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AN ADDRESS
ON THE
CONDITION AND OFFICE
OF THE
AGRICULTURAL COLLEGE
OF THE
STATE OF MICHIGAN,

Delivered in the Hall of the House of Representatives, Jan. 14, 1861,

BY

PROF. L. R. FISK, A. M.

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Mr. Chairman and Fellow Citizens:

It is the right of every citizen of the State to be made acquainted with the exact condition of all our public institutions. Established as the Agricultural College was, in conformity with a requirement of the Constitution and the will of the people, it is but proper that we should present a statement of its progress, the difficulties that have beset it, the work it proposes to accomplish, and its relations to the industrial prosperity and educational advancement of the land.

No educational institution of a high grade is built up in a day. The growth of colleges is proverbially slow. Even when established in conformity with our old and accredited system of education, it is universally true that many years are required to secure that development which gives permanency and efficiency. Half a score of years is much less time than is usually needed to gain a position among the colleges of the land. In-

deed, the minority of a college is seldom less than the minority of a human being. Even our own University, now so efficient, and deservedly held in high esteem, was compelled to struggle for a comparatively long period with many serious obstacles which blocked up its road to success.

The Michigan State Agricultural College was opened for the reception of students a little more than $3\frac{1}{2}$ years ago. That it has found peculiar difficulties with which to contend, is no more than should have been anticipated, and which the circumstances rendered wholly unavoidable. I think it is not too much to assert that when the Legislature passed the Act of Organization, there was no man living that could lay down the details of the system proper to pursue. The field was entirely a new one. Michigan was taking the lead in founding an Industrial College. There was, therefore, no precedents to guide us. We could not avail ourselves of the experience of others.

We had to make a system; we had to manufacture an experience. Standing then at the beginning of a new enterprise, with no aids in the past, with no assistance in the present, and the future to make for ourselves, it would have been miraculous had the way been free from all obstructions. We should have realized what was never experienced before, among institutions of learning, in civil governments, in the religious world, or in the prosecution of any untried enterprise.

What are the special wants of the farming community to be provided for? What shall be the course of instruction? How broad—how narrow? How shall study and labor be united, so that neither shall detract from the other? As the indoor instruction must be given by several Professors, how shall this instruction be practically illustrated on the farm which must be under the general supervision of one man? What shall be the system of remuneration of labor? What work shall be paid for, and what shall be considered as strictly educational, and, therefore, demanding no pecuniary compensation? What policy shall be adopted in regard to the experimental farm? Shall the experiments be prosecuted entirely by the Farm Superintendent, or

in part by the Professors, illustrating and deciding principles in their several departments? If the latter, how shall it all be systematized, and put in perfect running order? Indeed, involving so much of machinery as an Agricultural College must, having so many wants to meet, and objects to accomplish; and being necessarily complicated therefore, how shall all this machinery be harmonized, and the several objects secured?

Shall we look to Europe for a solution of the scores of practical questions that arise? We may derive some aid from this source, but our difficulties are not all removed. America is not like Europe. The entire genius of our people differs from that of the nations of the Old World. The state of society in which we live, the tenure of landed property, the social and industrial standing of the agricultural class, the wants therefor to be provided for; these all make our position peculiar, and prevent the imitation of the system of European schools. It would be highly absurd to think of engrafting on our policy any institutions of the Old World without radical modifications.

There is a degree of impatience among the American people, for the realization of great results, in regard to any enterprise. We cannot afford to wait the fashioning hand of time. We expect the acorn to become the rugged, massive oak, in a day. The natural process of growth is too tardy and old fashioned for this wide-awake, go-a-head nation.

The impossibility of realizing speedy results from the College farm, such as are contemplated in the law, becomes evident from its new and unimproved condition. The land must first be cleared and subdued before reliable experiments can be performed. In considering what the Agricultural College will yet become, it is wholly unsafe to reason from the past. Had the Institution been located on an improved farm, so that an extensive series of experiments could have been commenced immediately, the means of securing many of the objects for which the College was founded, would have been much sooner within its reach. Much of the expense at first incurred was for the purpose of hastening the day when these experiments could be

commenced. Labor, therefore, which would be unprofitable in general husbandry, it became absolutely necessary to apply to prepare the soil at as early a day as possible for putting in operation the experimental farm. To illustrate my meaning. It is in general a poor investment of means to remove the stumps from land from which the timber has been but recently cleared. It is better to seed it down until decomposition has so far progressed that it can be cultivated with the plow, not removing the stumps till from their natural decay it may be easily done. During the first year of the College, the stumps were extracted from some 20 acres of ground as a part of the process of rapid subjugation, that the idea of an experimental farm might be more speedily realized.

But these difficulties that have obstructed the free course of the College have been gradually surmounted, and a point is now reached where determinate plans may be formed, and definite results safely predicted.

The Agricultural College must consist of three general departments—an Experimental Farm, a Model or Practical Farm, and the School.

The establishment of an Experimental Farm was one of the leading purposes of the institution.

That successful agriculture results from strict conformity to fixed and immutable laws, is so evidently true that it needs no proof. Every plant has its own mode of growth, and invariably requires the existence of certain essential conditions. These necessary conditions are determined by experiment and close observation; by a minute inspection of the phenomena of vegetable growth amid the ever varying circumstances of the physical world. Agriculture is the creature of experiments. Its foundation was laid in experiments; its framework has been reared through experiments; as a temple of art, every timber has been fitted in its place by the hand of experiment.

Why plant corn in the spring of the year, rather than in the fall? Why select a particular time in the spring? Why plant at a certain depth? Why not plant at the same depth as the

potatoe? Why cultivate in a certain way? Why harvest it at a certain time? Indeed, why the special mode of culture of this and every other crop? Has not the knowledge we possess been derived from experiments? The world has been experimenting for six thousand years. This mighty art, on which rests the support of the race, with which is linked the very life of man, is wholly the product of experiments.

There is every reason to believe that this department of the Institution may become a source of great profit to the people of the State. Unquestionably the productiveness of the soil is not what it should be, for two reasons: 1st, from ignorance among the mass of the people of the principles already determined; and 2d, because many more experiments are yet required to bring to light truths which have a direct bearing on the cultivation of the soil. I know that a great deal is said against book-farming. Certainly that which is true is not rendered false, nor that which is false, true, by publication in a book or paper.

Doubtless there are scores of statements on agricultural subjects which find their way to the press that are utterly false, and calculated to mislead. It may be stated as a general rule that theories are unsafe until tested by experience. The object of a State Experimental Farm is to officially test these theories, to establish those which are correct, and disprove those which are false. A single experiment here performed, and officially published to the world, in detail, with all the circumstances and conditions fully stated, may save the people of the State thousands of dollars. Instead of every farmer incurring the expense of prosecuting each separate experiment, and if the result be unfavorable, thus indefinitely augmenting the aggregate cost, a single experiment from such an official source may settle the whole question, and effect an immense saving to the farming community. On the other hand, experiments which bring to light new principles, and establish improved methods, must have a direct effect in rendering more productive the labor of the farm.

Most of the experiments prosecuted throughout the country afford but little reliable information, either from neglect to note all the circumstances, conditions and results, or from inability to determine what those conditions are. For illustration: Everybody knows that the plant grows and matures in accordance with certain unchangeable laws. Each plant has nearly a fixed composition, and the material which builds up its organism must come from the soil and air. A certain amount of heat is necessary; a certain degree of moisture, together with the light of the sun. Now, every experiment on every class of plants, involves the principles of both Chemistry and Botany; and unless these are understood and regarded, no one can fully appreciate the lesson taught. Should the object be—to take a special case—to determine the value of a certain fertilizer in raising wheat, it is not enough to simply apply it and note the results. Should it increase the yield, it will not prove it to be generally adapted to the growth of wheat; nor should it fail to effect the crop will it prove it to be generally useless for this purpose. It may have failed to improve the crop, not because it did not contain the elements the plant needed, but because the soil was already richly supplied; or if it improved the crop it might have been one of those exceptional cases which would not occur again in a hundred times. It is necessary, then, to know not only the chemical composition of the fertilizer used, but also the composition of the soil, and the chemical wants of the plant raised.

But this is not the time to dwell on this subject at great length. I will only repeat, that it is often *indispensable* to determine the composition of the soil experimented on; the composition of the fertilizer applied; the composition of the plant raised, as to its earthy constituents, its fattening qualities, its nutritive value, with all the phenomena attending its growth and ripening, in connection with the amount of yield, at the same time that the facts of moisture, heat, climate &c., are all distinctly observed and noted; while a careful study of the whole subject shall give to each element in this problem of growth its

due weight. The want of such means of investigation as may be collected at a College in Chemistry, Botany and Zoology, renders it absolutely impossible for the farmer to conduct many experiments with that precision and completeness required for arriving at definite results.

The greater part of our published experiments are European. They are to us suggestive, and often exceedingly valuable; and so far as they conform to the conditions on this side of the waters, and proceed on general principles simply, they are quite indispensable. But who does not know that the mode of culture in Europe is not adapted to America? that should it be introduced here it would be an utter failure? With such a vast difference in climate, with a soil unlike theirs, with every special condition modified to an important degree, our agriculture must essentially differ from that of the Old World. And even Michigan, situated as she is within the lakes, has many climatic characteristics peculiar to herself. The farming of New England is not the farming for us. We have special problems in agriculture here to solve; problems that cannot be solved in New York, Pennsylvania, or Illinois. We are compelled to prosecute our own experiments, and make our own determinations. We cannot rely on the rest of the world to do this work for us.

He who would circumscribe the College simply to the office of imparting instruction to the young men who should resort thither for study and improvement, has a very inadequate view of the work it proposes to accomplish. It should occupy a broader field than this. It should reach every farm in the State. It should send forth its enlightening influence throughout the whole land. Every farmer should feel that he has special interests here; that the College is a co-laborer with him in the noblest pursuit of man. Dignified to the office of toiling in the great work of feeding the race, it has a noble purpose to guide it. It must, therefore, aim to be in its own department of labor, a fountain of original knowledge. Investigations should be earnestly and continuously prosecuted here, and every effort made,

as rapidly as the condition of the farm will allow, to make this one of the most useful and attractive features of the Institution.

Another department of the College is the model or practical farm. On this no experiments are to be performed. It is to be conducted according to the most approved system of husbandry, so far as already determined. It has various uses:

1st. It is cultivated for the income, the same as any private farm.

2d. It furnishes the students the opportunity of laboring, so essential for their health, and so convenient for providing means to prosecute their studies.

3d. It affords them the facilities of illustrating practically on the farm the instructions of the lecture room.

4th. It should be a model in neatness, order, system, and economy, both to the students and to the people of the State.

All its accounts being kept separate, as its design wholly differs from that of the experimental farm, the skill with which it is managed will be measured by the profits arising from the same.

The third department is the school.

That so long a period should have elapsed before any adequate provision was made for systematic instruction in the science of farming, is truly remarkable. A large proportion of the Agricultural schools of Europe have been founded within the last twenty-five or thirty years, and America is just beginning to awaken to the real importance of this subject.

The prejudice against the term science, as applied to agriculture, is fast wearing away. Men begin to understand that the whole vegetable kingdom is within the scope of nature's laws; that the plant is subject to forces essential to its life; that when proper conditions are supplied it will thrive and perfect; but that when some of these conditions are wanting, its growth becomes an impossibility. The object of scientific investigations is to determine what these conditions are, and the simplest means of maintaining them. Our most successful farmers are practically the most scientific. They are successful

because they conform to the laws of nature, and science is but an expression of these laws. It is impossible that a farmer who violates the principles of science, whether known or unknown, should succeed. Correct art is always founded on science. It is unreasonable to confound the *dicta* of agricultural writers with the science of agriculture. These *dicta* may be mere assumptions, or theories unfounded in facts and incapable of proof. But it is strange that any prejudice should exist against the advantage of studying and tracing out those laws of nature which operate in the conversion of the constituents of the soil and air into the plant, or by virtue of which all those changes take place which are required in successful agriculture. It seems to me that if there be a subject in the wide range of the arts demanding study and thought, this is one. There is, indeed, no branch of business which grasps so much of scientific truth, which rests on so broad a foundation, which is so justly entitled to the rank of a learned profession. Look where you will, and you can find no pursuit of man that presents so rich a field for research, so exhaustless a mine of truth, so abundant a harvest of thought. The forces of the material world seem to have all centered here. The kingdoms of nature all do its bidding. No agriculturist can explain the philosophy of his labor without diving deeply into Chemistry, into Botany, into Zoology, into Geology, into Mineralogy, into Meteorology, into Mathematics, into Philosophy. The study of these sciences with reference to their application to agriculture is eminently practical. Let us look at a few of the problems with which it deals.

What are the essential constituents of a fertile soil? What is the cause of the unproductiveness of the soil? Is it from the absence of one or more of its elements; or is it from an excess of some of its constituents, or from their state of chemical combination, or from some defect in its physical condition, or from two or more of these causes combined? What manures supply the waste of the soil effected by the raising of wheat, oats, corn, barley, potatoes, hay, or other crops? What ele-

ments, and in what proportion, are removed from the soil by the different species of plants? How do the constituents removed from the soil by the several varieties of wheat differ, or the several varieties of corn, oats, potatoes, &c? What is the proportion of fattening material in each of the several grains, the amount of nutritive matter, the percentage of starch, and the degree of fibrous and waste material? What influence have the different modes of culture on the proportions of these constituents? To what extent is starch or sugar fattening? Are the fibrous portions of the plant in any degree nutritious.

What is the difference in composition of vegetable and animal manures? and of the solid and liquid portions of the latter? and to what crops may each be most economically applied? How may these manures be most perfectly preserved? When should quicklime be applied as a manure, when the carbonate of lime, when the sulphate of lime, when the phosphate of lime? How may we determine the value of the various special manures? By what system of husbandry may we preserve most fully the fertility of the soil?

But the questions which can be answered only by the joint labor of science, and practice, are almost without number. They reach forth into every domain of the physical world. Turn over any page of nature, and we find them there. Pursue any line of research in creation about us, and we discover that some of its avenues lead directly to the farm. Indeed, this pursuit has made every department of nature tributary.

That a destructive system of husbandry has been pursued in this country, is no less remarkable than true. The soil has been gradually and perceptibly diminishing in productiveness. The foundations of our national prosperity as an agricultural people have been sensibly giving way. The only compensation has been an enlargement of this foundation so as to cover new lands, in order to supply the waste of the old. This yearly consumption of capital, leaving the several districts poorer in the wealth of the soil, is a subject that may well demand the attention of the political economist. This country is strictly agricul-

tural. This must always be true of the principal part of the West. Should this process of soil-impoveryishment continue, the limit of our population must be a very narrow one. It is well worth our serious consideration whether we are not inflicting an irreparable injury on the future of this country by this wasteful and destructive policy of farming. The coming greatness of the whole North-west is centered in her agriculture. If we seek to augment the wealth of the land, we must do it through her agriculture. If we wish to build up our works of internal improvement, and establish on a firm foundation the facilities for substantial material prosperity, it must be effected through our agriculture. If we look to the accumulation of means for the great work of educating the mass of the people, or prosecuting any benevolent enterprise, we must depend on our agriculture. If we desire to augment the power of the West in a political point of view, creating capital that shall invite population, laying a solid basis for the support of a mighty people, the road is open to us principally in the direction of agriculture.

In referring to the gradual deterioration of soil, the late James F. W. Johnston, the English agricultural chemist, says : "General illustrations of this sure though slow decay, may be met with in the agricultural history of almost every country. In none, perhaps, are they more striking than in the older slave States of North America. Maryland, Virginia and North Carolina—once rich and fertile—by a long continued system of forced and exhausting culture, have become unproductive in many places, and vast tracts have been abandoned to apparently hopeless sterility. Such lands it is possible to reclaim, but at what an expense of time, labor, manure, and skillful management ! It is to be hoped that the newer States will not thus sacrifice their future power and prospects to present and temporary wealth—that the fine lands * * * * * which now yield Indian corn and wheat, crop after crop, without intermission and without manure, will not be so cropped till their strength and substance is gone ; but that a better conducted and more skilful husbandry will continue, *without diminishing*

the present crop, to secure a permanent fertility to that naturally rich and productive country."

Our country in all the sources of prosperity and greatness, will be blighted by the impoverishment of our soils. Destroy the fertility of our lands, and you drive population as well as capital from us. Make our farms rich, increase the intrinsic value of the soil, and Michigan will not only retain her inhabitants, but will be a centre of immigration; she will be a spot sought by the wealth-loving citizens of other States.

"By a calculation that appeared several years ago in a Report of the United States Patent Office, it was estimated that *one thousand millions of dollars* would not more than restore to their original richness and strength the *one hundred million acres of land* in the United States which had already been partially exhausted of their fertility." That sum at this day is probably far below the true amount. The loss in the products of the soil every year from its impaired fertility, is doubtless vastly more than the whole expense of the General Government. Indeed, I am convinced that should the soils of the United States be restored to their original richness the increased profits of our husbandry would more than equal all the expenses of our Government—National, State and local.

Now every intelligent agriculturist knows that by a judicious system of farming, which would have been temporarily and permanently profitable, all of this destruction of farming capital could have been saved. Now why has it not been saved? Certainly this waste has not been premeditated. It must have been from an ignorance of those foundation principles in Agriculture by which men acquire wealth more rapidly by gradually enriching the soil, than by gradually impoverishing it. May not the farmer derive profit from an acquaintance with those laws of nature which he must call to his aid in developing the products of the soil, and on which he is wholly dependent for his success?

But we believe the day is dawning on this night of darkness.

The following admirable sentiments are quoted from Dr. Lee's Report to the Secretary of the Interior :

"Many who have labored for the improvement of Agriculture and the elevation of the Agriculturists, for a quarter of a century, with little hope of reward, now realize the beginning of an auspicious change in public sentiment. Thanks to agricultural societies and journals, the people will soon discover that labor and capital devoted to tillage and husbandry, are as worthy of legislative consideration and aid, as when applied to mining, commerce and manufactures.

It is indeed wonderful how long those enlightened farmers, who, like Washington, cherish a due respect for their high calling, have had to beg and beg in vain, of State Legislatures and Congress, for a little assistance to prevent the universal impoverishment of American soils. Neither the earnest recommendation of the illustrious farmer of Mount Vernon, nor the prayers of two generations of agriculturists, nor the painful fact that nearly all the tilled lands were becoming less and less productive, could induce any Legislature to foster the study of Agriculture as a science. Happily this term when used in connection with rural affairs, is no longer the subject of ridicule.

A great principle is involved in the science of Agriculture, which reaches through indefinite generations, and forms the basis of all possible improvements, and of the highest hopes of our race. As a nation of farmers, is it not time that we inquire what means, and on what terms the fruitfulness of the earth, and its invaluable products may be forever maintained, if not forever improved?

These are questions of universal concernment, to the careful and rigid investigation of which, no man should refuse to lend a listening ear. A governmental policy which results in impoverishing the natural fertility of the land, must have an end. It is only a question of time, when this truly spendthrift course, this abuse of the goodness of Providence, shall meet with its inevitable punishment.

A lack of mental culture and discipline is the most serious

impediment to the diffusion of agricultural science among the farmers. Its language to them is an unknown tongue. Hence the sublime truths in the economy of nature are shut out from the popular understanding. It is feared this will ever be the case until schools designed to teach these branches of learning, which the farmer greatly needs but does not possess, are established and maintained throughout the United States."

There is deep wisdom in the remark of Dr. Lee, that "a great principle is involved in the science of Agriculture which reaches through indefinite generations, and forms the basis of all possible improvements, and of the highest hopes of our race." The wealth of the world must ever keep pace exactly with the value of the products of the soil. Diminish the fruits of the soil, and you must curtail other branches of business. Increase the fruits of agricultural labor, and other departments of business will admit of like expansion. The wealth of the world, the extent of its population, the means of civilization and human enlightenment, and all its forms of material power, rest on Agriculture as a basis, and you can never shift them from this foundation. Should not therefore the promotion of this pursuit be a leading purpose of the race? Should it not receive the first and chief attention? As from it all other trades derive their life and support, is it not the height of folly, and even suicide to ignore its claims?

Although in the history of nations Agriculture has generally been the last pursuit to receive legislative aid, either directly or indirectly, yet it has generally been the fault of farmers themselves. An earnest and united appeal to our law-makers from this powerful class could not certainly be disregarded. Indeed, our law makers depend on the votes of farmers for the position they hold. The trouble has been that the need of any special preparation for the duties of their calling has too seldom been distinctly realized.

The wind that blows, the rain that falls, the sunlight from heaven, the lightning flash, the mountain that rears its top to the skies, the valley that divides the highlands, the broad ex-

panse of ocean, the immense sweep of the prairies, the position of lakes, the relations of marshes, the contiguity of forests, every condition, indeed, of the physical world, modifies its agriculture. The Deity has placed the farmer amid the most splendid collocation of forces. They sport about him, above him, and beneath him. Grand, like the surgings of the atmospheric ocean; terrific, like the vivid flash of lightning, or silent as the sunbeam painting the face of nature with its gorgeous colorings; this grand array of forces combine their influence to make the vegetable kingdom what we find it. Whether he realizes the fact or not, the tiller of the soil is dealing with the most delicately adjusted forces; and the success of his labors depends on the harmony with which he works these forces. Is there no advantage to the mariner in understanding the sea on which he sails; the traveler, the country through which he travels; the warrior, the plans of the enemy? Has the painter no need of vision; the musician no need of hearing? And has the farmer nothing to gain from comprehending these laws of nature, which he must daily handle, and whose behests he must obey?

Medical and law schools have been established and sustained simply because they were demanded by this class of our citizens. Young men entering these professions have felt the need of some special preparation that cannot so well be secured in any other way. And it cannot be doubted that if, with the same unanimity, agricultural colleges had been demanded by the farming community, they would before this have been in successful operation in every State of the Union. So far as numbers are concerned, and power, too, if their influence were concentrated and brought to bear, the government is in their hands. They own the capital and they cast the votes; and they have only clearly to discern the advantages within their reach, to be induced to stretch forth their hands and lay hold upon the gain they may secure.

Happily the lethargy which has rested on this class of our citizens is fast being dispelled. The sound has gone forth, and

the notes of preparation are being heard all through these States. An increased interest is daily being felt in the subject of agricultural education. The farmers begin to realize that they have rights which all men are bound to respect, and if asserted, they will be respected, for both interest and inclination will combine to effect this result.

Permit me, partly as a recapitulation, to present connectedly and briefly some of the benefits which are expected to flow from an Agricultural College.

1st. It will be a source of original knowledge. The experiments instituted cannot fail in time to advance the science of Agriculture, both by revealing more successful methods of farming, and warning against those processes that are unprofitable. Much light should originate from this source. With the cordial co-operation of intelligent farmers throughout the State, suggesting experiments and tests which would solve questions practically important : feeling that the Institution was founded to aid them, and that they are doing here by proxy that which it is often impossible for private farmers to furnish facilities to accomplish by themselves ; and being governed by enlightened views, we can readily make this Institution a guiding star to the farmers of the State. Farmers of Michigan, the College is yours, and it is in your power to make it eminently useful.

2d. By the labors of the farm the instructions of the lecture room may be illustrated and impressed on the mind. In gaining a knowledge of the scientific principles involved in Agriculture, practice should never be separated from theoretical instruction. Young men should not only learn the principles, but they should be taught to apply them, and thereby they learn them more perfectly and in a wider sense.

3d. The Institution furnishes extensive means of instruction in the scientific principles of farming. The truths established by experiments prosecuted in different parts of the world are presented; the student is made acquainted with those facts and laws of the mineral, vegetable and animal kingdoms which throw any light on the philosophy of Agriculture. Special

facilities, such as Laboratory, Museum, Cabinet, Herbarium, Botanical Garden, are provided for imparting instruction such as no farmers can derive from a private source.

4th. Agriculture becomes ennobled by its association with study. Being the leading element in a college course in a State Institution, it is invested with an importance, educationally which is not usually awarded to it.

5th. Manual labor is made honorable, and all become impressed with the idea that it is honorable. There is a feeling too prevalent among the young that it is dishonorable to labor. Here is a positive requirement. It is indeed an essential element in the success of the Institution, and all are taught to look upon it as a part of a great plan to accomplish an important work.

6th. It will exert a strong influence in retaining educated young men in industrial pursuits. In almost every case young men in college acquire a disinclination to labor, as well as a physical incapacity for labor. They are shut out from the laboring world: they do not mingle with it; they lose their sympathy for it; they are accustomed to regard themselves as occupying a peculiarly favored place among the laboring class. Hence they growd what are called the learned professions as presenting attractions peculiarly suited to their tastes. College training generally draws an impassable line between educated talent and the industrial world. If the object be to educate all classes, this certainly is a serious evil. Says one of the Professors in our own State University in a communication some time since given to the public, "In the University designed for the training of professional men, the destined agriculturist will not only fail to obtain that *kind* of liberal training, and scientific knowledge which are adapted to his life, but there will be nothing congenial in the atmosphere of such an institution to the moral and social nature of the farmer whose habits of life remove him from those who resort to Universities."

The truth of this statement is plain to all. The spirit of such

institutions is necessarily adverse to the habits of the working classes. Take four or five years of that part of a young man's life in which he is cultivating the mind, acquiring habits of thought, assuming mentally a fixed character; in which he is making preparation for his future career, and shut him out from the business world; keep him from mingling with it, give him an entirely different atmosphere; make him breathe it, and get accustomed to it, and love it, so that his habits of thought and his spirit shall be wholly disconnected from industrial pursuits, and will you not effectually produce a total alienation of his life from those scenes requiring labor? How can it be expected that a man will become interested in labor when you educate him to neglect and wholly ignore it? And just so long as our colleges pursue their present system, will there be an inevitable tendency to form two classes in society, the uneducated laboring class, and the educated non-laboring class. Now I look upon the system of Agricultural Colleges, imparting a knowledge of Agriculture, and embodying labor as an essential element, as designed to work the grandest results in favor of industrial pursuits, by retaining the sons of the farmer on the farm, and thrusting educated talent into those branches of business demanding labor. Should these be the only beneficial effects growing out of these institutions, they would amply repay the cost. They would ultimately increase the farming capital far more than the expense incurred in their support.

7th. Agricultural Colleges afford physical as well as mental education. There can be no question but that close study without labor or vigorous exercise, shortens life. The organization of our Institutions of learning, should be such as not to endanger health. This is certainly of the utmost importance. Experience, as well as theory in this Institution, sustains the fact that a certain amount of labor contributes to the health of the student, while at the same time it does not in the least arrest mental progress, but rather promotes it.

8th. The Agricultural College will exert a direct influence on the education of the young. The departments of science which

must here receive especial attention, are precisely those which are now monopolizing the thoughts of the most learned men of the age. There is everywhere, indeed, in this particular line of study, intense activity. Scientific associations are formed, scientific journals published, and the liveliest interest is manifested in bringing to light those mighty truths of nature which have too long been concealed from our view. Men are giving their lives without hope of pecuniary reward to the prosecution of these scientific researches. And it is a significant fact that these several branches of science, which necessarily form the principal part of the course of study in an agricultural college, and which must receive a much larger share of attention than can be devoted to them in other institutions, are the very studies which are now profoundly taxing the intellect of the scientific world. In this way an agricultural college naturally and necessarily falls into the spirit of the age, and moves in the same channel of truth. Thus while science, in its rapid development, cannot fail to lend important aid to agriculture, agricultural colleges must reciprocate the favor by entering into the work of scientific researches.

9th. There are moneyed arguments in favor of such an institution. I have before said that the more scientific the farming, the more successful it is ; and that it is successful because of its conformity to nature's laws. By giving instruction in genuine scientific agriculture, not the intangible, chimerical theories of the speculatist, but theories dignified into substantial, well-established science, much good must be accomplished in a pecuniary point of view. Is it possible that a man should not be benefitted by an intimate acquaintance with the material on which he bestows his labor? The light that would emanate from this source, being felt all through our State, in its aggregate influence, would add much to the productiveness of our farming capital. Again, by elevating the character of the people of the State, raising the reputation of this commonwealth abroad, it will aid in inviting among us men of intelligence and capital, thus adding to our sources of income far more than the cost of

the support of the college. Capital will always centre where there exist the most intelligent means for its use.

10th But all who enter such an Institution may not go forth from the College to labor on the farm, but many of them will engage in other pursuits in life. This may be true, as it is with all our professional schools. But 1st. A vastly larger proportion will devote themselves to Agriculture, than though they pursued their studies in other Institutions ; and 2d. Every class of men of whatever calling, would be benefited by a knowledge of Agriculture as a science and art. This is the great and leading interest of the land. All men in this country must in one way or another, come in contact with this Agricultural element. This foundation art, then, in the business world, whose facts are woven through every department of life, and which meet us in almost every transaction, should be studied to some extent by all. Aside from the beneficial effects of this system of study on health, and its favorable influence on habits of industry, the young would acquire a knowledge of the principles and practice of this, the most wide-spread and pervading branch of business of the whole country, and which is intimately connected with our prosperity as a nation. I can see a special advantage accruing to persons in almost every pursuit, from a somewhat minute acquaintance with this subject ; an advantage not derived from any other art. But when in later years men retire from the more stirring scenes of business or public life to the quiet of the farm, as they almost universally seek to do, they find a more direct and practical use for the knowledge they acquired in earlier days. It is well known that the most unprofitable, and often ruinous expenditure of means are seen among that class of men who, without any previous experience, undertake the management of farms at a somewhat advanced age. They discover when it is too late, that Agriculture is not so simple an art as they had supposed, and that previous study and practice are absolutely necessary to success.

At this period in the history of the Agricultural College, and while the subject of similar Institutions is engrossing so large

a share of the attention of the American people, it may be well for us to stop and consider whether the system which was recommended by the State Agricultural Society, and adopted by the Legislature at its session in 1855, and which has, therefore, become the policy of the State, was wisely planned, or whether a radical mistake was committed in the organization of the College. This is certainly a pertinent inquiry at this particular time, when the public sentiment of the several States which are now establishing industrial Colleges is with great unanimity drifting toward the creation of separate and independent Institutions.

If this sentiment be wrong, we should seek to correct it ; if right, the reasons for it will appear upon due reflection. Michigan is the accredited leader, not only as regards the priority of time of founding an Agricultural College, but also the form of organization ; and the responsibility of the position we occupy is thus correspondingly increased. It is not simply the success of our own Institution that is involved ; but of a great enterprise on which several States of the Union have already embarked.

The principal reason, and indeed the only one that can be given for attaching Agricultural Colleges to other institutions, that appears to have much force, is that of economy. But is not this vague notion of economy to a great extent dispelled by a close analysis of the subject ? Those who have imagined that a Chair of Agriculture, simply in our ordinary Colleges, is all that is required, have formed very inadequate views of the wants to be provided for.

In the first place, there is scarcely a professorship that is essential in a separate Agricultural College but that would have to be organized in addition to the regular force if it were but a department. I need scarcely remind you that the branches which constitute the principal part of the course of study in an Agricultural School are precisely those to which ordinarily the least attention is given in College. For illustration. Usually but few lectures are given in Zoology. In an Agricultural College, the importance of the subject requires

that Zoology and Animal Physiology should employ the whole time of one man. Ordinarily, also, but a few weeks are devoted to the study of Botany and Vegetable Physiology. In an Agricultural College the extent of scientific and professional instruction demanded in this department, renders a separate Chair of Botany and Vegetable Physiology indispensable. In Colleges of "Arts, Sciences, and Literature," the Chemical Department generally embraces simply Elementary Chemistry. In an Agricultural College, the applications of Chemistry to Agriculture must constitute the principal part of a professorship. Geology and Mineralogy usually receive but little attention in College; and Meteorology none at all. The intimate relations of these sciences to Agriculture afford scope and labor enough to employ the whole time of one man. In Mathematics the subject of Rural Engineering is supplementary to the instruction given, and necessarily increases the expense. It was well said by Gov. Blair in his inaugural message, that the Agricultural College "should teach far more thoroughly and extensively the sciences that relate to Agriculture than any ordinary College." In addition to all of this, aside from the Mechanic Arts, the general subject of practical Agriculture opens up a wide field of instruction which must also be provided for.

Thus, if the object be to teach scientific agriculture, an extensive acquaintance must be secured with those sciences which explain the philosophy of Agriculture. A Chair of Agriculture, then, without the means of acquiring a thorough knowledge of those sciences which lie at the foundation of this art, every one will readily see, could not accomplish the object sought. Therefore, to cover the additional instruction demanded in our Colleges and Universities, should an agricultural department be attached, the Faculty must be increased by at least four or five Professors. An entirely new course of study must be established, differing almost as much from the general course as that of law or medicine does from the arts and sciences.

Passing from the cost of instruction to the facilities required, and what do we find? Whether the Agricultural College be a separate institution or simply a department, in both cases there must be a practical farm to illustrate the instructions of the lecture room. In both cases must there be an experimental farm to improve the science of agriculture. In both cases must all the stock and implements for working the same be provided. In both cases must there be a Botanical Garden, and seed room. In both cases must there be a Kitchen Garden for instruction in this department of husbandry. In both cases must there be a Veterinary Hospital. In both cases must there be collections in Botany and Zoology, with special reference to the application of these sciences to practical agriculture. In both cases should there be an Agricultural Library, differing essentially from the libraries usually attached to colleges. Indeed, Agriculture being a specialty, its facilities and appliances must also be specialties.

But the foregoing are negative reasons. Doubtless the agriculturists of Michigan who originated the College, and insisted that it be made a separate institution, were governed by what they considered good and sufficient reasons.

They unquestionably discovered the fact that from the nature of the case success could be obtained only by making Agriculture the central and leading idea of the institution; that to make it subordinate would inevitably crush out its life; that like the water of the outer circles of the maelstrom, it would be drawn to the engulfing centre and be swallowed up and lost forever. Agriculture must be the grand nucleus around which all the parts revolve. It must be that in which the whole organization centres. It must be the heart of the Institution, the very sun of the system with its light and heat, rather than the dependent satellite.

Agriculture has far less attractions for the young than the professions. It is very seldom that the farm is chosen in preference to what are called the learned professions, if all are equally accessible. There is a degree of eclat attaching to the

latter. There is more that is captivating in the name; and they offer higher assurances of speedy success, and seems to point out an easier road to distinction. It is well known with what eager steps our young men who have been favored with academic and collegiate instruction, press towards these professions. The charm may be a delusive one, but yet it has its hold upon the mind. The result is, and experience confirms the theory, that where these elements exist together in the same institution, the agricultural is absorbed and swallowed up by the others.

Every one admits that manual labor is essential in an agricultural college. It is necessary to illustrate the principles taught; it is necessary in the prosecution of experiments; it is necessary to prevent that distaste for labor which gradually grows out of its neglect. Now who does not clearly see that you cannot blend the laboring and non-laboring elements in the same institution. That false pride which afflicts the young even more than the old, will make the non-laboring the popular, aristocratic portion, and the others will be looked upon as the "mudsills" of the college. Although sensible men in mature years know that labor is not degrading, but dignified and honorable; yet there is a species of inflation that fills the head of Young America when he enters college, that according to his own estimate lifts him above industrial pursuits. I need not argue the question; you all know that a cast would be thus produced, that must be fatal to the weaker and less influential elements in the organization. In a separate agricultural college, where labor is required of all, without distinction, there are no degrading notions attaching to it. A student that is indolent or inefficient in the field, ranks but little higher than does a blockhead in the recitation room.

Some ten years ago the Commonwealth of Massachusetts appointed Commissioners to consider the subject of establishing an Agricultural College, and in prosecuting the duties assigned, Professor Hitchcock, one of the Commissioners, visited the prin-

cipal agricultural schools of Europe. In their report we find the following remarks :

"European agricultural schools have taught us some important lessons.

Agricultural professorships, in colleges and universities, are not sufficient.

1st. Because lectures of this sort attract but few of the students of the colleges, who are looking forward to professional life. Such is certainly the case everywhere in Europe.

2d. Because the two classes of students who would thus be brought together, would have too little sympathy to act in concert, and as equals in the same institution.

3d. Because without such concert and sympathy, one or other of the classes of students would feel no pride in the institution, and without such an *esprit du corps*, it could not prosper.

4th. Because such professorships, unless numerous, would be entirely insufficient to accomplish the object desired."

Again the Commissioners remark :

"We learn from European experience, that independent agricultural institutions are essential to accomplish the object sought.

1st. Because the field is wide enough to require such establishments. The principles of agriculture are based upon a large part of the physical sciences ; and it requires a good literary education to understand those sciences. No man can understand the *principles* of farming who is not more or less acquainted with Chemistry, Anatomy, Physiology, Botany, Mineralogy, geology, meteorology and geology ; and then the practical part requires an extensive acquaintance with various branches of mathematics and natural philosophy. There should be institutions entirely devoted to a thorough instruction and investigation of the subject.

2d. Because it demands extensive collections of various kinds, in order to elucidate the principles of husbandry ; enough, indeed, to belong to any scientific institution, and too many to

form a mere subordinate branch of some institution with a different object in view.

3d. Because the number of instructors must be so large that they could not conveniently form an adjunct to some other institution.

4th. Because the interests of agriculture are large enough to demand an institution definitely consecrated to their promotion. No other art is so important, and I may add, no other is so difficult to be successfully cultivated; and therefore every means possible should be employed to render it assistance. * * *

In Europe they have started institutions with as ample a foundation, and as numerous a body of instructors, as we find in in most of our American colleges. Nothing short of this will be sufficient for our country; nay, we fancy that at least one such superior institution is needed in each of our States. The work to be done is too great, the number of teachers too many, and the amount of various collections too large, to attempt to attach an agricultural school to some other institution; and that too as only a subordinate branch."

In another place they state that "essentially the same reasons, and of greater force, exist for the establishment of agricultural schools in this country, as in Europe," but I cannot stop to present the reasons given.

It cannot be doubted, then, that the farmers of Michigan and the Legislature acted in accordance with the experience of European institutions, and principles that are almost self-evidently true, in providing for a separate and independent organization of the Agricultural College; and that the prevailing sentiment in those States which are now establishing similar institutions is founded on good and incontrovertible reasons. Public sentiment, indeed, coolly and dispassionately formed, is not very likely to be far out of the way.

But an agricultural college may be well enough, and indeed quite desirable, did it not cost so much. I know it has cost money to purchase the farm. I know it has cost money to erect the college building and boarding house, and as they were

found to be somewhat defective, expense has since been incurred in making them substantial. I know it has cost money to erect dwelling houses, but on which the institution is now realizing rent. I know it cost money to purchase stock and implements for the use of a large body of students in working the farm. I know it cost money to clear and subdue between two and three hundred acres of land, most of it heavily timbered, and that too by the labor of boys, as there was no cleared land on which their labor could be bestowed. I know it cost money to provide fixtures for the boarding house, and apparatus and other means of instruction in the college building. But I have yet to learn that any fault has been found with the expenditures of the past two years, as the outlays above enumerated and necessary for putting the institution in operation, were made previous to this time. Every body knows that the principal part of the expense must be incurred at the opening of the college. And you will not fail to remember that the institution went into operation just at that particular juncture when from various causes, lands, stock, wages, every thing could be procured only at extremely high rates. Unfortunately it was the most unpropitious time within the past ten years for the opening of the college. And in common with private farmers, until the past year, we have suffered from unfavorable seasons. During 1859 our crops suffered by the frosts to the extent probably of \$2,000. It is well known that on new lands you cannot guard against frosts, or droughts, or excess of rains as well as on old lands.

But the past is gone, and it is the future only with which we have to do. Taking the Institution as we find it to-day, how great a burden will it be to the State? The College is observing the closest economy, and we think we shall be able to show that the day is not very far distant when it will in great part, if not entirely, cease to be a tax on the Treasury. The State Board of Education have asked for an appropriation of \$25,000 for the coming two years, which has received the recommendation of both Gov. Wisner and Gov. Blair. It will be seen by an

examination of items, that no unnecessary or extravagant demand has been made. The amount has been reduced to the lowest possible sum. Economy should be studied in public as well as in private enterprises. Were the amount \$30,000 instead of \$25,000—that is, \$15,000 a year—it would be at the rate of two cents to each inhabitant. Do the people of the State realize the difference this makes in their taxes? Were the capital of the State \$200,000,000 according to the true valuation, and by the Report of the Auditor General it is now nearly that amount, \$15,000 would be a tax of one-twentieth of a mill. \$100 would be taxed $\frac{1}{2}$ cent; \$1,000, 5 cents, and \$20,000 would sustain a tax of \$1. Should the annual appropriations then be \$15,000, which is more than is asked, as the capital of the State increases, the rate of taxation will be gradually reduced. To nineteen-twentieths of the people of the State this tax is wholly inappreciable. You strike it out of the assessment and it would not be known.

But it is wholly unnecessary for me to make these statements here before this company of intelligent Legislators. Every thoughtful man knows that the whole expense of the State government even is no real burden upon the people; but that nearly all the taxes collected are appropriated to county, town, and school-district purposes, aside from the labor bestowed on the highway. It is not the taxes men pay that eat up their income, but the hundreds of little things which are considered trifling at the time, but which, should they be taken in gross, would appear enormous. To illustrate my meaning, take a single item. A tobacconist informs me that he estimates the value of the tobacco manufactured in the State at \$500,000. But as a large part of the tobacco consumed here is not manufactured in Michigan, the consumption must far exceed this amount. Should the people of the State refrain from the use of this *delicacy* for but a single year, and appropriate the savings to such a purpose, how many public institutions think you it would build up? It would certainly be a long time before Michigan would be called upon to appropriate

anything further for her asylums or other public works. The appropriation asked for the College the coming year, would not buy a cigar apiece for one-half of the people of the State.

The Legislature three years ago, authorized the College to take possession of certain swamp lands situated in the townships of Dewitt and Bath, in the county of Clinton, and Lansing and Meridian, in the county of Ingham, amounting in all to a little less than 7000 acres. Some 3200 acres of these lands are in one continuous mass, and are situated about $2\frac{1}{2}$ miles due north from the College, and are connected with the College Farm by other portions of the swamp lands, with the exception of $\frac{1}{4}$ of a mile in three different places, making $\frac{3}{4}$ of a mile in all. A road, therefore, constructed from the College Farm to this large marsh on the town line separating Lansing from Meridian, would be on the line of these lands, and would also serve for drainage of the same. Should the Legislature comply with the recommendation of Governor Wisner, and put the fee of these lands in the officers of the College in trust, with the privilege of selling the scattered portions that are not needed for use, and applying so much of the proceeds of the same as may be required for drainage of the balance, and vesting the remainder as a permanent fund, there is every reason to believe that within a few years the State will be almost entirely relieved of the support of the College.

Many of you are aware that this tract of swamp lands, situated just north of the College, is, for the extent of surface it covers, one of the most valuable in the State. A small stream runs along its western border, and towards which from the east there is a gradual descent over the whole marsh. Arrangements were made for commencing the drainage of the same the past summer, and a small sum of money was set apart for that purpose; but the high water occasioned by the heavy rains, rendered it impracticable without increased expense. On this tract of a little more than 3000 acres, there are some 2000 acres of open marsh, on which no timber is standing, which only needs to be intersected with drains to be as dry and smooth as

any meadow in the State. Then by seeding with Timothy and Red-top, without the labor of ploughing or harrowing even, the wild grass becomes gradually and rapidly eradicated, and a beautiful and most productive meadow is formed. The surface settles and becomes compact, so that a mowing machine may be used as conveniently as on our best upland meadows. This large marsh can be drained at a trifling expense; with less money than would probably be required to fence the same amount of land; while the ditches thus opened would also serve to a great extent in place of fences, so far as required. Thus, in a very few years at a trivial cost, an exceedingly valuable meadow will be secured, which will bring a large revenue to the College. Lands in the same vicinity which have been thus treated, are now valued at \$50 per acre. On the outskirts of this marsh as a part of the same tract, are several hundred acres of the finest quality of upland.

That the resources of this tract will be thoroughly husbanded and be made speedily available, it is only necessary for me to state that it will be under the direct supervision of Mr. James Bayley, the present Superintendent of the College Farm, who is known to be one of the most practical and successful farmers in the State.

Agriculturists are now turning their attention more than ever before to the raising of stock. The fact is beginning to be realized that the largest profits can be secured only by preserving the fertility of the soil; and that in no other way can this fertility be so economically preserved as by means of stock-husbandry. It is plain to every thinking farmer, that there is not half the exhaustion of soil in raising stock as in an exclusively grain husbandry, provided due care is exercised in the preservation of the manures on the farm. To this department of farming must the College give special attention, both for the profit pecuniarily, and the varied instruction which can thus be imparted to the students pursuing their professional studies here, as well as for experiments for the benefit of the people of the State.

It was a very judicious and far-seeing measure of the Legislature of 1858, in reserving these lands from sale for the use of the college; and if now secured to it by the legislation that is asked, there can be no doubt but that the principal part of the current expenses of the Institution may in a few years be defrayed from this source.

It will be remembered that two years ago a bill passed both houses of Congress donating to the States for the purpose of establishing and endowing agricultural colleges, lands to the amount of 20,000 acres for each member of Congress according to the ratio as should be decided by the census of 1860; but this bill failed to receive the signature of the President of the United States. Had this become a law, Michigan would probably have received 160,000 acres of land, which in time would have furnished an ample endowment. May we not reasonably hope that this policy, or one similar to it, will yet be carried out by the general government. Grants of lands have heretofore been made to the States for the endowment of universities, including not only the arts, sciences and literature, but also the professional departments of law and medicine. Can any valid ground, therefore, be urged against the endowment of agricultural colleges from the same source, which are designed to give instruction in the principles of that department of business which monopolizes more of time and capital than all other pursuits combined?

There is nothing more reasonable than the desire to understand the principles involved in our chosen pursuits. We certainly are not automata; we have intellectual capacities, and it is a leading purpose of nature to minister to the wants of this thinking being. The farmer is dwelling in a museum of wonders; and ten thousand forms of beauty too delicate for the un-instructed eye seek to charm the soul. There is here enough for the mind to feast upon forever. The commonest things about us are full of lessons of wisdom. This volume of nature is written all over with the most glowing truths. It is, indeed, the embodiment of God's great thoughts; a material working

out of his plans ; an exhibit of that endless fertility of mind which belongs only to Deity. Shall we not open this volume of truth to the busy world ? Shall we not introduce the young who are to labor amid these silent but omnipotent forces, to the associations which surround them ? Indeed, if there be any educational arguments in favor of any class of our citizens, do they not emphatically apply here ? But passing by all educational considerations in favor of such an institution, considerations of immense importance when we take into account the adaptation of these truths of nature to the development of the mind, and the great multitude of men who from the labor of the farm are thrown within their reach, and the vast amount of talent that might thus be developed to re-act on the world in its various channels of progress ; passing by these all, we say, let us ask the question, as every Yankee is sure to do, will it pay pecuniarily ?

In the Patent Office Report of 1847 appears the following remark : " It is a question worthy the attention of agriculturists and political economists, whether there was not absolutely more wealth invested in our soil, in fertilizing matter, at the time Columbus discovered America, than there is above the surface in improvements and investments of every kind " There is no one subject to-day that so earnestly demands the attention of the American people, as the gradual and alarming exhaustion of our soils. Every consideration requires that this be arrested. The 3,000,000 acres of improved lands in the State certainly yield \$15,000,000 to : 20,000,000 less of products annually than they ought to do. Why is there this fearful waste ? It can only be ascribed to improper management. How is this evil to be corrected ? It can only be done by the great mass of the people acquiring a better knowledge of the theoretical and practical principles of Agriculture. By what means may this knowledge be acquired ? The great school of practical Agriculture is and always must be the farm. It is almost impossible that a mere theorist should ever succeed. The whole *modus operandi* of Agriculture can be learned only by experience.

The practical sense and shrewd discrimination gained by a long familiarity with the every day details of the farm, are indispensable to success. But an art so thoroughly interwoven with the great kingdom of nature, an art which is never beyond the reach of the myriad forces of the material world, also pre-eminently demands close discriminating thought, and the widest range of study and research. You all know that the best farmers are those that think the most, and gain the most thoroughly practical knowledge of the philosophy of things.

Our agricultural associations may accomplish much good for the farming interests; and also our agricultural press, when conducted by sound, experienced farmers. But it is evident these cannot accomplish the whole work. That which has seemed to offer the highest assurances of success in supplying this great want are agricultural schools. This is the general sentiment of Europe, and many of their official reports show remarkable effects on the improvement of agriculture in the districts where these schools are located.

But as I have already presented some thoughts on this subject, I shall not dwell on it here. And yet if so far as agriculture is concerned, there be no profit in studying its principles; if the struggles of the mind in its search here for truth, will fail in time to reap their reward; if the power of thought in this domain of God's works was given us for no purpose, then certainly this is a lamentable exception to his otherwise universal laws. We have then found one field where truth was not made for the mind, and mind is not fitted to seize hold upon the truth, and turn it to useful purposes. Then surely we have found a mighty chasm in the plans of Deity; we have found the separate parts of his creation warring against each other. But this cannot be. Mistakes may be committed, but the truth will ultimately find the light. Arouse the whole farming community to thought and study. Let them determine the why and wherefore of every process. Let them look into the philosophy of nature, and understand those sublime laws which are building up the vegetable and animal kingdoms. Let them form an

intimate acquaintance with those forces which constitute the life of their art, and good will result, or else reason was given us in vain.

The beneficial effects of this union of scientific researches and practical agriculture on the products of the State, must necessarily be gradual and silent. But these silent results are sometimes the most momentous. Should the increased interest thus excited in the philosophy of agriculture but partially restore our lands to their natural fertility, the aggregate benefit might still be greater than the whole expense of the College. Should it in time increase the products of our improved lands on an average not more than one dollar per acre, upon the 3,000,000 acres of cultivated lands, it would amount to \$3,000,000. In 1854 the average yield of wheat in this State was little less than 14 bushels per acre. This is certainly far below the natural capabilities of our soil. And the history of American agriculture has been that the yield per acre of our staple crops has gradually been growing less.

In 1840 the yield of wheat in the New England States was 2,014,111 bushels. In 1850 it was 1,090,182 bushels. The yield of potatoes in 1840 was 35,180,500 bushels. In 1850 it was 19,418,191 bushels, while in most of these States stock-raising has gradually assumed less importance. In the State of New York in 1825 there were 7,160,967 acres under improvement. In 1855 it had increased to 26,758,182 acres, yet the number of sheep had decreased nearly 300,000, and within five years the decrease had been nearly 50 per cent. ; and the number of horses, cows and swine had decreased over 15 per cent. In 1845 the yield of wheat in the same State was 13,391,770 bushels. In 1857 it was only 6,000,000 bushels. In 1844 the average yield of corn was 24.75 bushels. In 1854 it was only 21.02 bushels. It is estimated by competent authority that the annual loss from want of skill in Massachusetts in the cereal grains is \$2,000,000, and in stock, dairy, &c., \$15,000,000. Thus we might continue, piling up facts without number from every part of the Union, showing the decreasing

fertility of American soils. It is calculated from reliable sources that the loss of capital in the United States from the depleted condition of our soils amounts to more than \$166,000,000 every year. Is this not a prodigal waste?

It is easy to see towards what goal we have been tending. We must by some means arrest this downward march, or we shall seriously impair our industrial and political prosperity. We must then consent to take a far less prominent position among the nations of the earth than is otherwise within our reach. This is not a question that should claim the attention of the farmer simply; it should claim the attention of the statesman; it should claim the attention of every one who would give prominence to the free institutions of America. Can too much be done to stop the fearful impoverishment of our natural wealth? Is it not worth our while to make this subject our special study? Is it not worth our while to seek to turn the best talent of the country towards this pursuit? Is it not worth our while to bend far more of our efforts to the solution of the great problems of agriculture, and the dissemination of the results of practical and scientific inquiries among the mass of the people? In the single item of manures, I have no doubt there are hundreds of thousands of dollars, and perhaps millions, wasted every year in Michigan, from ignorance of their composition and properties, and the best and most economical methods of preservation. Is there not a practical field open for instruction?

It was not a vain remark of the Father of his Country, that he "knew of no pursuit in which more real or important good could be rendered to a country, than by the improvement of its agriculture;" and I doubt not this sentiment finds a warm response in the hearts of the farmers of Michigan.

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