miles West. He is of opinion that manure does not operate below where the soil has been stirred. He hoped the farmers of Worcester county would give their attention to the subject.

Hon. Mr. Walker, Secretary of the Commonwealth, had made some experiments. He regarded thorough draining as very profitable. Was surprised at its effects in bringing in fine grasses—white clover, herdsgrass, &c. without manure. He throws the mud out one side; the gravel out on the other side; digs four feet deep or more—then fills up within a foot of the top with small stones, inverts the turf and fills up.

Gen. Cushing read a letter from a friend that has practised thorough draining in Scotland. Shallow draining had fallen there into disrepute. Roots of cereals would average 13 inches in length where soil was made deep by the subsoil plough.

Daniel Pratt, Jr. of Chelsea, requested five minutes, and said that physical labor alone was not enough. Mental labor was required to make agriculture available. He then made some discursive remarks on mechanism, &c.

☞ In allusion to the remarks of the gentleman from New Hampshire, Rev. Mr. Sawyer proposed this:—

"The *Plains* of Massachusetts give their thanks to the *Hills* of New Hampshire.—*Pittsfield Culturist.*

THE LAST HALF CENTURY.

There has been no period since the commencement of the world in which so many important discoveries, tending to the benefit of mankind, were made as in the last half century. Some of the most wonderful results of human intellect have been witnessed in the last fifty years. Some of the grandest conceptions of genius have been perfected. It is remarkable how the mind of the world has run into scientific investigation, and what achievements it has effected in that short period. Before the year 1800, there was not a single steam boat in existence, and the application of steam to machinery was unknown. Fulton launched the first steam boat in 1807. Now there are three thousand steam boats traversing the waters of America, and the time saved in travel is equal to seventy per cent. The rivers of every country in the world, nearly, are traversed by steam

boats. In 1800 there was not a single rail road in the world. In the United States alone there are now 8,797 miles of rail road, costing $286,000,000 to build, and about 22,000 miles of rail road in England and America. The locomotive will now travel in as many hours, a distance which in 1800 required as many days to accomplish. In 1800 it took weeks to convey intelligence between Philadelphia and New Orleans; now it can be accomplished in minutes through the electric telegraph, which only had its beginning in 1843. Volatism was discovered in March, 1800. The electro magnet in 1821. Electro-typing was discovered only a few years ago. Hoe's printing press, capable of printing 10,000 copies an hour, is a very recent discovery, but of a most important character. Gas light was unknown in 1800; now every city and town of any pretence are lighted with it, and we have the announcement of a still greater discovery by which light, heat, and motive power may be all produced from water, with scarcely any cost. Daguerre communicated to the world his beautiful invention in 1839.—Gun cotton and chloroform are discoveries of but a few years old. Astronomy has added a number of new planets to the solar system. Agricultural chemistry has enlarged the domain of knowledge in that important branch of scientific research, and mechanics have increased the facilities for production, and the means of accomplishing an amount of labor which far transcends the ability of united manual effort to accomplish. The triumphs achieved in this last branch of discovery and invention, are enough to mark the last half century as that which has most contributed to augment personal comforts, enlarge the enjoyments, and add to the blessings of man. What will the next half century accomplish? We may look for still greater discoveries; for the intellect of man is awake, exploring every mine of knowledge, and searching for useful information in every department of art and industry.—*Philadelphia Ledger.*

IVY ON BUILDINGS.

It is a mistaken idea that ivy renders a structure damp, and hastens its decay. On the contrary, nothing so effectually keeps the building dry, as may be seen by examining beneath the ivy after rain, when it will be found that the walls are dry, though everything around is deluged with wet. Its exuberant and web-like roots, issuing as they do from every portion of the branches, and running all over the surface on which it grows, bind everything together that comes within their reach with such a firm and intricate lace work, that not a single stone can be removed from its position without first tearing away its protecting safeguard. In proof of this, we refer to ruins of ancient castles and buildings; for, while in those parts of the structure that have not the advantage of this protection, all has gone to utter decay; where the ivy has thrown its preserving mantle, everything is comparatively perfect and fresh, and oftentimes the very angles of the sculptured stone are found to be almost as sharp and entire as when first they came from the hand of the builder.—*Am. Agriculturist.*

From the Lexington Gazette.

THREE-HORSE PLOUGHS.

Have you tried the three-horse plough, my brother farmer? Some in Rockbridge have, I know. Did you ever know a man who had given a good three-horse plough a fair trial, throw it aside, and take his two-horse again? I think not. It is a trite but sound adage, that "whatever is worth doing is worth doing well;" and, in nothing that man employed his skill upon, is the adage more appropriate than in ploughing. Good ploughing is the very foundation of a farmer's success. Without it, he may rise early and eat the bread of industry, but, if his ground is not thoroughly broke and well tilled, he will be but poorly remunerated for his labor, for, "as a man soweth that shall he also reap." Well, is a three-horse plough really a desirable implement of husbandry? It is. The weight of the plough is such as to keep it better in place than a two-horse; the ground is therefore more uniformly broke. It cuts a wider and deeper furrow when properly drawn, and hence, declares a war of extermination upon brier roots, &c. Owing to its weight, it requires a little more "elbow grease" in turning at the end of "a land," but less than a two-horse at other times. Superadded to its other advantages, the three-horse plough fortifies the farmer more fully against the effects of dry weather upon his crops, and of washing rains upon his land. I consider this last, itself a sufficient inducement to the use of three-horse ploughs. Just try them, and it will do your "very heart good" to see how old mother earth "goes curling" before, and what a furrow, dark and deep, they leave behind them. If your land is a stiff sod, the McCormick pattern with a cutter in front may suit best, but,

in most cases the "graceful Livingston" is all you could desire. Don't be scared by what you may hear as to the rapid wear of its cast points. When at a summer or fall fallow, you will find them to wear pretty rapidly, but just lay aside those half-worn points until winter, the time at which corn ground should be broke, and you will find them to do your ploughing well.

BLAKE.

From the Germantown Telegraph.

PLASTER OF PARIS.

Plaster of Paris, or sulphate of lime, which is now so universally used in farming pursuits, is a compound, as I presume most of your readers know, of sulphuric acid and lime. It exists in abundant quantities, in a native state, both for artistical and agricultural purposes, and has been recommended by many for the same use as muriate of lime—the fixing of ammonia—but it is generally regarded, and with justice, as greatly inferior to that article, as it is of difficult solubility; at a temperature of sixty degrees, one part only of gypsum being soluble in four hundred and sixty parts of water; and even the solution of this comparatively insignificant quantity cannot be perfectly effected with the previous trituration of the gypsum and masceration for a long period of time. It has, however, a very beneficial effect upon vegetation, especially upon clover plants, and for top-dressing, where the crop and soil are favorable to its application, is probably the cheapest and most economical mineral that can be applied, all things considered.

The following from "*Sprengel's Analysis*," exhibits a tabular view of the quantity of lime and magnesia, sulphuric and phosphoric acids in one hundred thousand parts of several of our most common and valuable crops:

	Lime.	*Mag.*	*Sul. Acid.*	*Phos. Acid.*
Wheat,	96	60	50	496
Barley,	103	180	59	210
Oats,	86	67	35	70
Potatoes,	33	32	54	40
Cabbages,	1822	202	474	436
S. Turnips,	835	289	890	408
W. Straw,	240	33	37	170
B. Straw,	554	76	118	160
Oat Straw,	152	22	79	12
R. Clover,	584	70	94	138
Turnip,	127	22	41	73
Beet,	285	133	123	167

The practical reader will not fail to notice that red clover contains, according to the above analysis, a very large proportion of lime: hence the very decided action of sulphate of lime on this crop, when sown on soils not naturally affluent in this substance, or in which it does not abound in sufficient quantity to subserve the wants of the crop they are required to sustain. I cannot vouch for the strict accuracy of the above table, but presume from the high character of the source whence it emanates, that it presents a very near approximation to the actual truth, and more especially is this conviction impressed by the corroborating fact that it quadrates very nearly with the deductions of others who have examined it with attention and practical skill.

Cabbages are, I believe, ordinarily considered both here and in Europe, a very exhausting and emasculating crop—except on soils of a certain class. This will be easily explained when we reflect upon the comparatively and really large quantity of lime required to perfect the plants. Unless the soil be strongly calcareous, the chances against success are fearfully numerous, and hence it results that both in the field and garden cultivation of this vegetable, the application of ashes and lime, in some of its compounds, and in large quantities, produce such decidedly good results.

A MONTGOMERY COUNTY FARMER.

Gwynedd, December 6, 1850.

COMPOST FOR FRUIT TREES.

Fruit trees must be *fed*, if we would have them thrive and bear. Decaying leaves or the scrapings from the forest form one of the best ingredients for compost designed for any kind of fruit trees. Mr. Downing, a distinguished fruit culturist, and the editor of the Horticulturist, gives it as his opinion that the best compost adapted for general use, with fruit trees, is that composed of swamp muck, or the black, decayed vegetable matter to be obtained from low grounds, mixed with wood ashes, at the rate of five bushels of fresh ashes or twice that quantity of leached ashes to a wagon load. This furnishes not only the requisite vegetable matter, but also those mineral manures which are essential to the production of fine fruit. This compost he would modify as follows, to adapt it to the different varieties of fruit trees.

For Apple Trees.—To every cart load of muck and lime mixture, after it has lain a fortnight, add two bushels of air slaked lime.

Pear Trees.—To every cart load of the muck and ashes mixture, add a bushel of ground or dissolved bones, and two bushels of leached ashes.

Plum Trees.—To every cart load of the muck and ashes mixture, add half a bushel of lime, half a bushel of ashes, and a peck of salt.

Grape Vines.—To every cart load of the muck and ashes mixture, add a bushel of lime, a bushel of ashes, and half a bushel of gypsum or plaster.—*Maine Farmer.*

From the Germantown Telegraph.

PREPARATION OF CLOVERSEED.

For several years past severe losses have been experienced by our farmers, annually, in consequence, as many have supposed, of sowing bad seed. Others again have attributed the failure to drought, which prevented the germination of the seed, or effected its destruction after it had germinated and began to grow. All these causes, doubtless, have had their full share in producing the evil complained of; but we cannot help thinking that, notwithstanding the introduction of much bad seed, and the occasional effect of severe drought, in some sections, the failure complained of might with proper attention in selecting and sowing the seed, have been in a great measure prevented. It is, perhaps, generally well known, that clover seed germinates slowly, and that the plants, during the earlier stages of their developement are peculiarly fragile, and liable to be destroyed by a privation of water, or by the suffocating and stultifying influences exerted by the grains in connexion with which they commonly take root.

The latter evil is far more extensive and fatal in its effects, unquestionably, than many are prepared to suppose. I observed a field the past season, through which a narrow strip had been left unsown, in consequence of want of seed; but which had been sown with herdsgrass and clover, the same as the residue of the field, which had been laid to grass with *oats*. On this strip, the grasses presented a most beautiful and luxuriant appearance, while on those portions which had produced oats, scarcely a plant was to be seen!

In the preparation of clover seed, I have ever found that soaking for a day or two in warm water, in which a small quantity of common salt has been dissolved, has usually produced the best results. But even this precaution against failure, will be of little use unless the seed be carefully covered. On the contrary, seed that has been soaked, if it be not covered immediately, and at a sufficient depth after sowing, will be much more liable to fail, than that sown in its natural state. I have found it an excellent plan to *roll* lands intended to be laid to grass. For this purpose, I have a "*drag roller*," which is expeditiously formed by attaching a chain to a common drag by a clevis fastened to one side, in order that the length of the drag may be at right angles with the direction of draught. This allows the drag to swing clear of permanent obstructions, and finishes off the surface much more thoroughly than any other instrument I have ever used.

In laying lands to grass, I never sow my seed with the grain. The frequent failures which perplex and discourage the farmer, in his attempts to stock his lands, are, in my opinion, attributable to the natural effects of this practice. I prefer harrowing or ploughing my stubble grounds, after the grain has been taken off, and sowing on my seed, care being taken to cover it thoroughly but not deeply, and to compress the surface and render it perfectly smooth and level with the implement above named; or, if there are rocks or other obstacles in the way, which would render its operation imperfect or inefficient, with the heavy cylindrical roll. Seed put in in this way, rarely fails to "come" well, and if the ground is in good condition, the growth will be rapid and vigorous, and the grasses more forward at the close of the season, than if sown with the grain in the spring.

A Montgomery County Farmer.

EXPERIMENTS WITH "PURE BIPHOSPHATES"

The following is the experiment with this chemical manure, upon the farm of Hon. R. Johnson, of Maryland, referred to in the advertisement of Messrs. Kettlewell & Davidson, published in our March number:

Mr. Editor.—Some time ago I promised to furnish you for publication in your valuable paper, a statement of *facts*, in relation to an experiment made upon the farm of the Hon. Reverdy Johnson. Protracted and severe indisposition has prevented me from sooner complying with my promise.

I shall not trouble you with a disquisition upon the particular theory of manuring, the truth of which this experiment was designed to establish. It is the theory of Liebig, familiar to all intelligent farmers.

Several excellent writers and intelligent agriculturists have attempted both in Europe and the United States, to overthrow this theory; arguments have been used for this purpose, the

force of which I have been unable to appreciate, and experiments made, the accuracy of which I am compelled to think at least questionable.

My sole object in making the experiment in question, was to ascertain facts, and my purpose now is to submit these facts, through the medium of your paper, to the consideration of those who are more capable than myself of deducing from them true and reliable principles for the application of manures. About thirteen months ago, Mr. Johnson acquired the farm upon which this experiment was made, situated about two and a half miles west of Baltimore. Believing the land susceptible of improvement, and desirous to effect his object by any reasonable outlay of money, he sought information from several persons as to the best mode of doing it—I was one of those consulted—I explained to him the theory of Liebig, and urged its adoption, by such arguments and illustrations, as occurred to me at the time; his consent was easily obtained, to an experimental test of this theory upon a part of a field, then about to be laid down to wheat.

The farm contains about three hundred acres, two hundred of which are cleared — The land originally good, had been utterly impoverished by a long course of bad husbandry.

The soil contains a very large proportion of iron. So complete was its exhaustion, that when I first saw it all the vegetable matters growing upon the two hundred acres of cleared land, (including the briers, sassafras and other bushes,) carefully collected, would have been insufficient for the manufacture of one four-horse load of barn-yard manure. The field selected for experiment contains ten acres, embracing the slopes of two hills, and a small valley intersecting it diagonally. It was at that time in corn, and did not produce one peck of corn to the acre, although it had been cultivated in the usual manner, and with ordinary care, and the season had been not below the average of seven years.

I procured the services of Dr. David Stewart, so justly distinguished for his scientific attainments and the accuracy of his chemical analyses; who rode out with me to the farm, and selected himself the samples of the soil. These samples he analyzed most carefully and minutely, and having ascertained the defective elements, prepared a recipe by which the proposed manure was compounded, by those skilful gentlemen, Messrs. Kettlewell & Davison.

The corn was then cut up at the ground and removed; the field ploughed, harrowed, and laid off into sixteen and a half foot lands.— The preparation was then scattered regularly over it, costing (all told,) ten dollars per acre. One and a quarter bushels of Mediterranean wheat were sown to the acre, about the first of November, and harrowed in. No barn-yard or other manure was used. The yield was more than twenty-nine bushels per acre, although the crop was badly harvested, and the field not subsequently raked.

I send you herewith a note from Dr. Stewart, containing the analysis of the soil, and his reasons for using the particular preparation employed, which I beg you will append to this hasty and necessarily imperfect communication. If the account here given of this remarkably successful experiment, shall induce a few of our enlightened farmers to investigate this subject; or aid in establishing the truth of the great principles which it was designed to illustrate. If it shall convince any one of the necessity of ascertaining the disease of the soil, before prescribing the remedy, and of the great value of chemical science as applicable to our noble profession, I shall be amply repaid for any trouble bestowed upon the experiment, or upon this communication.

Very respectfully,

Your obedient servant,

J. O. Wharton.

P. S —It is due to the public and to Messrs. Kettlewell and Davison, to say, that the preparation made and sold by them, under the name of "Renovator, or Chemical Salts," was also used upon this farm at the same time, and upon similar land with marked effect, and there can be no doubt of its value upon soils like this.

Baltimore, 19th September, 1850.

To Dr. Wharton:

Dear Sir,—I take my pen to comply with your request that I should state to you the reason for using the bi-phosphate of lime on a soil; in the examination of which we were both very much interested about a year since. It affords me much pleasure to comply with this request, as I know that you can appreciate the labor of a careful analysis.

I find in my note book the following comment, made on the occasion of our visit to the farm: "Sample of soil from the farm of the Hon. R. J. yielding about a half a peck of corn per acre."

Sand and bases insoluble,	71.20
Lime,	00 30
Magnesia,	00.40
Manganese,	00.10
Potash,	00 23
Water and organic matter,	10.07
Phosphoric Acid, no appreciable trace,	00.00
Iron and Alumina,	17.70
	100 00

Remarks.—The above contains as much lime and magnesia as could be furnished by a dressing of one hundred and fifty bushels per acre, although no lime has ever been applied to this farm. It also contains as much potash per acre as could be obtained from about six hundred bushels of best green sand, or several times that quantity of the best hickory ashes. But there is no doubt but that the latter would benefit it to some extent, on account of the phosphoric acid which exists in the ashes of

wood, and which is deficient in this soil. The same remark may be made of lime, which contains a trace of phosphoric acid, and sometimes one or two per cent. But another remarkable feature in the soil, is the immense quantity of iron it contains, at least six times as much as usually occurs in soils. [Phosphates had been applied to a field in Frederick County without any effect. The failure was attributed to the presence of a large quantity of iron in the soil, but upon analysis I find fifteen bushels of phosphate of lime in each acre, equal to about two thousand lbs. of guano, sufficiently accounting for the failure of this article, as it is manifest that the soil did not require it.] Now, as this soil contains an abundance of every other material except phosphoric acid, and the large quantity of iron is capable of supplying all the ammonia that the crop may require, the most economical dressing is the purest preparation of phosphoric acid that we can adapt to agricultural purposes; our object being to avoid the expense of hauling, and pay only for what the land requires. The result *has proved* that bones dissolved in oil of vitriol—in other words, bi-phosphate of lime reduced to powder with slaked ashes—supplies the deficiency in the soil where no phosphoric acid exists, while phosphate of lime applied to soils containing an appreciable quantity of phosphoric acid has no effect. I know that some object, that it is difficult, and others say *impossible*, to appreciate a few hundred pounds of phosphate of lime when distributed on an acre; but they seem to forget that it may be very easy to measure the quantity of water that will cause a vessel to overflow *when full*, although it may be impossible to measure its contents accurately, or sound its depth. That which causes it to overflow (however small the *proportion*) corresponds with the quantity of phosphoric acid which, when added to a soil, renders it productive—any lesser amount, however minute, is the cause of sterility.—We assert that we can detect it in every productive soil, and if it cannot be detected, it is fair to infer that it should be applied, if we expect to remove grasses and wheat which always contain it. On the other hand, should it exist in appreciable quantity, we save the expense of applying ten dollars per acre in the form of guano or bones, and substitute some other material that is deficient. In order more fully to illustrate this *principle*, I will show you below the qualitative analyses of three soils.

The first, a soil from Frederick County—limed seventy-five bushels per acre—yielding the best crop of wheat in the neighborhood.

The second, from Delaware—limed thirty bushels per acre. *Before* liming, it yielded twelve bushels of corn per acre; after liming, twenty-four bushels.

The third is from the neighborhood of Baltimore, and is being limed.

One thousand drops of distilled water, in passing through one pint of the soil, *during twenty-four hours*, dissolved—

	1st.	2d.	3d.
Grains of solid material,	0001.10	0000.60	0000.30
Specific gravity of solution,	0001.00	0000.40	0000.10
Inorganic matter in do.	0000.90	0000.20	
Lime & Magnesia,	0.50	0 15	0.7
Potash,	0.10	0.03	Trace.
Soda,	0 01	0.02	0.01
Chlorine,	0.01	0.01	Trace.
Sulphuric Acid,	0.02	0.01	Trace.

If one grain of plaster should exist in a square foot of the soil, it would not only be easily detected, but weighed. This is a mode of analysis that I have devised for determining the immediate wants of a soil—not estimating those substances that may be set free by *subsequent disintegration*. By the percolation of pure cold water, you obtain a view of what the soil would present to the next crop through the rain.

It is demonstrated, then, that bones, lime, plaster and salt, are only relatively good; that even the best guano must fail when applied to soils that require some other substance; that the experience of the *most intelligent and best farmers in the State*, with regard to the comparative value of bones and lime, is *worthless*, except he can also prove that all farms are composed of the same proportion of lime, phosphoric acid, &c. But the prejudice against these doctrines is so strong that personal abuse is frequently fulminated against those who deny the universal application of any means, or the value to the public of any multitude of experiments *except the composition of the soil upon which the various experiments were tried, is also given.*

I am, very respectfully,
Your obedient servant,

DAVID STEWART, M. D.
No. 77, N. Eutaw st.

From the Baltimore Sun.

ANALYSES OF GUANO.

LABORATORY OF THE STATE CHEMIST,
No. 78 North Eutaw Street.

Messrs. Editors,—As the following is of interest to a large class of your readers, will you please give it an insertion in your paper:

Having had numerous queries propounded to me as to the quality of the guano now in market, I here publish for the information of the agricultural community the following analyses of several cargoes, recently imported, and now offered for sale.

The samples, with one exception, were furnished to me by Mr. N. E. Berry, commission merchant, No. 8, Light street wharf:

Sample from ship Greyhound was composed of: water, 10.00 per cent.; ammonia, 15.28 per cent.; sand and earthy matter, 1 40 per cent.; organic carbonaceous matter and other constituents, 41.32 per cent.; phosphates, 32.00 per cent.

Sample from ship Albany was composed of: water, 13.00 per cent.; ammonia, 13.94 per cent.; sand and earthy matter, 1.40 per cent.; organic carbonaceous matter and other constituents, 40.46 per cent.; phosphates, 31.20 per cent.

Sample from ship Brooklyn was composed of: ammonia, 12.09 per cent.; sand and earthy matter, 0.90 per cent.; water, 9.50 per cent.; carbonaceous matter and other constituents, 51.71 per cent.; phosphates, 25.80 per cent.

Sample from ship Chapin was composed of: water, 10.20 per cent; ammonia, 18.14 per cent.; sand and earthy matter, 4.00 per cent.; organic carbonaceous matter and other constituents, 40.06 per cent.; phosphates, 27.60 per cent.

Sample of a specimen of Patagonian guano, none of which is imported directly here, as far as I know, but comes by way of New York: water, 11.50 per cent.; ammonia, 2 86 per cent.; sand and earthy matter, 10.00 per cent.; organic carbonaceous matter and other constituents, 33.24 per cent.; phosphates, 42.40 per cent.

I did not make the above analyses in a very elaborate manner—that is, I have not given the quantities separately of many things of no particular value, such as onalates, &c. the enumeration of which convey to the mind of the non-professional reader no definite idea. Indeed, from many of the published analyses of guano, one cannot judge of its agricultural value. When, for instance, one number represents several different things, it cannot be told how much of either is present; it may as likely be nine-tenths of one substance as another, and so its agricultural value cannot be determined.

In the above, the ammonia, already presented, together with that capable of being formed by the decomposition of the elements of the guano, is estimated, and its phosphoric acid, the relative quantity of which is shown under the head of phosphates. The guano also contains a little chloride of sodium (common salt) with some potash and sulphuric acid; but as it does not owe its peculiar value to these, I have not given them separately. Altogether, they seldom exceed five, and are sometimes less than two per cent.

The first four of these samples are marked by Inspection No. 1, are of Peruvian guano, and are sold at $48 per ton of 2,000 lbs. The Patagonion guano is marked No. 2 and sells for $38 per ton.

Here are four specimens of guano, selling at the *same* price; their valuable constituents should be equal or nearly so; how is the fact: The Albany contains of ammonia, 13 per cent.; the Greyhound, 15.28 per cent.; the Brooklyn, 12.09 per cent.; the Chapin, 18.14 per cent.

There is a difference of more than 33⅓ per cent. as to the quantity of one of the chief constituents, and that which gives Peruvian guano its peculiar distinctive value. The other valuable constituent is the phosphoric acid, showing relatively as follows: The Albany, 31.20; Greyhound, 31.10; Brooklyn, 25.85; Chapin, 27.60.

The difference in this is not so marked, but still sufficiently so as to make it a subject of care in the purchase of the different cargoes, being nearly six per cent. between the Albany and Brooklyn. The Patagonian, selling at $38 per ton, contains but two hundred and eighty-six per cent. of ammonia, whilst its phosphates exceed those of the Peruvian. When we consider the absolute superiority of some of the above specimens over the others, and the value of guano to different soils, it is of the highest importance that its relative value should be shown by an inspection, that will cost those who use it nearly $5,000 per year. In the report which I made to the Legislature at its last session, I then insisted that the law for the inspection of guano should cause to be shown what was the proportion of its valuable constituents, and that those in guano were the "ammonia already present as a salt, with that capable of being formed by its azotized matter and its phosphoric acid or phosphates." This is a "fixed fact," and the analyses above given show the necessity of the advice which I then urged upon the Legislature.

There is no safety in buying an article by the mere name. The Peruvian guano differs very much, though it is frequently said to be "all alike." The Patagonian, being subject to more influences involving change, differs more widely. I have examined some specimens containing as much as nine per cent. of ammonia; the

one above contains less than three per cent.

The above facts, independent of others, are sufficient to show the necessity to the agricultural interest of an inspection which will show the worth of the thing inspected, which will convey to the mind of the purchaser what he is buying by showing the quantity of particular constituents in the article bought.

The only remedy which I can at present suggest is, *that the purchaser should insist on the seller guaranteeing his guano to contain a particular per centage of ammonia and phosphoric acid*, and in the event of this per centage not being present, then a pro rata deduction being made.

I urged that this should be provided for by the Legislature at its last session. I have again and again insisted, that the planter and farmer should not purchase the article unless the seller would give the above guarantee. This should not be objected to by any honest dealer or importer; and I again advise all not to buy guano without some arrangement of this kind be entered into. In England guano is offered for sale *guarantied* to contain sixteen per cent. of ammonia, for a less price than that which contains even less than twelve per cent. here.

There is no reason why this should be the case; the purchaser should insist upon some guarantee as to the quantity of valuable matter, when buying an article of which he nor the vender can know the value. I shall furnish from time to time analyses of the various cargoes in this port until all be completed.

JAMES HIGGINS,
State Agricultural Chemist.

For the Southern Planter.

REVIEW OF THE FEBRUARY NUMBER.

Mr. Editor,—The spikey roller is an entirely different article from the one described in the Planter of this month, and by reference to the November number you will see them so expressed. Two errors appear in page 46, second paragraph, 16th and 17th lines: boarded should read *banded*, and ends behind should be ends *and* behind. I hope our friend, the Colonel, understands me.

If it be not "travelling out of the record" "I'll take a step over" the last Planter. Imprimis, there is beauty, truth and simplicity in the extracts from Mr. Newton's address, and my knowledge of him makes them the more valuable to me. *Guess* he finds more satisfaction in the farming than the political world. The fact is, men of his stamp are never properly estimated. The author of Arator is known but as a statesman. Buel,* the good and the wise, has gone unregarded to realms unknown; and the estimable head of the "Plough, Loom and Anvil" finds, by sad experience, how monstrous is the task of making the agricultural world "do the things that ought to be done." G. is attempting to make the worse appear the better side. The old wheel-horse is right sour in the intemperance of his style. Never saw any good salæratus biscuits yet. Peas are certainly a fine feed for hogs, particularly our field pea, which, combined with the sweet potato in cooking, is the most fattening of all hog meat, and is equally as good for beeves. The article on the management of negroes is the very best I have ever read, though the worthy author must pardon me for dissenting from his mode of elevating their houses so far above the ground, as being obnoxious to two substantial objections—cold in the winter, and danger from the hurricanes that prevail in the South. And I would respectfully suggest the use of *comforters* in the place of blankets, particularly for families. Hauling logs for fuel is an immense saving of time and labor, for they can be sawed at night and morning in short lengths, and split out faster than shingle blocks, with a heavy axe. The laps, or smaller wood, should be hauled by carriage horses, for the double purpose of keeping them gentle and earning their food. A friend of mine, once of King & Queen, practised this mode of supplying his homestead with fuel. I think sunrise, in short days, a good time enough for breakfast. The reclamation and draining of bogs having always "cost more than they come to," I let the Olive Branch pass. The farmer's elegy reminds me forcibly of the poetical vagaries of old Dimock Hayes. Mr. Barnum, when he took the Presidency of the Fairfield Agricultural Society, made, as poor Fleming Terry used to say, "very high aspirations." It is ardently to be desired that the Scuppernong grape should be extensively cultivated amongst us; it is decidedly the least expensive in its culture; is a *heavy bearer;* and certainly a great luxury. To Mr. Baldwin I would say, that as the man carries the umbrella in the summer and the overcoat in winter, so should the ground be protected in either season. Professor Norton is informed that latitude must be consulted in the successful propagation of the different kinds of corn.—Wonder if our friend of the White House (New Kent) does certainly know all about the

* When the death of Judge Buel was made known I proposed that each subscriber to the Cultivator should contribute one dollar towards erecting a monument to the memory of a public benefactor—one who had done more substantial good than all the warriors and statesmen of his day, but his merits did but find a tomb.

prolific corn? Although it is said the Professor's examinations are plain, yet there is too much of the "*two and thirty syllable*" in them for the plain yeomen, and even "Old Whack" could have done as well. The colt article will do, though I have seen better. Remarks on *in-and in* breeding, are in part true, though the celebrated Bakewell said "breed from your own stock until you get a better," and Dr. James Anderson reiterates this direction. There is no controverting the doctrine of garden manures, as laid down by the Southern Recorder. What is said by I. I. H. about plaster on wheat and grass may be true or not. The article on steam ploughing is very long. He who sings the praises of the Northern apple, probably never tasted the Albemarle pippin or those of friend Woods. I have lately seen an apple that was raised on the Bordley lowgrounds, and although a seedling it promises, if possible, to be superior to either in flavor, and certainly in size and keeping qualities. All that is said about setting out, &c. is very good, and when the trees have attained sufficient size and strength, hogs should run amongst them during the fall, winter and spring months. Any leguminous crops, cotton, or potatoes, may be cultivated in the orchard whilst young, but no corn or straw crops. The Virginia and Tennessee Railroad "I had rather see than hear talk of." The Patent Office article reminds me of a remark seen several years ago in the National Intelligencer, "The power of party is the philosopher's stone, which by its transmuting powers can make pure gold for one, out of what was dross in another."

Pray, who is using highland meadow oat? It is certainly the best grass for sandy soils, and followed by pea fallow, will make a very fine wheat crop. Pleased to find your valuable work meeting encouragement.

I am yours, &c.

JOEL YOUNGER.

February 25, 1851.

POSTAGE ON THE PLANTER.

Under the new postal law, commonly known as the "cheap postal bill," the charges upon the "*Southern Planter*" will be as follows:

Beyond the county lines of Henrico—

50 miles or less,	-	5 cts. per annum.
Over 50 and less than 300,	10 "	" "
Over 300 and less than 1000,	15 "	" "
Over 1000 and less than 2000,	20 "	" "

So soon as a list of the post offices within fifty miles of the county lines can be made out correctly, we shall publish it. The list will be longer than would be supposed. Henrico is not a very large county, but she stretches with the meanderings of the rivers and creeks that bound her, to within striking distance of many post offices which are much more than fifty miles from Richmond. There will be little trouble to ascertain what are over three hundred miles distant.

EXTRACT FROM EDITOR'S CORRESPONDENCE.

"*Liberia, Prince William, March* 29, 1851.

"This section of Virginia has heretofore been remarkably badly cultivated, and consequently the lands are reduced in fertility very much; but there is an evident improvement perceptible in the mode of culture, and with the use of clover, plaster, guano, &c. I anticipate a very great change, especially as we shall have the advantage of the Orange and Alexandria Railroad through the neighborhood, affording a cheap mode of transportation to and from market."

We would be pleased to have a full report of experiments with clover plaster, guano, &c. from the above correspondent; the quantities applied, and to what crops, with the increase of product.

For the Southern Planter.

ON THE SELECTION OF A FARM.

Mr. Editor,—The farmer has been compared to a general—his farm to a battle-field. If it is incumbent upon the one fighting the battle of a day to be cautious in selecting his position, how much more essential is that quality to the other preparing for a life-time battle. The time was in the history of our agriculture when *open* was the watch-cry; the tall primeval forest soon melted before the woodman's axe. Regardless of the future, our ancestors, looking only to the present, with little judgment and less discretion, soon exhausted the shallow, yet fertile soil around them. Then under their system change was necessary. But another era has arisen. The stunted pine, the yawning gully, and the broomsedge have taken the place once occupied by the giant monarchs of the wood. Now, another system is necessary. Improvement still opens a glorious field to the farmer, for the full cultivation of which, in choosing a residence, it is needless to say, he should locate for life. Allow one, who with little experience still desires to contribute his mite to the common good, to give a brief synopsis of what should influence one in such location.

First, in regard to the house; he should see that it is easy of access, convenient to wood,

and with an abundant supply of good water near; as nothing more than it contributes to the health and general well being of a family. He should observe (if there are any) whether the marshes and stagnant waters are west and south of the dwelling, as the winds which generally prevail during the generation of miasma blow from that quarter—if there is an intermediate body of woods the better. He should make strict enquiry into the health of the place, particularly if ponds or large water courses are adjacent.

There are various other observations, which a discreet purchaser will not fail to make, viz: the arrangement of the interior house, its ventilation, and many others, which, while of too little importance to hinder his selection, should certainly have due weight in influencing his contract. Though the house and its appurtenances may have all to please the eye and gratify the senses, yet, if the land be originally deficient in fertility, he should do any thing else than purchase. If originally fertile, yet impoverished by negligent culture, let him be assured that before him lies an ample area for successful improvement—for no maxim is more axiomatical than this, "land originally fertile has a strong tendency when impoverished to resume its pristine state." The best soil is a chocolate loam. Such land is good for any crop. So friable as to be easily worked, yet so tenaceous as to resist washing. There are some light lands based on a clay subsoil that are rich and productive. The philosophy of deep ploughing long since taught what experiment has since corroborated, that the power of land to resist washing is increased in proportion to the depth it is broken. The rationale is this: the water is absorbed instead of running off. Light land at best lacks tenacity; its dense subsoil prevents absorption; the thin surface is soon saturated. The water not being absorbed, running through so friable a soil, its effects are painfully manifested in the woful gullies unfortunately too prevalent in Virginia. The scientific agriculturist tells us, that light lands, though quick and productive, are liable from their evanescent properties to quick deterioration, and require a constant application of manure. While we admit in them the possession of good qualities, still we advise a purchaser to buy such only when he can get none better. These remarks have special application to the middle region of Virginia.

Yet though the soil may vie in fertility with the valley of the Nile—though health may take its abode in that dwelling—yet if the neighborhood be unsociable, it is no home for that man who wishes to act in harmony with that principle, "it is not good for man to be alone". Man is a social being. The poor man, surrounded by his fellows, feels more solid happiness in his humble cot, than the lonely Selkirk in his vast and ample island.

Let the purchaser also remember, that in the cultivation of the soil he should not neglect the mental culture of his family. We are far from being advocates of that plan which, for educational purposes, takes the boy from the influence of parental dictation at the age when that character is being formed which is to exert its influence on his whole life. Sent from the house of his parent, from the natural influence of his example, the youth considers himself a man ere he has learned the responsibility of that state. We therefore presume to say that a school in the neighborhood should be a high recommendation of any farm. Knowing that this life is the schooling for another, it is superfluous to say that no man should locate in any neighborhood in which religion is not respected, and its propagation facilitated.

These, Mr. Editor, are a few of the many facts that should influence one in the choice of a farm. If you think they may prove beneficial to any one, you are requested to publish; if worthless, then they may serve to light your midnight lamp for the elucidation of more useful themes; and I will have the pleasing thought that I have attempted to perform what was considered a duty.

POWHATAN.

Powhatan, April 9th, 1851.

For the Southern Planter.

HORTICULTURAL REMARKS FOR APRIL, 1851.

PREPARED BY A. D. ABERNETHY, FLORIST, GRACE STREET, RICHMOND, VIRGINIA.

Annual flower seeds may still be sown.—Finish planting out verbenas, carnations, roses and other hardy flowering plants. When all danger of frost is over, plant out the more tender sorts, such as heliotropes, scarlet geranium, scarlet sage, dahlia roots, &c. also all the summer flowering, such as tuberose, gladiolus, amaryllis tigridia, &c. Newly planted fruit and other trees should now (if not previously done) be tied to stakes, as they are more liable to be injured by high winds after the foliage is developed. Flower borders, &c. may now be hoed and raked, as the weeds will now be coming through the ground, at which time they can be more effectually destroyed, and with less labor, than when they are larger. As this season is particularly mild and moist, grass lawns, to have them in neat order, will require to be mown towards the end of the month.—Admit abundance of air to greenhouses, &c. Water freely, particularly such plants as are blooming, as geraniums, roses, cactus, &c. About the end of the month the plants may be taken out of doors, examine them carefully, and shift such as may require it; afterwards plunge the pots in sand, tan-bark, or some other substance that will keep the roots cool and moist. Camellias should be placed in a

situation where they are shaded from the sun after eleven o'clock.

In the kitchen garden plant out cabbage and lettuce for succession crops, and tomatoes, and eggplants, if the weather is mild. Plant snaps, Lima beans, melons and cucumbers. Sow a few radishes and peas to succeed those sown last month. Sow flat Dutch, drumhead, or other late cabbage for fall use.

TO CORRESPONDENTS.

The communication of *Wm. Boulware, Esq.* was received too late for the present number. We will take pleasure in laying it before our readers in the May number.

MANURES.

The continuation of the subject of Manures we promised in our last issue, is unavoidably postponed until the May number, when it will be resumed.

An old gentleman in a neighboring town missed from his vines some luscious grapes, which he suspected his gardener had appropriated to his own use.

"Wife, wife," said he, "what has become of the grapes?"

"I suppose, my dear, the hens have picked them off," was her reply.

"Hens! hens! some two-legged hens I guess," said he, with some impetuosity; to which she with as much calmness replied,

"My dear, did you ever see any other kind?"

CONTENTS OF NUMBER IV.

COMMERCIAL RECORD.

WHOLESALE PRICES CURRENT,

Reported for the Southern Planter by

NANCE & GOOCH, COMMISSION MERCHANTS.

TOBACCO—Market more animated within the last few days, with a slight advance in inferior grades. Lugs $4 to $7 50. Inferior Leaf $7 50 to $8. Middling $8 25 to $9 50. Good to fine $10 to $13 50. No very fine Manufacturing arriving. Stemming $7 50 to $15. Demand for all kinds, fully equal to the supply, with rather an upward tendency in prices. Crop unusually poor.

FLOUR—Richmond Canal $4 50. Sales at retail $4 62½ to $4 75. Scottsville $4 62½—$4 75 asked.

WHEAT—90 cts. to $1 05 per bushel, as to quality.

CORN—63 to 65 cts. per bushel.

CLOVER SEED—$5 50 per bushel.

OATS—45 to 50 cts. per bushel.

PLASTER—$5 to $5 25 at the Landings and scarce.

GROUND PLASTER—On inquiry a few days since we found there was none in market.

LIME—$1 25 from store.

GUANO—Peruvian $50 per ton—Patagonian $40 per ton.

Richmond, April, 1851.