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THE KENT NEWS.

Frustra laborat, quiomnibus, placere studet:—"He labors vainly, who endeavors to please every one."

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AGRICULTURAL.

ADDRESS
OF THE
HON. JAS. A. PEARCE,
DELIVERED BEFORE THE
Maryland State Agricultural Society,
AT ITS SECOND ANNUAL EXHIBITION IN THE CITY OF BALTIMORE,
ON THE 12th OCTOBER, 1849.

GENTLEMEN:—It is with great diffidence that I venture to address you on the interesting and important topics of those agricultural pursuits which must be so much more familiar to you than to me.—Though I have always had a passion for rural life, and for the last seventeen years have devoted to it all the leisure which my professional and political pursuits allowed, yet I am little more than an amateur farmer; and am fully sensible that it would much better become me to receive, than to offer, instruction.

But, as I am not a volunteer on this occasion, and have only, within the last week yielded to your invitation a reluctant consent, you will, I trust, acquit me of presumption, and make liberal allowance for any errors of theory or practice into which you may think I have fallen.

The present century has witnessed vast progress in the arts—in scientific discoveries and inventions applied to the uses of men. Indeed, it seems to be the spirit of the age to extract utility from what was formerly considered abstract and barren science, and to diffuse knowledge among men, by popularizing it. Our century is already distinguished not merely for great discoveries and inventions, such as the application of steam to locomotion, and of electro magnetism to telegraphs, or beautiful ones like the Photograph, which paints with no other pencil than the light of heaven, but by thousands of minor inventions, which all minister to the wants, real or artificial, of men—which lessen the toil of labour—improve and cheapen the necessaries as well as the elegancies of life—diffuse its comforts—ameliorate the condition of those whose fate it is to earn their bread by the sweat of their brows—and even severe to spread knowledge among men to whom it sources were formerly inaccessible With the aid of Sir Humphrey Davy's safety lamp, the Miner pursues his once dangerous, amidst the explosive fire damp in almost perfect security. The Steel grinder, whose health and life were soon destroyed by the hard filings which filled his lungs, may now be thoroughly protected by the magnetic gauze mask, which admits the air, but excludes the pernicious metallic dust. The Diver need no longer make the plunge from which he used to rise with the blood gushing from his mouth; but in the tidal diving bell, and with the sub-marine armour, he can safely seek the perils which "lie under Oman's green water." Vast improvements have been made in printing—in metallurgy—in the manufacture of wool, cotton, and chemicals—And indeed, every department of mechanic industry—down to the fabrication of every domestic utensil and every article of personal apparel, the principles of art seem to be better understood, and new and improved processes are employed. But in agriculture improvements have been neither so various nor so rapid. In that great department of industry, which is the nursing mother of all the rest—which is the primary source of national wealth, which chiefly furnishes the raw material to manufactures, and the commodities of exchange to commerce—which, directly, or indirectly, supplies the principal support of government, and without which a nation cannot long sustain its prosperity, and preserve its power, science seems to have shed the least light and art to have been least emulous and improving. It is that in Belgium and some parts of Italy a judicious and skilful system of husbandry has long prevailed—that England and Scotland, within the last 50 years, have revolutionized their systems of agriculture, and reached the highest point of known improvement. But in the United States, generally, so swift in the race of improvement, old inveterate and senseless habits of husbandry have been blindly followed, almost down to the present time.

These habits cannot be called systems, since they have not been formed or regulated upon any just or consistent principles, and have been pursued without even any rational inquiry into the methods proper to be observed.

In our own State the course of tillage generally followed, till within a few years past, has been careless wasteful, exhaustive and and inefficient—and habits and prejudices have become so rooted, that the grossest errors have been consecrated, and the most valuable and palpable improvements have either been neglected, or derided as ridiculous.

Ten years ago, I had a tenant who considered himself very hardly treated, when I insisted upon his spreading the lime which I had placed on the farm without cost to him. Another complained bitterly that his lease required him to haul the corn-stalks into his farm yard, to be converted into manure, and restrained him from depasturing the young clover in April. But a short time since many farmers considered shallow ploughing as best for the improvement of the soil, and the production of several staples; and I have lately heard a farmer, who is a proprietor and a man of more than ordinary intelligence, pronounce a furrow of *two* inches to be of the proper depth in breaking up a fallow for an oat crop. Marl, which is so abundant in portions of our State, was applied in Talbot County more than forty years ago, with signal benefit: and yet it crept very slow into general use; and even now there are many farms with beds of it entirely unworked. Fine natural meadows, in many instances, remain uncleared—the coarse grass of the hard marshes, so valuable for manure, is often left uncut—clover is not sown by all farmers, and very few indeed cultivate true grasses. * * * *

Our State, gentlemen, presents great advantages to the agriculturist. Her situation on the borders of the Atlantic, and the fine navigation afforded by her noble bay, and its numerous tributaries, enable the Maryland farmer to be among the first to reap the advantages of foreign markets; and to supply the demand of the great manufacturing States of the East; while the admirable water power, abounding in a great part of our territory, has created and must increase, largely, the growth of manufactures within our own borders; thus furnishing us to a considerable extent, with a steady and reliable home market. Blessed with a fine climate—a soil originally very productive, and quite easily restored to its native fertility, by resources accessible to almost all—we seem to require nothing but a good system of husbandry, energetically pursued, and the practice of a liberal economy, to make Maryland what her local advantages promised she should be, the most desirable agricultural district in the United States.

The course of farming pursued among us for many years, induced, I suppose, by indolence, and encouraged by the high prices, which a long period of war abroad and peace at home afforded for our products, was a rapacious and destructive one. It was a system of exhaustion, which took from the earth, year after year, all that it would yield, and returned to it none of of those elements of fertility which we were thus annually diminishing. Finally, in many parts of the country, the soil became greatly impoverished, and there followed a train of evils which we seldom attributed to the right cause. To escape the ravages of the Hessian Fly, we sowed our wheat in autumn, that it had scarcely pushed through the earth, before the winter frosts came. Then it was thrown out of the ground by alternate freezing and thawing, until scarcely a root remained fast in the soil. This we charged to the climate and season, saying that the winters were changed, and that the weather was much more capricious, and severe than it used to be,—we forgot that wheat, though not absolutely a biennial plant, is most perfect when winter sown,—when it makes a part of its growth in one year, and flowers, seeds, and perishes the next—that therefore it requires to be sown early enough to form a deep strong root, to resist the winter which it is its destiny to encounter. If it perished from the attack of the fly, we forgot that disease and enemies are just as incidental to vegetable life, as to men themselves, and that we could no more expect the crippled and unfed plant to regain its health and vigor, when left to struggle in the unmanured soil, than we could count upon the wounded soldier taking his place in the ranks again, after he had been left on the desolate battle field, without lint, salve, medicine, or food. If the crop struggled on, in spite of an impoverished soil, slowly ripening in the harvest, and was destroyed by rust, we forgot that early seeding would have given it root, and deep manuring have furnished it with vigor, to escape the evils of late ripening, protracted till the moist hot weather had developed this last enemy of our great staple. Here let me remark that our wheat is often sown in land very poorly prepared for it—not deeply broken, so as to be mellow for at least seven inches, in depth—not with the furrows regularly and evenly laid over. Much of it is sown amongst the standing corn—in which the foxtail and crab grasses have grown leg-high, so that no skill of the seedman or ploughman can avail—some of the seed being covered with little mountains of earth and grass through which the plumes never can penetrate, if heat enough should reach the seed to produce germination: other grains are often so slightly covered that the first rain uncoveres them, while a river of water furrow runs between two rugged, ridgy margins of grain bearing soil. It is a matter of much importance too that the grain should not deposited more than about 2½ to 3 inches beneath the surface, experience having shown that, when sown below the depth, the plant is not so vigorous and does not tiller so well.

The farmer of Otwell, and others of his school, will pronounce my notion of early seeding an abominable and destructive heresy. But my own experience satisfies me that, if the ground be well prepared, and the *weather be suitable*, the September sown wheat, in spite of the Hessian fly, will *cæteris paribus*, outcrop that sown in October. However this may be, and though it is true that the farmer has his enemies among the insect tribes, and in the vicissitudes of the seasons, I firmly believe that there are none against which he cannot, in general, successfully contend. If we are not pretty well fortified against them, it is the fault of our forefathers and ourselves, they having exhausted the ammunition with which this war is to be carried on, and we having neglected to repair the waste of which they were guilty. All of us have, in greater or less degree, the means of replenishing our armory; or, in plain terms, all of us may, by labor and care, *slowly*, and by the application of capital, rapidly, renew those fertilizing elements of which our soil has been robbed by bad tillage.

Foremost in the list of means for improving our worn-out soils, I reckon lime and calcerous earth or marl. I have used a great deal of lime myself, and have seen it applied to every variety of soil on our peninsula; and in no instance has it failed to produce the happiest results. Some of our soils have been ascertained to contain magnesia; and on such, the magnesian limes of Pennsylvania are less profitable than the alum lime of Maryland, or the burnt shells of the bay side. On my own lands, I have used all these kinds of lime, with excellent effect, whether applied to grass the fall before breaking up the land for corn, or in the spring after the ploughing. The latter application I prefer, as giving me quicker returns for the investment, and securing a more equal distribution and better admixture of the lime with the soil. The most striking enefit from lime is seen in the clover which follows the small grain, and which, in almost every season, does not fail to be well set and to flourish, after limiting, no matter how poor and exhausted the soil may have been before. My plan has been to keep two fields always in clover—one for pasture, and the other to enrich the land. This therefore, is not touched by scythe or hoof till after midsummer, when it is ripened, and is lailing in masses over the field. This not only shades the land from the hot suns of summer, but furnishes a good coating of vegetable matter, in itself a pretty good manuring. Some lecturers on agricultural chemistry hold that more benefit is derived from ploughing a vegetable growth directly into the land, than by first passing it through the stomachs of animals, by which it is lessoned in amount, and deprived of certain valuable constituents. Dr Baldwin, on the other hand, contends "that the fertility which is always imparted to the earth, by a luxuriant crop of clover, is not in the slightest degree diminished by the removal of the whole crop previous to fallowing," and "that no fertility can be imparted to the soil by ploughing under green crops of any kind;" and in short, that vegetable matter must undergo, before being ploughed under the ground, the putrefactive process, to be of any use. However this may be, the practice of keeping clover growing thickly over the field, till it be ploughed for wheat, satisfies both theories; for it shades the land, which is Dr. Baldwin's talisman, and it returns to the soil al the vegetable matter, undiminished, by the appropriations of the horse and bullocks of the farm, or by the waste of putrifaction in the barn yard.

But to return to lime. It is, in some places, a popular saying, that lime enriches the father, but impoverishes the son. This saying, like many others which are pronounced as oracles, is but just half right, and is, therefore, deceptive mischievous. Certainly, the man who should treat his land to repeated applications of lime, without grasses or manures, and should constantly draw from it all the crops it would yield, would, after a time, find his farm less productive than it was before liming But this is not the least inconsistent with the true theories of liming, or the position that lime is invaluable, as the basis of every well digested system for improving worn-out lands, not already abounding with that mineral. All crops take away from the soil in which they grow various substances other than lime. These, being all necessary, in greater or less degree, to the perfection of such crops, must be supplied to the land, if not originally in it; and if not existing abundantly in the soil, they are soon exhausted by repeated cropping. If lime be wanting, and the other fertilizers be present, the addition of lime immediately makes the land productive; but the repetition of its application cannot supply the diminishing stock of others. Hence, while, under such circumstances, the crops may rapidly diminish, no one ever heard of land deterogating, which was limed, manured and clovered, at proper intervals. This exhaustion of the soil by repeated applications of lime, without other manures being supplied, has been well compared in an article in Mr. Skinner's valuable work, "the Plough Loom Anvil," to the operations of the iron smelter. "He throws into his furnace the ore and coal, but gets no metal till he puts in lime also. He adds a dose of lime, and draws off a running of metal. He adds more lime, and perhaps procures more metal. But he soon finds that lime does no more good—he has melted out all the metal—he has exhausted his furnace—the stimulous of lime has no effect. He must add more coal and ore again, and then he will obtain his regular flows of metal. So it is with the soil. The farmer who hopes, by the continual addition of one thing, to make his land produce continual good crops, hopes and acts against reason." It is very clear that he must return to the soil the other ingredients of the grain which he has carried away, and then its fertility will be renewed. As the mode in which lime acts upon the soil, and the growth of vegetation, I believe we know enough for all the practical purposes, although there is some controversey among the learned on the subject, and some of its chemical effects either unknown or not yet susceptible of satisfactory explanation. It seems to be well understood that, besides its mechanical effect, in loosening and lightening heavy soils, by dividing their adhesive portions, and cementing those of the sandy sort, it has several chemical effects of great benefit to vegetation. Many believe that it is a direct pabulum, or food of certain plants, in whose ashes it is invariably to be found; and this seems to me reasonable enough. It neutralizes, by new combinations, acids found in many soils, which are hurtful to vegetation, and which sometimes abound in humus, according to the character of the plants from whose decay it has been formed. It combines with, or decomposes, inert vegetable matter in the soil, so as to give it life and activity, and convert it rapidly into food for plants. This strike me to be its most important agency. According to Professor Johnson, it has also the valuable "property of causing or fociliating the production of other useful compounds of inorganic matter" (that is matter neither animal nor vegetable), or of so promoting "the decomposition of existing compounds as to prepare them more speedily for entertaining into the circulation of plants." At all events, experience shows that in any soil where lime does not already exist in sufficient quality, its application is sure to reward the farmer by the speedy increase of his crops, and the parmanent improvement of his farm. Its efficacy does not seem to be limited to any class of soil. I have seen it work miracles upon stiff heavy lands, and up on light sandy land, where there was not 5 per cent of clay. Had been unable to purchase it for my lands, I am certain that I never should have improved them: for clover almost always failed without it; and manure which now seems to become fixed in the soil, did not exhibit any appreciable effect after two crops. Still, lime is but the basis of improvement in our treatment of reduced lands. The grasses must not be neglected; and, above all, clover, which, in conjunction with lime, is a grand renovator. In truth I know nothing that can supply its place. Under the dense shades of its foliage, and in the moisure thus preserved at the surface of the soil, some subtile process seems to me to be conducted—some natural chemistry, or agricultural alchemy, which we do not thoroughly understand, but which ensures fertility to the soil. We do know, however, that clover has deep roots, and draw some of its nutriment from the depths of the soil, below the plough's range, and that it abstracrs from the atmosphere both carbon amonia, in larger quantities than other plants; and so returns to the earth more fertilizing matter than it takes away.

The supply of carbonaceous matter which it furnishes to light soils is of immense value to them, making them more retentive of moisture, while the ammonie which it affords is the aqua vitae of growing plants, yielding them the nitrogen indispensable to their growth. Whatever furnishes it to the cereal grains must needs be valuable, and, indeed, the efficacy of manures may be said to vary almost in proportion as they supply this vivifying principle. Clover divides heavy soils, and makes them all more pulverulent and permeable, by the air, from which they derive small, but constant and invaluable supplies of fertilizing gases. The theories on this subject do not all agree, it is true; and it may be that agricultural chemistry is yet but on the threshold of discoveries, which may hereafter silence all controversy on the subject, and explain to us clearly why clover is so great a fertilizer.—Certain it is, that it has long been the basis of the Flemish agriculture, which has been carried almost to perfection; and it is enough for us to know from this and our own unmistakeable experience, that either ploughed in, or suffered to fall and die on the land, it never fails to enrich it, and that its effects are peculiarly happy when combined with the application of lime.

The next source of manure, accessible to all, which, in sufficient quantity, is better than all, which contains, in some proportion *all* the elements of fertility, which almost every farmer might increase far beyond the ordinary supply—the careful husbanding and judicious application of which, furnish the best guarantee of successful farming—is the product of the stable and cattle yard, the hog pen and sheep fold.

The barn yard may be called the farmer's laboratory. This is, with us, almost always arranged without any reference to its uses, and in violation of principles so obvious, that it requires no nicety of observation, no acuteness of mind, and no science to point them out. It should be so protected by shedding around its borders, as to throw off most of the rain which would otherwise fall on to it. It would be well to have a large open shed, in the middle, so provided with gutters as also to throw the rain water without the yard; and it is highly important to have, at some point, a sink or reservoir for all the liquid contents of the yard—not one drop of which should ever be permitted to escape by evaporation or other waste, if possible. The most valuable ingredients in the dung heaps are soluble in water, and are readily taken up by the rain which falls in superabundance into the unprotected yard The invaluable liquid extract of manure thus formed is generally discharged, as if it were waste water. This may be prevented by proper shedding, and by the sink or reservoir before mentioned, and by properly shaping the surface of the yard. I do not think it necessary, as some do, to cover the whole barn yard with roofing, like a rail road depot. This would be a heavy, and I think needless expense, and would exclude too much the direct light of the sun. Nor do I think the European system of box feeding likely to be adopted or desirable on our large farms. Fattening bullocks may be kept in stalls till ready for the butcher, but dry cattle and milch cows seems to me to thrive best with more liberty and open air, Open shedding will afford them shelter and warmth enough; and the bard yard being protected, as I have suggested, from excess of rain water, there will be no great waste from drainage and evaporation. When entirely unprotected from the rain, the loss from these two causes has been estimated at 75 per cent. of the valuable parts of the manure. The liquid contents of the yard may be applied, diluted with water, directly to the crops, or pumped over the yard, when more moisture and fermenting stimulus are needed for the decomposition of the refuse straw, hay, leaves and vegetable matter of every sort, of which the barn yard should be the common receptable. I have myself used the liquid drarnings of my farm yard, in a small way, upon a lot of orchard grass, with great effect.—The preparation and sale of these fluid fertilizers furnish a regular business in some parts of Europe where their value is justly appreciated. The liquid voidings of cattle and horses are particularly rich in ammonia, which exists in urine in the shape of phosphate and carbonate. In the condition of carbonate, it is volatile, and flies off into the air. In the condition of a sulphate, it is not volatile, and hence the propriety of strewing the farm yard regularly with plaster or sulphate of iron—the sulphuric acid forming a new combination with the ammonia of the manure, and yielding the sulphate of ammonia, which is not volatile but is readily dissolved, and absorbed by the plants with which it comes in contact. To absorb the liquid and gaseous parts of the manure, and to increase and improve the heap, we should add rich earth, swamp mud, woods scrapings, and peat to the waste vegetable matter in the yard; and the cattle and horses should be fed with rich and nourishing food, Experience and chemical analysis both show the advantages of this, and that the manure of stock fed upon dry and poor food is, by no means, as valuable as that which is made by grain and hay fed cattle and horses. Every farmer, for this reason, as well as for the improvement of his stock should raise hay in ample abundance. A few acres, well enriched and thickly set in timothy, will yield more to the farmer, in the increased value and quantity of his manure, than the same lands would produce in any other cultivation—to say nothing of the improved value of the stock.—Another grass, not used for hay, but invaluable for soiling, is lucerne. This yields a larger amount of rich green food than any other grass known to me. It is a very early grass, being often fit for the scythe as early as the 15th or 20th of April, and, in deep, light, rich soils, continuing to yield prolific crops throughout the season of soiling. I have grown it for ten years, and have cut it four or five times in a year. It is rich and succulent, and better for milch cows than any other grass which is soiled. A judicious and exact friend of mine compared it with clover and orchard grass, by feeding a milch cow with equal weights of it and those other grasses, alternately, during three different weeks, and seeing the animal milked three times a day. The result was, that more and richer milk was given during the week when the lucerne was the only food. I sow it broadcast with oats in April, and soil the oats before they ripen. A small lot would enable the farmer to keep his cattle well, in the farm yard until his clover field was fit to be pastured, and would add largely to the stock of manure. * * * *

During the summer some of my friends in Kent County and myself purchased a cargo of Patagonian guano, in Connecticut. It was analyzed by Dr. Higgins, and found to contain 47 per cent, of the phosphates, and nearly 4 per cent. of ammonia—this was very well for Patagonian guano. But some samples have contained only about 1 per cent of ammonia, and less than 25 per cent. of the phosphates: while in Peruvian guano, the ammonia varies from 5 to 15 per cent. and the phosphates have sometimes been as much as 60 per cent.

Yet all Peruvian guano sells, I believe, for the same price, without reference to quality—as the Patagonian does. What system of inspection is pursued, I do not know; but it is certainly worth nothing to the farmer, who pays for it, if it does not include an exact analysis of fair samples of each cargo or lot offered in the market—and copies of these analyses the seller should always be prepared to furnish to the buyer. It would be well, I think, to amend the act of our Legislature establishing the inspection of guano so as to meet these suggestions.

An intelligent and most respectable citizen of St. Mary's County informed me this morning, that he purchased last year 19 hogsheads of guano, which had been inspected and marked No 2; and that these 19 hogsheads of inspected guano of second quality yielded 3 hogsheads of *stones!*—Of what value is an inspection which fails to guard against so gross an abuse as this? and what guaranty have we when guano containing 16 per cent. of stones is considered second quality, that the remaining 84 per cent. contains a single part of ammonia or of the phosphates, or indeed that it ever rested on the rocks of Patagonia or the Chincha Islands?

I do not recommend the purchase of manures as part of a good farmer's permanent system. Necessary as I conceive them to be, to the rapid improvement of our farms, I look upon them as only temporary expedients, to be adopted by the judicious improver, in the beginning of his efforts, to restore fertility to his land; or rather to be employed until he has removed the elements which improvident tillage has taken from it. When this is accomplished, every one has in his hands the means of mantaining his land at a high productive point, with only occasional application of such of the purchased fertilizers, as experience has shown to be supplied in rather stinted quantity by the home made manures. There are many farmers with ample means, who shrink from the necessary outlay—who console themselves with the wise saw, that a penny saved is a penny got, and who would rather bury their silver under the earth, than scatter it in reproductive manure upon its surface. But the most practical and successful farmers understand their own interest better. They know that any manure judiciously purchased and applied, will yield far more than six per cent. interest, and that it would be as unwise to deny manure to their land, as food to the horses which are to work it.

I have consumed thus much of your time, gentlemen, on the subject of manure, because that is the first great want of the farmer—the sine qua non, or indispensable, something, without which it is in vain to hope for any improvement or success in farming.

The pressure of business and other circumstances having allowed me very little time for the preparation of this address, I have been unable to present to you my views on several topics of great interest to the farmer. I must leave it to others, much better qualified than myself, to instruct and gratify you—to discourse, at some of your future meetings, on the time of seeding and planting, the kinds of seed, the modes of culture, and variety and care of stock, the business of the dairy, the culture of the kitchen garden and orchard, and last, but not least on the tasteful embellishments of Flora. Though every farmer should look first to the general fertility of his farm, as the foundation on which all improvements are to be laid, he would be utterly wanting in the true spirit of his profession, if he did not design, in due time, to crown his whole work, by every domestic comfort and appropriate rural ornament. The business of agriculture is not one of merely practical utility. The farmer is not necessarily a dull swain.—His pursuits are consistent with the keenest admiration of the beautiful in nature and art, with the most refined taste, and with all the graces of cultivated life. He owes it to himself as a rational being, gifted with all the capabilities of his race, to the obligations of the domestic duty, and above all, to the devotion which we all acknowledge, to that gentle sex, whose smiles are the crowning bliss of life, to provide, for his own and his family's enjoyment, all the comforts and embellishments, which belong to a mature civilization. Among other high duties, is that of properly educating his children. And to such of them as are destined to pursue his own profession, he should give much more than that teaching, which stops at a knowledge of the mere routine of farm-practice. A good agricultural education is both scientific and practical. The knowledge which is necessary to make a thoroughly intelligent farmer is to be drawn from a great variety of sources. Geology and mineralogy must instruct him as to the formation of the crust of the earth, and qualities and elements of the substances which compose it, and the character, nature, and properties of all the minerals imbedded in it. Chemistry will teach him to analyze the soil, to trace out every element of its fertility, and its just proportion—will developе to him the principles of its exhaustion and replenishment, and guide him in every effort to improve and ameliorate.—Indeed without analytic chemistry he can never know the money value of the ameliorators which he purchases. It will teach him also the properties and value of the different kinds of food for stock—what kind supplies the bone, what the muscle, and what lays on the fat. Botany will inform him of the nature and structure of plants, from the forest tree to the herb; of their uses, value, medicinal properties, and adaptation to the climate and soil of his residence. Entomology will teach him the habits of insects injurious to vegetation, and how to prevent or remedy, as far as possible their attacks. Natural Philosophy will explain to him the principles of merchanics, and from these he will know how to estimate the value of every mechanical contrivance employed or proposed in rural art. Much important knowledge may be gathered from this source. These principles, for example, regulate the construction of wheat threshers and horse powers—the forms of good ploughs and their use, making them easy of draught and efficient in turning over the tough sward or crumbling the broken fallow. Even in the digging of a drain, the construction of a good axle tree, or the proper harnessing a horse, the principles of natural philosophy are involved.

In all these branches of science, the highest genius and the most persevering research have long been devoted to the ascertainment of truths simple only when demonstrated, and of the greatest practical value to those who dream not of the learning and toil necessary for their discovery: and all these should be taught the agricultural pupil.

It is gratifying to see the attention beginning to be paid to this kind of education in our country—to know that agricultural chemistry is becoming one of the branches of collegiate instruction, and that institutions are projected, and, indeed, in existence among us, where the best methods of rural art and every branch of farming work will be taught experimentally, practically and scientifically. In such institutions, the labors of the field, the barn and the workshop, will be followed by the lessons of the school room. Thus practice and science will be combined, and the agricultural pupil will become the finished farmer. Let me commend such institutions to your favor, gentlemen, for the benefit of your sons.

I trust that I may be permitted, also, to recommend every farmer to subscribe and pay for at least one agricultural paper or periodical. Knowledge is power in agriculture, as well as in every other department and business of life No man can keep up with the improvements of the times who does not thus avail himself of the experience and knowledge of the many