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ADDRESSES

DELIVERED BEFORE THE

Pennsylvania State Agricultural Society,

AT ITS

Exhibition and Meeting at Williamsport, Lycoming County,

SEPTEMBER, 1865,

BY

HON. EDGAR COWAN,  
*of Westmoreland County,*

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AND

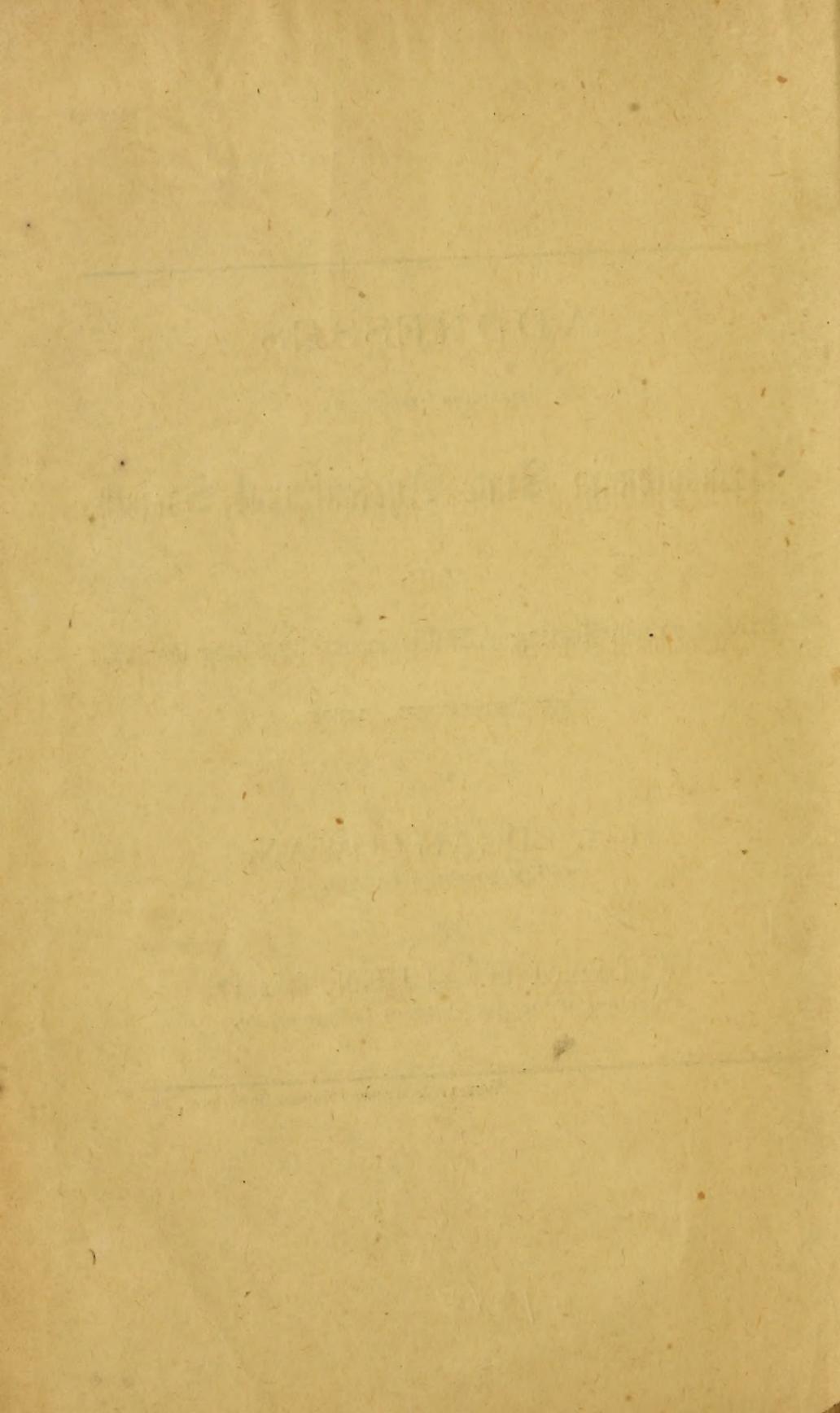
WILLIAM H. ALLEN, LL. D.,  
*Principal of the Agricultural College of Pa.*

SINGERLY & MYERS, Printers, Harrisburg, Pa.



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At a meeting of the Pennsylvania State Agricultural Society, held at Williamsport, in September, 1865, the President announced that Senator COWAN had been requested to address the Society, he had consented to do so, was present, and would now proceed to fulfil his promise. Whereupon he came forward, and in presence of Governor CURTIN, Ex-Governor PACKER, Mr. NEWTON, Commissioner of Agriculture, Professor ALLEN, of the Agricultural College of Pennsylvania, and a very large number of members of the Society and others, delivered the address printed herewith.

After its conclusion, Mr. JOHN MURDOCH, Jr., of Allegheny, seconded by Mr. GEORGE H. BUCHER, of Cumberland, moved that Mr. COWAN be requested to furnish a copy of the address for publication, and for preservation on the minutes of the Society. The motion was agreed to without dissent.

On motion of Mr. THOMAS P. KNOX, of Montgomery, and Mr. STEPHEN F. WILSON, of Tioga, it was unanimously resolved, that the thanks of the Society be tendered to Mr. COWAN for the able and interesting address just delivered.

The meeting then adjourned.

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At a previous meeting of the Society, Gen. A. L. RUSSELL, of Bedford, stated that he had been deputed by the President to say, that according to an invitation extended by that gentleman on behalf of the Society, Principal ALLEN, of the Agricultural College, would now proceed to address its members, and the ladies and gentlemen present. Mr. ALLEN then made the address herewith printed.

After he had concluded, it was moved by Gen. T. J. JORDAN, of Dauphin and Mr. JOHN C. MORRIS, of Susquehanna, that a copy of the address of Mr. ALLEN be requested for publication, and that the thanks of the Society be tendered him for the ability and interest with which he has invested his subject. The motion was agreed to without dissent.

The meeting then adjourned.

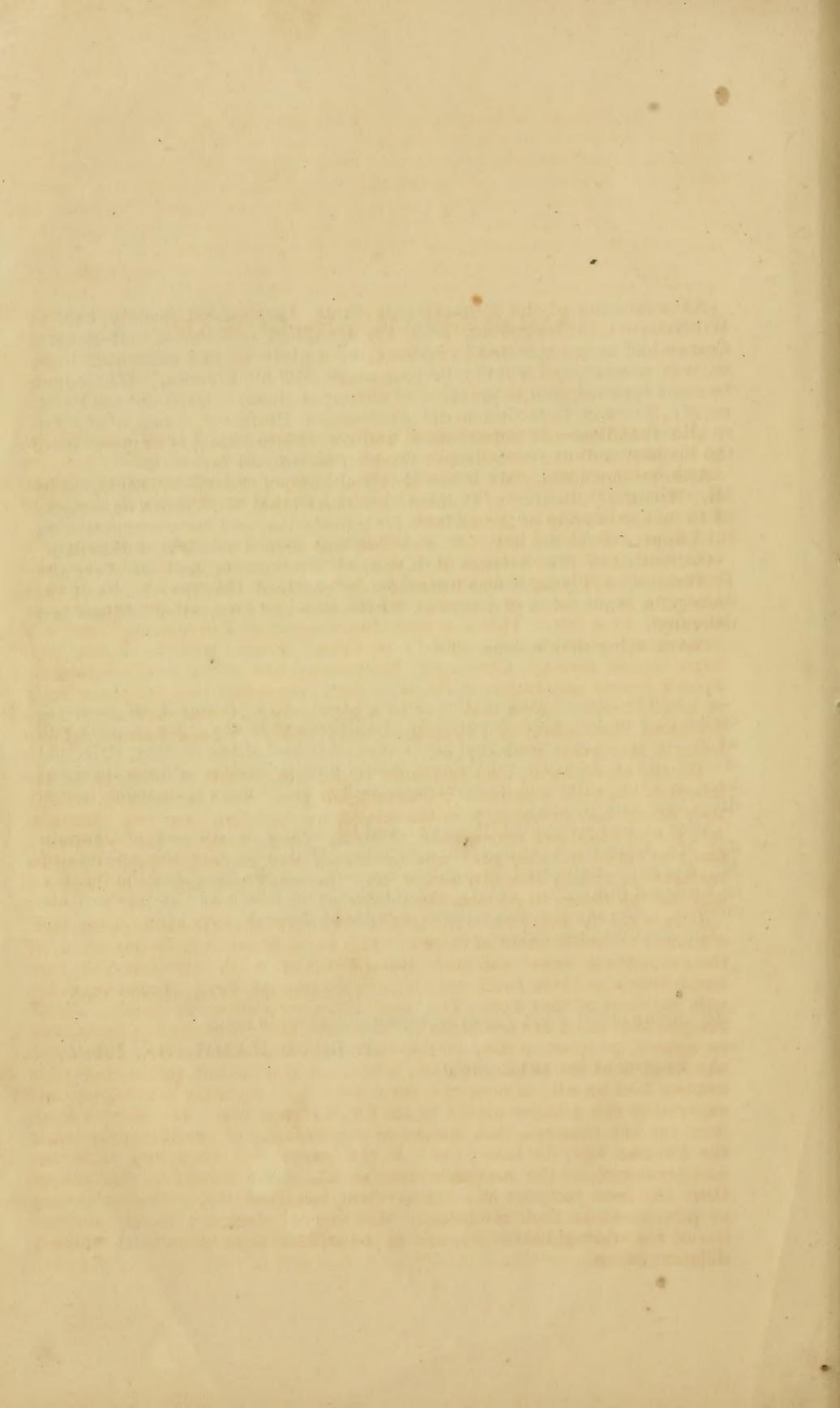
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HARRISBURG, November 8, 1865.

In pursuance of these resolves, this publication is made.

A. BOYD HAMILTON, *Pres't.*

A. BROWER LONGAKER, *Sec'y.*



## ADDRESS OF Mr. COWAN.

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MY FRIENDS:—In presuming to address you to day, I shall not attempt to instruct you in your calling—in the practical details of which you are much better versed than I could pretend to be. In that branch of Human Knowledge, it would be far more fit that I should be your pupil, than that I should assume to be your teacher.

I hope, too, that I may not be thought to disparage your occupation, in believing that your success in it, depends much more upon your care and industry in applying that knowledge easily within the reach of all, than in having a large stock of learning, which from its very nature can only be acquired by a few. This is a wise dispensation of Providence, because if it were not possible for a man to be a good farmer, without he had first been taught Botany, Chemistry, Mineralogy, and other sciences bearing upon a proper cultivation of the soil, the world would be often times sadly in lack of bread. As a man may be a very good Christian without being a profound Theologian, so I suppose he may be a very good Farmer without being a very great Philosopher.

On the other hand, I do not wish to be understood to undervalue the labors of scientific men in their efforts to aid you. Very far from it. I think they are of the greatest possible use to you in furnishing you results at which you could not arrive without them. They construct the hypothesis, and you verify it; they propound the theory, and you enjoy the fruits of its realization, and by this division of labor between you and them, both are enabled the better to perform their parts.

CHANGE is the universal law, and although slow, there is still progress from a worse to a better state of things. The earth is continually improved by the evolution of newer and more useful forms out of the old—since the Carboniferous Era there is an entirely new Flora—the Fern being almost the only survivor of that age. The roses, the nightshades, the grasses and all the plants of most use are recent. The rose family furnishes us fruits, such as apples, peaches, pears, plums, cherries, blackberries, &c.; the nightshades give us the potato, tomato, tobacco, egg-plant and red peppers; the grasses feed us with wheat, rye, corn, oats, &c.; all these are staples, and superior to the ancient plants by far for our purposes. The animal kingdom too has changed, and instead of a population of horrid reptiles as in the Saurian age, the horse, the cow, the camel, the sheep, and others are here, crowned by the master wonder of all, Man. Surely in this change there has been progress and improvement, but these, too, are not stationary or permanent in their condition. Man himself changes; slowly emerges out of his original barbarism, and in the lapse of ages becomes an entirely different being.

At first a naked savage, and the most helpless of all animals, he has become the master of all by virtue of his superior reason, which enabled him to supplement himself in everything he wanted. Without strength, he became the strongest; without swiftness, he became the fleetest; and without means of attack, he became the most dangerous. He did all this by means of weapons or *tools*; he is the only animal that uses tools. He multiplied the strength of his arm by the club, and the handle of his spear was longer than the horn of the buffalo. His arrow-head was sharper than the panther's tooth, and his bow sent it afar from his hiding place. He was soon a conqueror with these rude engines, and he has gone on from the first, slowly and surely extending his dominion. The first age of his history has been called the *Stone Age*, because he made his tools of stone, such as axes, knives, spear-heads, &c.; and these are yet found on his ancient battle fields, near his quarries, and in the ruins of his encampments and villages, to tell us of the poverty of his condition. It is more than likely, too, that even thus early he domesticated certain animals, such as the horse, ass, ox and camel, in order to aid him in going from place to place, and carrying burdens. Perhaps, too, he found that he could grow certain plants useful to him, but his agriculture was of little account.

When this country was first discovered, the North American Indians were living in the condition I have mentioned, so that we can have a tolerably clear idea of the life of our ancestors thousands of years ago, when they commenced their career of conquest. I have no doubt they rejoiced, as we now do, over their new inventions, hailing the bow and arrow as Christians did gunpowder, and boasting of the horse as we do of the steam engine. How the desert tribes exulted when they found the capacity and endurance of the camel, with his extra stomach to carry water to last from station to station, we cannot tell; but we can suppose they were not insensible to his value then, more than to-day, when the tinkling of his caravan bell is heard in all the fairs of the Eastern world. The reindeer of the Laplander, the dog of the Esquimaux, and the lama of the Peruvian, all were important to them in the same way, and required new tools and new contrivances—saddles for beasts of burden—harness and sledges for beasts of draught—so that life was not without work to do even in the age of stone tools and animal forces.

Still the master races among them were not content to remain in this condition, and having discovered copper and tin, they made an alloy of these two metals, of which they then fabricated their weapons and tools. *Bronze* was a great improvement upon stone, for these purposes, from the ease with which it was cast and hammered into various shapes, and in the evenness and tenacity of the edge it carried. They could now mine in the quarries, hew timber in the forests, clear wide fields and cultivate them; they had Agriculture. Society was then organized into the State, which manifested itself in the building of cities, temples, roads, pyramids, palaces, &c., the remains of which still exist as monuments of their industry and ingenuity. This was called the *Age of Bronze*, and how far man could progress with tools of that metal, was well shown in Peru, when the Spaniards first discovered that country. They were struggling with the same imperfect tools used by the Egyptians and Assyrians, thousands of years before, and every thing among them seemed to wear much the same aspect as the civilization of the East in the earlier times. It is evident they understood many of the modes of applying the mechanical forces, from the ponderous weights they were enabled to transport, and the great works they erected. Still their contrivances were rude, and they made up for their deficiencies by an enormous expenditure of labor and patience, to achieve results now obtained with very little trouble. It is not certain, but I think it probable

they knew of the power of the wind to drive their boats and ships, but the uses of the water-fall, as a mechanical agent, was not yet discovered.

But the next discovery, and the one which has exercised by far the most important influence in all departments of human life, was that of *Iron*; and being the most abundant of all the metals, and combining all the qualities of strength, hardness and durability, it has superseded the bronze, and is everywhere used as the material par excellence for tools.

Never, or very rarely, found in a pure state, and its ores bearing little or no resemblance to itself, it is difficult to conceive how it was first found out; perhaps by accident, at the edge of some volcano, as glass was found where a fire had been built on the sand and vitrified it. It is certain that it requires an intense heat to extract iron from its ore; and then afterwards, the processes it must undergo before it becomes available for its more refined purposes, are difficult and require great skill. A certain amount of progress in metallurgy was necessary before iron could be made, and the age of bronze served as a preparatory school for this. The savage never could have achieved it.

It is wonderful to think of the uses to which this metal is put, in industrial pursuits, all over the world. There is no work of any kind done in which it does not take part; the finest needle and the heaviest anchor—nay even the heaviest ships—are alike made of it. It is so intimately bound up with all the processes of life, that we can only estimate its importance by supposing ourselves deprived of it; take it away, and the world would come to a dead stop; we would be savages again, to a certain extent, in spite of ourselves. No wonder it has given its name to the present age.

Having material for tools in perfection, and having, by means of it, made great strides in adapting all things to their purposes, they still sought something more. The forces of men and animals were inadequate to the increased demand everywhere making for the products of labor. Human wants were still in excess of human capacity to supply them, and the idea of new forces began to dawn in ingenious minds. The ship is built, but it must be rowed from port to port; what if the wind could be made to waft it? Then the sail relieved the oar, and the oarman's bench was vacated. The women and the slaves ground the corn, but it was found the wind could turn the mill as well, and the water-fall a great deal better; and for two thousand years, perhaps, these were the inanimate forces used to perform the heaviest kinds of drudgery. Still, the operations performed were of the simplest kind, such as grinding, sawing, forging, &c., and they could only be performed on the spot where the power existed; and even then it was uncertain and irregular in its action.

There was still more wanting; machinery with a wider function, and a power to drive it certain and steady; not confined to any locality but to work anywhere and everywhere, in any given amount, and unaffected by any conditions beyond the control of the operator. In achieving this, we enter upon a new Era; the Era of Invention; and we stand now upon its threshold. Much as has been done, it is hardly yet inaugurated, for we must remember it all lies in the last hundred years. Before that time there were tools, but it could hardly be said that such a thing as industrial machinery existed.

Just two hundred years ago, in 1665, the Marquis of Worcester announced the discovery of "A MOST ADMIRABLE AND FORCIBLE WAY TO DRAW UP WATER BY FIRE." And this was perhaps the first time that FIRE was distinctly suggested as a mechanical force. It happened luckily, too, in the beginning, that it was associated with water as the best medium through which

its force could be applied to industrial purposes. Nothing has since been found to answer the purpose so well, because, when the fire communicates its force to the water, expanding it into steam, this can be used the same as wind to drive machinery; with the additional advantage, that it can be deprived of its power in an instant by the ease with which it is condensed. Here, then, was a new slave born into the world, unlimited in its capacity for work, perfectly manageable in the hands of a skilful master, unaffected by the seasons and unwearied by continuous exertion.

This hint of Glamorgan, Marquis of Worcester, has grown to be by far the most important feature of modern civilization, and the man who struggled so loyally to save Charles I., the most faithless of tyrants, has inaugurated a new state of things, which is likely to be forever fatal to the divine right of Kings, by the impulse it has given to the common sense of mankind everywhere. The Watts, the Fultons, and the Stevensons, have been improving upon his hint, of doing things by fire, till there is hardly any thing which is not done by it. If a cotton crop is to be spun and woven, a fire is built to do it—if a great ship is to be driven across a wide ocean or up a rapid river, a fire is built to do it—and if a thousand tons of merchandise is to be carried across a continent, a fire is built, and this fire drags it with a speed that is marvelous. About the same time it became evident that fire was the agent by which the largest part of our work was to be done: it was question as to fuel, because it was very clear that the forests would not suffice for a long time to furnish it, as well as the lumber required for all the uses to which that article was put.

Here the discovery of coal came in to set at rest that question, and it was found the provision was ample for every contingency—indeed that all the forests of the earth, in remote geological ages, had been carefully preserved—cut, ranked and stowed away in the most compact manner, apparently to meet it. Coal mines, when carefully examined by the best lights of science, showed themselves the repositories of vegetable matter, the remains of immense crops of trees and plants—compressed and covered up in the bowels of the earth, concealing them till the fullness of time. No wonder that men, in their sincerest moods of thankfulness, call God Providence.

That such a commodity, so simple and easily tested, should have remained so long unknown in populous countries, as fuel, is most strange; yet it is the fact that in England, two hundred years ago, when wood was scarce, coal was but little used; while now, its consumption is so enormous as, in time, to threaten its exhaustion. So, too, in America, where there was once the largest forest on the globe, and wood plenty, coals are now everywhere used, and in a short time will supersede wood entirely. It exists everywhere, in almost all countries, more or less in quantity; but being of heavy carriage, and its transportation costly, those who have it at their doors must eventually enjoy such superior advantages as to make competition with them very difficult, in all operations where great power is wanted.

From this short retrospect of the past, it is not hard to understand the significance of the present; nor, perhaps, is it difficult to foresee the probable future. The first thing apparent as the result of this long and arduous struggle, is that the civilized man has procured for himself the best material on the globe for tools and machinery. It is not likely he will get any thing better than iron for these purposes; and although he may, and doubtless will, improve its quality very much, yet it will still be iron. Nor is it probable that he will find any cheaper or readier way to generate force to work them, than by fire; because heat is force, and heat is best obtained by combustion. Here, then, are two ultimates achieved; and his labors

are, to a great extent, done in that direction which will leave the whole force of his intellect to expend itself upon *invention and contrivance*. Henceforth he will study the nature of the work to be done, and the operations to be performed, in order that they may be done and performed by means of machinery. This he will contrive so that it will attain the end; and I think I am warranted in saying, from what he has done already, that he will succeed. No man can doubt this, who will examine the inventions already made in almost every department of industry.

Another thing has been verified; that is, that the progress of improvement now goes on with a pace that is continually being accelerated; so that an imperfect piece of mechanism can no longer maintain its place, but must soon give way to another, freed from defects. As an example of this, you may take your own agricultural implements—say the plough. How soon the inventors of this age corrected the deficiencies of that one which had come down to them sanctified by two or three thousand years of blunders. Elisha was found ploughing “with twelve yoke of oxen before him, and he with the twelfth.” Was this one team, or a dozen? And yet this plough of Elisha was suffered to remain in its original rude and clumsy condition, without much amendment, till within the last hundred years. Observe, too, the continued efforts to improve threshing machines, reapers, mowers, &c. Every man brought in contact with them seems to think that it is his particular duty to suggest improvements. The sewing machine is another instance of the rapidity with which these contrivances are brought to comparative perfection. Indeed its appearance, and the suddenness with which it has come into general use, would almost incline one to think it was given in order to stifle the painful cry of pale and overtasked women, which found poetic embodiment in Hood’s “Song of the Shirt.” May not the song of the poet have awakened and inspired the genius of the mechanic?

I have said that the introduction of industrial machinery was of recent date, and I mean by this, *machinery* which of itself performs industrial operations, without any other aid from human hands than that which is necessary to bring the material to be fabricated within reach of the machine. The ancients do not seem to have had any notion such an achievement was possible; at least it would appear, from all we know of their works, that they did every thing by hand. Now, however, it is known that the hand itself can be rivalled, in flexibility of movement, by machinery; while for delicate exactness of execution, the latter far exceeds it. This can be multiplied at will to such an extent, and with such a cheapening of production, that in the case of many articles of necessity, they are brought all over the world, within reach even of the poorest people. This is a kind of progress that cannot be arrested, and produces a civilization unlike those of former ages, because it cannot be lost.

But you ask, what has all this to do with Agriculture? I confess the query is somewhat startling at first sight—still it is easily answered, by saying EVERYTHING. The farmers own the country and are, being the great bulk of the population, interested in its progress more than any other class. You have seen that IRON is the most important of all materials for industrial purposes—are not your hills and mountains filled with it? You have seen that FIRE is the force superior to all others to make things go. Who then has so much coal and can make fires as cheaply as you can? I mean then, not indeed that you should all turn manufacturers, but that enjoying, to an extraordinary extent, these two articles of prime necessity in modern industry, you should establish and encourage manufacturing pursuits as the readiest means of furnishing a market for your produce and of enriching our country.

It must be clear that from this time forward the great desideratum will be machinery, and whoever has the most, the best and the cheapest machinery will be able to do the most work and produce the most wealth. Now to encourage manufactures is not only to encourage the *use* of machinery—but to encourage the *invention and production* of it—and if there was no other reason, the farmer ought to do this in order to procure it for farm purposes. He is quite as much interested as any one else, that his work shall be done by it—not because it saves labor, but because it multiplies it infinitely and saves human toil and drudgery. He will require quite as many people to assist him as ever, perhaps a great many more, but each one will control ten, twenty or one hundred times as much power as at present, and thus do so much the more work and in the same degree increase production. The price or wages of labor will rise, too, because the value of man himself will rise, and you can better afford to pay an engineer to drive a machine of twenty horse power two dollars per day, than to pay your ploughman one dollar for driving two horses. So that you see the laboring man will be the gainer too—he will get better wages, and as you can then produce much more at less cost, he will get cheaper bread. You have perhaps \$250,000,000 worth of tools and machinery in the United States now, and you and the laborer are both better off than you would have been the old way, when a few dollars stocked the farm and your sinews and his did the rest.

Your horse has become far more valuable, too, because thirty years ago he could only drag and haul your burdens. Now, since he has learned to thresh, mow and reap, you prize him more highly. How curious to observe, too, that as soon as *invention* set coals or fire to do the carrying and hauling of commerce, which the horse used to do, that moment *invention* set him at the work you used to do, and both are quite as busy as before; but your work is of a nobler sort, and not so toilsome and exhaustive. All this, however, is but the beginning; and if you open your eyes and understand your advantages, invention will do a great deal more for you. Your hills and mountains, you know, are full of coal and iron; but they are also full of MANURE. Where do the rich soils of the river bottoms come from—the alluvials of the Susquehanna, the Ohio, the Mississippi? Surely from the highlands which they drain, and they leach them out and carry them down in floods to enrich the fields below. It is impossible to conceive of the amount of fertilizing matter carried by a great river—the Mississippi or the Nile, for instance. All the navies in the world, if sent to the guano islands, could not carry such a cargo. Some day you will be shown how to get these manures from the hills, just as you now get lime. Science will determine their qualities, and invention will dig, separate and prepare them; so that you can keep your soils in a condition to render you a harvest worthy of the age and its progress.

Then again you, as farmers, are interested in this march of progress in another way. You are the owners of the great coal fields of the country, and it is only by an acquaintance with the leading characteristics of the age and its tendencies, that you can know their value, and the best way to develop them. Let us look for one moment at the comparative extent of your fields. Let the unit be 100 square miles; then the British islands will be represented by 54, and all Europe by 90. Would you be surprised to find that Pennsylvania alone has 126, or more than one-third more than all Europe? Again, the Apalachian coal field of Pennsylvania, Virginia, Maryland, Ohio, &c, has nearly six times all Europe, or 555; while the whole United States, with all its fields, has 2,000, or more than twenty-two times as much as Europe. You own mines of iron equally extensive, so

that you see that in both of these leading materials you are more richly endowed than any other country. Why, then, should you not use them, and know how to use them?

It is evident that at some time or another, you must look to these mines, and the facilities they offer for manufacturing, in order to see if you cannot find there a market for your breadstuffs; in other words, a home market. Where do you expect to sell the produce of the great valley of the Mississippi, increasing as it is so rapidly, if you do not people your coal and iron districts with a population of consumers? You cannot sell any thing now worth mentioning to foreigners, except your cotton, which is just the thing you ought not to sell, seeing that of all raw materials it is the most important, and the one out of which the most money is now made. Of this wonderful product you, too, have a kind of monopoly, producing five millions of bales in 1860; enough to employ one half the nation in working it up.

Our circumstances at this time, too, render it incumbent upon us to be up and doing; as before the commencement of the war we had about twenty years of a run of luck, which we are not likely to enjoy again. The American farmer profited by it in a remarkable degree. It commenced by a famine in many parts of Europe, owing to the failure of the potato crops, which then was the chief subsistence of the poor. Great Britain was awakened by it to a more thorough consideration of her corn laws; they were repealed, and her markets were opened to your bread stuffs. Having protected her industry by her tariffs till it was beyond competition, she now recommends free trade to her neighbors who cannot afford it.

About this time, too, an immense net work of railroads began to be built every where, and a large amount of labor was withdrawn from agricultural pursuits to build them. The discovery of the gold of California and Australia operated in the same way, taking thousands who would otherwise have been your competitors, and turning them into consumers. This last event gave an unusual impulse to all kinds of business activity, precisely as the gold of Mexico and Peru moved the world two hundred years before, and stimulated the torpor of the middle ages into progress in all directions.

The next fortunate event was the Crimean war, closing the grain ports of the Baltic and Black Seas, leaving Dantzic and Odessa to yield the palm to Chicago, which from that time began to be the greatest mart in the world for grains.

Again, shortly after the treaty of Paris, another war occurred of advantage to us, because it kept one of our rivals with hands full for a time. This was the rebellion in India, and which at first threatened to deprive Great Britain of by far the richest of all her colonial possessions. It was hardly over when Austria, France and Italy again met in battle array in the Historic Square, and the great battles of Solferino and Magenta resulted in the kingdom of Italy.

Out of all these disturbances we had profits, because nothing gives an enterprising and energetic people such a chance for fortune, as to find her neighbors exhausting their means and resources in war; while they are free to follow peaceful pursuits. Our history shows this, for while other nations were at war, we were accumulating wealth faster than it had ever been known to accumulate in the world before. Take the ten years between 1850 and 1860, and we had increased the value of our real and personal property from seven to sixteen thousand millions, and had put an area of more than three hundred and fifty miles square more under cultivation. We had more than doubled the cash value of our farms, and had nearly doubled the worth of our live stock. We raised seventy millions of bushels

of wheat, six millions rye, twenty-six millions oats and two hundred and thirty-eight millions of bushels more of corn than in 1850. We also ginned two and a half millions of bales of cotton, and grew two hundred and thirty millions more pounds of tobacco than we did in the latter year, and we raised our manufactures proper from one thousand millions in 1850, to one thousand nine hundred millions in 1860. Think of it.

Up until this time we were fortunate and happy ; but suddenly the scene changes, and instead of *peace* we have *war*, and the worst of wars—civil war. The elements of strife are unloosed, and death and destruction begin to hold carnival. The accumulations of years are swept away, commerce ruined, trade suspended, and the whole industry of the people on both sides is devoted to the production of the various implements of war. Guns, cannons, swords, powder and bullets are in demand; they need all they can make, and all they can buy. Enormous quantities of all kinds of military and naval stores are required; ships and forts are to be built, the whole, too, on a scale as extensive and magnificent as the most lavish outlay could command. The battle fields, too, were burdened with our people, wounded, maimed and dead; cities were destroyed, public works dismantled, and whole districts made desolate, so that the loss was incalculable.

Besides all this, in the very storm and smoke of the battle a great social revolution is going on; the very frame and texture of society is undergoing change in one-half the Union; in almost every house, and in almost every family, there must be new arrangements and a new state of things. More than three millions of slaves are made free; a nation of men, women and children, of another and a different race, rise suddenly up from the condition of property into liberty and independence, and the duties and responsibilities of their new position. They are utterly poor; not a dollar to start on; and thus born in the throes of war, they must, from hence, take care of themselves and make their own living. No event ever happened in the world operating a change of such magnitude as this, in so short a time and under such adverse circumstances. The exodus of the Israelites from Egypt has nothing to compare with it on the score of difficulty. In that case the Jews were in bondage, but it was only political bondage; they were slaves to Pharaoh, the King, and to him alone; they lived in Goshen by themselves, in a distinct, separate community; they had houses, families and property; they had society, organization and leaders; and they had miracle after miracle to break their chains; they had a miracle to destroy the host of Pharaoh which pursued them; and they had miracles to feed and support them till they reached a new country and a new home. The negro slaves, on the other hand, were the chattels of a people, the same as domestic animals, and not the mere vassals of a King, compelled to pay taxes by making bricks and building cities for him. They did not live in a community by themselves, but were part of the household of their masters, the same as his dogs and cattle; they had no homes but his; they had no families; they did not own their wives and children; they had no property, no society, no leaders, no organization of any kind; they had no miracle to aid them, unless the unaccountable madness and folly of their masters, in going to war about nothing, can be set down as such; they had no promised land to go to, but they had to rise from their bondage and remain in the face of their masters, to try if possible to cope with them in an independent struggle for existence. And yet these men, in their servile state, constituted the industry of the Southern States; by their aid it realized its wonderful increase of wealth. Now, however, all is necessarily chaos and confusion; the new order of things is not yet established, and

the immense losses sustained are not yet repaired. Let us hope they soon will be.

In addition, however, to the losses suffered by the destruction of property, diversion of labor, ruin of commerce and diminution of trade, there yet remains another memento of it, to which I now propose to turn your attention, and that is the *National Debt*, which Mr. Stevens, in his Lancaster speech, thinks will amount to four thousand millions, but which I would fain hope will not exceed three thousand millions interest bearing debt.

Now I shall not inquire whether this debt is a national blessing or not; that depends upon the use we make of it. I think, however, it would be a greater blessing if we had it once paid; and it is to this task we must now devote ourselves. We have shown that we can maintain the national honor in the field, and I trust we will show ourselves equally able to keep it unsullied in the market.

We have incurred it in maintaining the supremacy of the Constitution and laws; and unless we now throw away the results, it was well expended. They are worth more to us, by far, than all else; and if we were to allow them to be violated with impunity, at the will of revolutionists, then all free government is at an end, and liberty, as we understand and prize it, impossible. There can be no liberty when the laws are not supreme.

After four years of struggle, waste and suffering, it is now incumbent upon us to see, if we can, in what way we can best relieve ourselves from debt and repair our losses. In doing this, it is only proper that we should observe the same rules that you, as individuals, would do, if in your private affairs you found it necessary to make a like investigation. The laws which govern the finances of nations are the same as those which govern in families.

First, then, as to our resources. In 1860 the estimated value of our real and personal property was a little over sixteen thousand millions, six thousand millions of which belonged to the seceding States, and ten thousand millions to the loyal States. How much remains to us now? I think the latter States have not depreciated; they may have wasted their increase and incurred debt, but I think their property is worth as much as in 1860. The rebel States are in a different condition; having been the theatre of war, they suffered much more loss in realized values than we did, and I suppose it is not far from wrong to say they are now worth but half as much as before, viz: three thousand millions, and that we both together have thirteen thousand millions for a new start, which is six thousand millions more than we had in 1850, when we had only seven thousand millions.

The next inquiry is, how much we can probably make, annually, out of this. Between 1850 and 1860 we increased our seven thousand millions up to sixteen thousand, or at the rate of nearly a thousand millions a year; but I have shown you the circumstances were very favorable to us, and as we had little or no taxes to pay, we were enabled to add all we made to existing capital. This we cannot do hereafter.

Besides this, the nations who were then at war are now at peace, and likely to be more formidable rivals, in all the industrial arts, than before. Still notwithstanding all these drawbacks, and looking to the general progress everywhere making, I believe we can, if fortunate, increase the value of our property two thousand millions per annum, or rather that sum minus our taxes; because out of our annual increase we must raise the revenues to carry on the government and pay the interest of our debt.

How much revenue will be required for that purpose? This is a question hard to answer at this time; but I think, from present appearances, three hundred and fifty millions will suffice, viz: one hundred and eighty millions to pay interest, one hundred millions for ordinary expenses, and seventy

millions for extraordinary. Mr. Stevens, however, put the whole at four hundred and seventy millions. He may be right, but to avoid all appearance of exaggeration, I assume three hundred and fifty millions as the amount required.

Now if I should be right, it will require a little more than one-sixth of our annual gains to meet it. If, however, Mr. Stevens is right, then it will take a little less than one-fourth; or to speak more exactly, his estimate will take  $23\frac{1}{2}$  per cent. of our incomes and profits, while mine takes  $17\frac{1}{2}$  per cent. Now these are enormous taxes no doubt, and it only remains to decide, from the little experience we have had, how heavily they are likely to bear upon us.

Our present internal revenue system is of course imperfect in itself, and still more so from the difficulty of administering it with untrained officers, and a people entirely unaccustomed to such burdens as it imposes.

Notwithstanding, however, its figures so far give promise that it may be made to yield enough to prevent us after this year from further increasing our debt.

It would appear from the returns in the Revenue office, that

the collections for the six months ending 30th June, 1865, amounted to.....	\$94, 721, 483 54
From 30th June till 20th September inst.....	82, 318, 871 00
Estimate from 20th September till 1st January, 1866....	68, 000, 000 00
 Total for the year 1865.....	<hr/> 245, 040, 354 54
If to this we add amount received from customs, say....	60, 000, 000 00
 We will have a grand total of.....	<hr/> <hr/> 305, 040, 354 54

This is perhaps as much as the most sanguine expected for this year, and we ought to note that some of the articles most productive, existed in such large quantities before the imposition of the present tax, so that as yet no great amounts have been realized from them. We have had also to encounter fraud and smuggling to an extent which cannot exist in the future, when the revenue officers become more skillful in the discharge of their duties. It is also probable the opinion held in the Revenue office, by those having the best means of knowing, will be found correct, in which the amount collected for the year ending 30th June, 1866, it is thought will reach \$300 millions.

At any rate, I should think it would be the duty of Congress, at the next session, to provide for raising enough, at all hazards, to satisfy all the world that we are both able and willing to pay. This ability of ours, I think the above figures put beyond a reasonable doubt, because we have now felt the burden of \$305 millions for 1865, and we can readily guess from that the weight of 350 or 400 millions in 1866. If we have paid that sum this year, (305 millions,) when all was in confusion and disturbance with the closing scenes of the war, with the disbanding of nearly a million of men, and with all the uncertainty incident to our situation, we certainly have right to expect a very large increase when peace is fully restored, when the citizen soldiers get back to productive industry, and the policy of the nation is settled by the restoration of harmony and good will in all parts of the Union. If we can once raise enough to pay off the interest and current expenses of the year, we will be free from danger, if we do not, it is impossible not to fear the worst results. Our people are willing to bear as long as possible the heaviest burdens if they find them growing lighter, but

if on the other hand we make their condition hopeless by an increase of them, they may remedy themselves in a very abrupt and compendious manner, and refuse to pay altogether. To avoid a contingency so much to be dreaded as this, we must struggle to achieve several things: 1. The pacification of the South. 2. The restoration of the public credit. 3. Retrenchment of government expenses to the lowest point. 4. The discountenancing of all waste and extravagance, even in private life. 5. The establishment of a great system of American industry, various enough in its character to furnish employment to all our people every where, with sufficient protection to put it out of the reach of undue foreign competition and combination of capitalists against it, and till it has matured itself.

1. It must be evident to all who reflect, that we are deeply and vitally interested in the immediate pacification of the Southern States, and in their speedy return to conditions of prosperity, so that they may aid us in paying their share of the national taxes. How this can be done best is a most difficult question, and one upon which people will differ widely. The true rule, however, in such cases, is not only to acquiesce in, but to carry out cheerfully whatever plan the properly constituted authorities may adopt to attain the desired end. Somebody must decide in such a conflict of opinions, and those to whom we have confided that duty ought to have our confidence and support, although they may not do what we would have done had we been in their places. All government is based upon the agreement that those who are disappointed by the rejection of their plans, will submit themselves to that which is determined upon, and without this it could not exist. The very best way to do anything is seldom found or adopted; but owing to the imperfection of our natures, we must always fall upon one not free from objections. Nevertheless even the worst of these succeed in the hands of wise men who make the best of them, in the help they give one another in carrying them out. One thing I think very certain, that union, harmony and the supremacy of the laws cannot be restored by continuing the same sectional hate and animosity which so recently endangered them; while it is equally certain that a return to the old national and fraternal feeling would soon unite us more strongly than before.

2. And second, as to the national credit, or as I might with great propriety phrase it, "your credit." This, at present, is at forty-three or forty-four per cent. discount; that is, it takes \$1 43 or \$1 44 of your cents to make a dollar; and when you buy anything with your dollar, you only get seventy cents worth; your dollars are only worth seventy cents each.

Why is this? Because people are afraid you will not redeem your dollars, and they charge you thirty cents on each of them, on account of that fear and the risk they run. Now if you could satisfy them their fear was groundless, and the risk they ran was nothing, you would bring your credit and your money at once to the gold standard; you would increase the value of all your dollars nearly one-half; and you would keep up the supplies of your army and navy nearly one-half cheaper than you do now. It takes, too, nearly one-third more of your dollars to pay the interest on our debt than it would do if we kept them at par, because that must be paid in gold. You ask, how is this to be done? I answer, let us show that we mean to pay it, by levying, annually, as much taxes as will keep it from increasing; while at the same time we cut off all expenses of the government which are not absolutely necessary. This will do it, and nothing else will. No kind of financiering, no kind of jugglery, will help us now; we must pay, and to pay easy our intention to do so must be manifested continually. Nothing keeps a creditor in a better humor than to show our good intentions toward him and his claims; and by putting your money up to par,

you will increase the national revenue nearly one-half, without raising the rates.

3. Every part of the government service should be thoroughly revised, every abuse should be corrected, and every expenditure cut off that is not absolutely necessary. Abolish as many offices as can be dispensed with, and discharge the incumbents; because at the heels of a war such as we have had, there will be thousands who will the more anxiously desire to cling to the place, since the place itself has become a sinecure. Do away with all bureaucracy, and confine the government within its legitimate sphere, leaving to the good sense of the people to attend to their own affairs in their own way, as they are interested to do their own business far better for themselves than any officers which may be chosen to do it for them.

4. It might be well to remember, too, while retrenchment and reform is going on in government affairs, that a reform is equally needed in this country in the mode of life too prevalent with individuals. It is a saying as old as history, that luxury is fatal to republics, and destructive of public virtue. Wherever it prevails with those rich enough to indulge it, it is sure to be imitated by thousands who are too poor to do so. These, then, become slavish and corrupt, in order to maintain themselves in extravagance. With such people there is no such fund to draw upon as the public money, and no place so loosely guarded as the public treasury. There they can plunder with impunity, because it does not require a great while to beget such a number of offenders that correction is impossible, and every new rogue who makes his appearance is hailed as an accession, and to be protected as one of the fraternity.

5. As agriculture in this country is now sufficiently productive for its markets, I would turn your attention to the establishment and protection of manufactures of all kinds of which it is capable, as being, for you, the surest way to create a market for your products; and besides, the one which most certainly leads to wealth and independence. You have seen that you are now in a situation to enter more largely into this department of industry than any other nation, because you have more coal to create force, more iron to make machinery, than any other. Besides these, you have more of cotton, in fact, than you can work up; a raw material of the greatest value, and one which would, in the end, contribute most materially to put our finances upon an easy footing, if we could manufacture it ourselves, instead of letting other people do it for us and take the profits.

Great Britain is, perhaps, the richest empire in the world, and she owes it chiefly to her manufactures, which she carries on, by the aid of her coal and iron, in a manner not only worthy of all praise, but of all imitation. She burns, perhaps, forty millions of tons of coal annually, makes three millions of tons of crude iron, and worked up, in 1860, one billion two hundred million pounds of our cotton, and nearly two hundred millions of pounds she got from other countries. This cotton cost her about two hundred millions of dollars, and when manufactured, it was worth to her nearly twice as much, after deducting six or seven millions for drugs and dyestuffs, which she had imported to work into it. So that she had about one hundred and ninety millions for her time, trouble and labor in the premises. Why should not we strive to make the same gain, in the same way?

I am also encouraged in the belief that we might rival her, in a very short time, by a consideration of what we have already done, and under somewhat adverse circumstances. Heretofore we have suffered from a want of circulating capital, and we have had to pay about twice as much for the use of money as they do in England. This was a serious drawback, but it ought not to remain in our way much longer, since the national debt, mobile

in itself, is still further mobilized in being made the basis of bank capital. Add to this the fact, that the present supplies of the precious metals are exercising a most extraordinary influence everywhere, in rendering exchanges easy. There is now hardly any species of property in this country which cannot be solved into money, readily and at fair prices, so that there is no such thing as dead, inert capital, and all the business operations of society take place easily.

While, too, advantages on the score of capital are being more and more equalized every day, in our favor, our prospects are brightening in another direction, that of labor, the wages of which, in European countries, has been so low, that it was impossible for us to compete with it, without degrading our own below the republican standard. Now, although our wages are not falling, yet I think there are evident symptoms that they are about to rise in other countries. How long can the capitalists of the old world continue to buy the labor of the poor, for that which merely suffices to keep soul and body together? And how have they been able to do it heretofore? The answer is obvious. The poor could not escape from the thralldom imposed upon them by over-population, and the ascendancy which ages had conferred upon power and capital over them. They can escape now. The new fire force is annihilating space, and breaking down rapidly all the barriers which have so long hemmed in the laborers of populous countries. Populations are being mobilized, too, and move upon one another, from place to place, far more freely than ever before, and it seems to me the day is not far distant when the poor man will find out the highest and best market for his labor, with the same shrewdness the rich merchant finds it for his goods, even though it be in the antipodes. He goes to the other side of the globe with far more ease to-day, and in less time, than he used to require in crossing the Atlantic. Why should he toil a doomed slave in Europe, when fortune and competence await him in new homes in America, Australia, and other lands? Is he too poor to pay his passage, or too timid to make the venture? Capital is beginning to know his worth, and is providing for his transport, and his protection by the way. Continents are being opened up for his reception, and he is no longer compelled, as in old times, to colonize himself slowly, away from the coast, through generations of struggle. The railway dashes away through the very heart of the wilderness, carrying him along where farms and mines are to be had, not solely as the reward of genius or money, but simply as the wages of a sound body, and an industrious pair of hands. The wages of labor, then, must soon find its level, the same as other commodities, and that upwards, and not downwards, as heretofore.

In the meantime, and before the changes I anticipate will be brought about, we must do the best we can; for if we can only once get a fair start in manufacturing, we will bring into play a vast amount of labor, even in this country, which is now unproductive. We have seen that the laborer does not move as readily from place to place, in search of higher wages, as he is likely to do after a while. He manifests, in many cases, the same indisposition to seek for employment at all, unless it comes to him, and is congenial. Idle men are not so much idle because they prefer to do nothing, as because they have not found the kind of work which suits them. Some are industrious in one pursuit, some in another, and all are as various in their preferences for a vocation, as they are in other things.

One of the advantages of a manufacturing community is, that on account of the variety of the processes it requires, it is able to furnish congenial employment to all the members of it, so that none are idle. It is for this reason that the people of New England are, on the whole, more industrious than in other parts of the Union. She has such a variety of industry, that

all her people find something they like to do. In the South, on the contrary, there were more idlers than in the middle States, and the reason was, there was nothing doing hardly except farming and planting there; and those who did not like those pursuits did nothing. Establish manufactories, however, and they will be as industrious as anybody else. I have no doubt, either, that there is just enough of such idle people now in this country, who, if they had a chance, would produce as much as we uselessly import. I think it will be found to be a law of nations, as it is of families, that just in proportion as they go abroad to purchase that which they might produce themselves, just in the same proportion will a certain number of them remain idle in consequence. Hence it is one of the first and fundamental duties, both of families and nations, if they want to be independent, never to go elsewhere to buy what they could make at home. From this any one can have an idea of the importance, to us, such a source of revenue would be, if we had all our idle people everywhere employed.

Mr. Morrill, of the Cambria iron works, in a letter of his recently published, shows that it requires about forty days' labor to make a ton of iron, and that in this period of time, the internal revenue tax upon the articles consumed by the laborer, is \$5 83, or \$43 72 for the year. This sum the laborer pays, because he is at work, and can afford to consume the articles subject to the tax. If, however, you stop the Cambria iron works, by buying your iron abroad, you will throw the laborer out of employment, and oblige him to consume only such articles as are absolutely necessary, and therefore free, and he will pay nothing towards the national burdens. Again, however, it will be remembered that if we keep him employed, the product of his industry also pays a tax, which, if he were not employed, would not go to swell the collections in the revenue office.

I suppose it is hardly necessary to elaborate this point. There is something in the view I have taken of it, which every man seems to recognize as true, almost by instinct.

The question of free trade and protection has been much mooted in this country heretofore. Now, however, we are likely to hear less of it, from the fact that no one would be willing to raise the price of a home product by internal taxation, and then admit the foreign product duty free. To do so would inevitably destroy us. This, then, settles the difficulty, because if the impost is laid at all on that principle, it must be adequate to put the home producer on an equal footing with the foreigner, or it might as well not be laid at all. And it is to be hoped that, hereafter, the policy of the government will be fixed and steady, so that men may know, when they embark in any business, how much they can expect in this way from it, and how far they can rely on it. Nothing exerts such an injurious effect upon the production of any country, as a constant tinkering at the laws, and especially revenue laws. No man is willing to embark his capital in a pursuit, if he is afraid that Congress will either put new taxes on him, increasing the cost of his commodities, or will take them off somebody else, and thus lower the cost of them, ruining him, perhaps, in an hour. No citizen ought to be exposed to changes of this kind, because it is impossible to guard against their bad effects, depending, as they do, upon the caprices of the legislature, and the various fortune of parties. No nation ever yet has been able to build up a great system of industry, without steady protection of this kind. Without this, it never could get a start in competition with rivals in successful operation. Constructive industry has its periods of childhood and infancy, when it requires the fostering care of the community, in order to keep it on foot till it matures itself in all the arts it must necessarily learn. It must make its erections, it must procure engines and

machinery, must lay in stock and raw material. It must next learn the various processes involved, must learn the economy of managing the business, and finally, must be able to keep pace with the improvements daily making in all parts of these. So that it will be seen that it is not the work of a day, or a year, but indeed heretofore it has required centuries to enable it to command in every market. Now, however, everything perfects itself so rapidly, that a much shorter time will be required.

Still, during that time it is essential that it, at least, should have the control of its home market. This is the lowest price any community can pay for this species of independence, and the great advantages which ultimately flow from it. And this the community cannot confer, except through the intervention of its government. It cannot be done by the agreement or combination of individuals, which has been often tried, and as often failed.

I think, then, we should extend to our industry, during this period of its pupilage, a steady and uniform degree of protection, sufficient, at all times, to secure it against the combination of all rivals, which is another and very formidable danger to which it is exposed, because any one can see that the manufacturers, rich as those of England, could well afford to stand a heavy tax, in order to break down such a rival as we are likely to be, if we are once matured. And the very fact that they may combine for this purpose, (and it is said have, at times, done so,) is enough to justify us in guarding in every way possible against them. It seems to me we can better afford to pay to keep them from mischief of this kind, than they can afford to pay for doing it.

I am, therefore, very strongly of opinion, that hereafter there will be little difference of opinion in our councils as to the policy of inaugurating a great system of American industry, worthy of the age in which we live, and showing a proper appreciation of the remarkable advantages we enjoy for the purpose of carrying it out.

Then, again, we shall be knit together in the bonds of true union and harmony. There will be no more sectional division, but all will constitute a whole, of which the parts will be so dependant upon one another, as to exclude the possibility of rupture.

This is now within our reach, and no people ever before had an opportunity of achieving so much, if they are wise and prudent, and none have ever had so much in danger from folly and dissension. Empire is offered to us on the one hand, if we show ourselves worthy; anarchy and disgrace on the other, if we do not. Choose ye between them.

## THE ECONOMY OF INTELLIGENCE.

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AN ADDRESS BEFORE THE PENNSYLVANIA STATE AGRICULTURAL SOCIETY,  
AT THE ANNUAL EXHIBITION, WILLIAMSPORT, SEPTEMBER 27, 1865, BY  
WM. H. ALLEN, PRESIDENT OF THE AGRICULTURAL COLLEGE OF PENN-  
SYLVANIA.

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MR PRESIDENT AND GENTLEMEN OF THE SOCIETY :—When valuable minerals are discovered in any accessible locality, men of practical sense are quick to understand that the opening and working of the mines will benefit themselves and the public. They know that mountains of iron, and placers of gold, and rivers of oil can add nothing to the wealth of a country until they are reached, appropriated and used. Therefore they subscribe liberally to works of internal improvement, by which the treasures which are locked up in mountain, rock and forest, may be set free and made available. And they act wisely. The increase in the value of property in Pennsylvania, resulting from her public improvements, would pay their cost five times over, and every citizen of the Commonwealth has been benefited, directly or indirectly, by these works.

But Pennsylvania has other veins of latent wealth—other quarries of rich ore—lying waste and unopened, which are as capable of adding to her prosperity as her abounding forests, her fertile valleys, and her rich deposits of iron, coal and oil. These are the minds of her children—minds hidden, inert, unproductive, and unavailable for the higher uses of God and man. If these were cultivated and set at work, “what an accession of prosperity, power and true glory would be the result! Its effects would soon be manifested in more abundant production, in a higher civilization, in wiser laws better administered, and in greater security for life and property.”\*

Labor and capital being mutually dependent, neither can be profitably employed without the other. The same is true of intelligence and industry; and an exposition of the relations of these deserves a larger space than has been given to it in the books of systematic writers on political economy. If educated labor can produce the value of five dollars a day, while unskilled labor can produce but the value of one dollar, the educated laborer, if we regard him merely as a wealth-producing machine, is worth to the community five times as much as the other. This estimate leaves out of the account the higher and nobler uses of the man as a member of society, as a teacher, discoverer and inventor. We cannot count in dollars the value of a man who is competent to break loose from routine and find a shorter and

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\*Quoted *memoriter* from a speech by Rufus Choate.

easier way to results; who can devise new processes and new implements to execute them; who makes two blades of grass grow where but one grew before; who reaps ten acres of wheat as a pastime, while his neighbor, with swollen wrist, and aching back, and much sweat of hard labor, reaps one; who introduces new arts, opens new avenues to wealth, discovers a value in materials which ignorance had cast among rubbish; and what is still better, directs un instructed labor into more productive channels, and thus contributes a hundred fold to the common prosperity. The value of such a man cannot be estimated by numerical computation.

We should be at a loss to assign a limit to the number of millions which the spinning jenny added to the wealth of England, or the cotton gin to that of the United States. The invention of Richard Arkwright enabled England to spin the destinies of the world; while that of Eli Whitney made it possible for our country to supply the raw material to keep the spinster at work. The steam engine, with its manifold applications to navigation, locomotion, manufactures and war, has proved that the power which moves the world does not reside in the lever for which Archimedes was puzzled to find a fulcrum, but in rarified vapor.

These labor-saving, wealth-producing machines were not made by labor alone. The printing press, the power loom, the magnetic telegraph, the mower and reaper, the sewing machine, and a hundred other mechanical contrivances, all suggest something in their construction antecedent to hand-work. The ship which spreads her wings to the breeze, and tends steadily towards her port, from whatever point the winds may blow or the currents run, is not an accidental aggregation of wood and iron, sails and cordage. As the ideal form is in the mind of the artist before it comes forth from marble, or stands out upon canvas, so all the achievements of human skill first existed in the intellect, and assumed form under the workman's hand in obedience to the imperial mandate of mind, and in conformity with the plan which his own, or some other master head, had devised.

A builder does not rear his structure till he has considered the form that will be appropriate to the intended use. A book, worthy of the name, is not made with the manual labor of writing it out. Astronomy has not advanced to its present state by mere star-gazing. If Le Verrier had not determined the place of the planet Neptune by ingenious cyphering and more ingenious reasoning, Galle's telescope might have swept as successfully for the lost Pleiad as for it. Chemistry has not extended its researches to every substance in air, earth and water, by making experiments at haphazard. Nature does not reveal her choicest secrets, except to him who knows how to question and cross-question her, and how to interpret her answers. The falling of an apple had been a common occurrence from Eve to Newton, but men had been content, like our first mother, to test the flavor of the fruit, without caring to inquire how it came to fall. It was reserved for Newton to propound that question, and not only to explain the fact, but also to connect that fact with a multitude of other facts, by a chain of universal law.

But with these achievements of intellect all around us, we permit nine-tenths of the mental capital of the country to lie dormant and unproductive for want of culture. If all the minds which are capable of high improvement in any community were trained for use by education and discipline, they would be adequate to all the demands of private enterprise, and to all the exigencies of the public service. As things are, the supply of educated labor is not equal to the demand for it. Large capacities lie buried, while educated mediocrity pushes its way into high places, and the public is worse served at greater cost.

There are some who profess a serious apprehension that these views, if carried out practically, would turn the heads of many useful people and make them worthless. I care not how far you turn their heads, so that you turn them in the right direction, that is, *upward*. This objection is made by the hard school of economists, who estimate the value of a man as that of a horse in a mill, by the number of times he can turn the sweep before he wants provender, and by his perfect indifference as to how, what, or why he is grinding. They believe that one man is born with a saddle on his back and a bit in his mouth, while another comes into the world ready booted and spurred for a ride. It is preposterous that any one living in the light of the present age, under a government of equal rights and equal men, should object to that culture which elevates the common mind and raises society to a higher level. Will the workman perform his task less cheerfully, or less skillfully, because he knows that he is somewhat more and better than an appendage of plow, loom or anvil? Will the engineer run his locomotive with less care and caution, because he happens to comprehend the principles of its mechanism, and is conscious that he is something more than part and parcel of the machine? Will the seaman hold the ship's helm with a less steady eye and sturdy arm, because he can converse with the winds, and read the language of the stars? I hold that the humblest fisherman would decoy his finny prey more adroitly, if mind-culture should make him something more than a simpleton at one end of a line trying to inveigle another simpleton at the other end.

Let us next observe that this waste of mind through want of practical culture, is accompanied by a corresponding waste of labor through misdirected effort.

Without denying man's adaptability to the circumstances in which he may be placed, it will be conceded that almost every one has more natural aptitude for one occupation than for another, and that he will be more useful and happy in one line of duty or business than in another. In this, as in all other arrangements of the Divine economy, we perceive proofs of beneficent wisdom, for care has been taken that all the wants of civilization shall be supplied; and to compass this end, the inclinations, tastes and capacities of different individuals have been made to vary in such a manner as to minister to the well-being of all. Universal geniuses are rare. The swan, so graceful in the water, is a clumsy runner; and the eagle, so majestic as monarch of the clouds, swims very awkwardly; and when a man turns up who has a knack at doing everything, he will usually be found on trial to do nothing well.

But through preconceived notions of respectability, men waste their labor in attempts to do what neither nature nor education has fitted them for. Dread of losing caste has made many a briefless lawyer, and spoiled many a good farmer and mechanic. It is a mistake to predicate of the occupation that respectability which belongs only to the man. But many, instead of forming a character that shall reflect dignity on their calling, rely on their calling for their character; and having placed themselves in this false position, they waste one half of their lives in learning that they have not the wit to make a living, and then waste the other half in scheming to "live by their wits."

We honor labor, not because it is labor, but because it is useful and productive. There is not a dollar of property which its strong, hard hand, assisted by the elements and forces of nature, has not created. But how? Not alone by the wear and tear of living sinews. The man who should manufacture pins with file and hammer, however diligently he might work, would as certainly starve, as he who should undertake to convey passengers

on a hand cart along the line of a railway. Labor, unless intelligence direct it, has neither honor nor reward. As we honor useful labor because we see and comprehend its products, so and for a similar reason, we honor useful thought. But both prosper by reciprocal aid. Labor without thought is unproductive; and thought without labor only consumes.

Some do nothing but think. They will not stoop from their abstractions to say, write, or do any one practical thing for their fellow-men. We do not honor these intellectual dreamers, for we see no fruit of their mental incubations. They may have much learning, but all you can get out of them is worth about as much as Dominic Sampson's "*pro-di-gi-ous*." They may have ideas as huge as those of Irving's Wouter Van Twiller; ideas so big that they can examine only one side of them at a time; but when they come around to a new side, the distance is so great that they have forgotten how the first side looked. They doubtless move in deep water, for they never touch bottom, and never come ashore. While they speculate profoundly on the state of society in the moon, they forget that living men are much more interested with speculations in real estate on the earth. They have counted the trees of pine-capped Ida, and the golden sands of Pactolus, but talk to them of the lumber of the West Branch of the Susquehanna, and the black diamonds of the Wyoming valley, and they will tell you that they have not studied modern Greek. They have measured the height of the Acropolis, and all the dimensions of the Parthenon, but ask them the latitude of the Great Salt Lake, and you will find that their knowledge has gone up Salt river. They have heard that the owl was taken by the ancients as an emblem of wisdom, and by imitating his solemnity of face they expect to be deemed as wise as their nocturnal prototype.

Others do nothing but keep busy. They work much and do little, because they either work without any plan or purpose, or with a plan and purpose that lead to no useful end. A man may walk a thousand miles in as many successive hours, or wheel a barrel of apples from Newburyport to Boston, or perspire over any other muscular absurdity; but what good comes of it? Who is fed, clothed, sheltered, educated, or made better? It is said that an Athenian boasted to a Spartan that he could stand on one leg longer than any man in Sparta. The Spartan replied, "but a goose longer than you." He who devotes years to the construction of microscopic mechanism, until he puts all the machinery of a watch into the size of a gold dollar, may make a toy which will amuse children both large and small; but when he has finished it, he will not have contributed to the welfare of society the value of the coin which measures the magnitude, or rather the *minutude*, of his work. The old poets imagined that one of the punishments of the wicked in the other world was to draw water in a sieve; but all the water escaped before the sieve came up. Another was sentenced to roll a great stone up a hill; but just as the stone reached the summit, down it would tumble again. It would be better for the stupid, blundering worker of this world to draw water in a sieve, or roll the stone of Sisyphus, than to toil with might and main to do every thing wrong; for then he would only lose his labor without mischief to others. A late medical lecturer used to say to his classes that by a certain mode of treatment which prevailed at that time in the Southern States, an enterprising physician could ruin constitutions enough in two or three years, to insure himself full practice through the remainder of his life in trying to patch them up again. So the man who works at any craft whatever, without the guidance of a modicum of brain, is always sure of having something to do; but like a verdant domestic, he kindles the fire on the stove, instead of in it, and smokes his eyes out instead of cooking the breakfast.

There are several institutions of learning in Pennsylvania, which were founded and organized with a direct aim to diminish, by a more practical union of head-work with hand-work, the waste of mind and labor to which I have invited your attention. Two of these, with unlike organization and methods, are similar in principle and aim. Both are designed to *elevate labor*. The oldest of these was planned and endowed by a successful merchant, who furnished in his own person a rare example of that economy of mental force by which a man may extend his enterprises over the whole world, and by operating through the heads and hands of subordinate agents, may become in a manner ubiquitous.

Stephen Girard was a worker; a diligent, provident, intelligent worker in wood and stone, in bricks and mortar, in ships and merchandise, in lands and cattle, in stores and wharves, in gold and silver, in bank notes and bills of exchange, and he knew the qualities, values and powers of them all. But chiefly he used men as instruments to execute his work, and the insight to select these implied rare discrimination, while the ability to direct them required the exercise of sound judgment and extensive knowledge. He measured the value of men by their intelligence, their honesty, their industry, their fidelity to his interests, their obedience to his instructions, and by their skill as carpenters, masons, ship-builders, seamen, farmers, bankers, clerks, supercargoes and masters of vessels. He also knew how to test their honesty and capability, and seldom made a mistake in either. To be foreman in a manufacturing establishment, or to cultivate and garner the harvest of a farm, does not require more than ordinary reach of thought; but the civilized world was his workshop, and the surface of the terraqueous globe his harvest field. His enterprises extended over years of time, and over seas, islands and continents, from the equator to the polar circles; but he had them all spread out like a map before his mental vision, and he so combined his operations that the supply was sure to arrive at the place of demand in the requisite quantity and at the right time. To accomplish this, what sources of intelligence he must have had access to and used! What knowledge of the productions, tastes and wants of the people of different countries! What skill in the use of credit without abusing it! What sagacity in forming his plans! What energy, secrecy and boldness in executing them!

And for what was this vast expenditure of thought and labor? When we contemplate this architect of a fortune toiling early and late, without repose or relaxation, to extreme age, with little sympathy from his fellow men, working for an object which had been the cherished purpose of his life—the endowment of an institution in which the unfortunate and destitute might be trained and prepared for the intelligent use of their minds and bodies—he rises on our view to a higher level than that on which the slave of avarice stands, and takes rank with those benefactors of mankind who have lived a self-sacrificing, heroic life.

The design of the college which bears and perpetuates his name, was not so much to maintain in comfort a certain number of orphans, not so much to provide a school for their instruction, as to attain an object above and beyond these, to which these were preliminary and preparatory, that is, to elevate and enoble labor by the diffusion of intelligence among a class of youth, whose success in life must be won, if won at all, by their own industry. A beneficent scheme, worthy of the man and of his splendid fortune!

The Agricultural College of Pennsylvania, the second in the order of time of the institutions above alluded to, was established to give instruction, at moderate cost, to the sons of that great industrial class which is composed

of farmers, manufacturers and mechanics—a class which comprises a large majority of the people of the Commonwealth, and whose industry is the basis of its wealth and prosperity.

This institution was founded by enlightened and public spirited citizens, under the auspices of the State and County Agricultural Societies, aided by liberal donations from the Commonwealth and from individuals. Its object is to elevate labor, by disseminating among the industrial classes a knowledge of the Arts and Sciences by which labor is made productive, together with such moral and social instruction as will prepare young men to discharge with credit the duties of good citizens of a free, self-governing Republic. It aims to develop and discipline the physical, intellectual and moral powers of its students in harmonious proportion.

At this college it is honorable to work, and the sons of the rich labor equally with those of moderate means. Every student, by giving six hours in twenty-four to study, three to recitations and lectures, three to work, four to meals and recreation, and eight to repose, will develop mind, muscle and manhood, and at the end of his course will be prepared to gain an honest and honorable livelihood, and to assume the responsibilities which society will impose. He will leave the college with the most valuable of acquisitions—*a sound mind in a sound body*; and if any of our friends here present will visit the college, and examine its human product, they will not fail to notice the full round limbs, the ruddy complexions, kindly digestion, and elastic step of the students, and to contrast these with the flabby muscles, pale faces, dyspeptic stomachs, and languid gait of many young men who have tasked their minds at the expense of their bodies.

I regret that we cannot yet exhibit similar qualities in the best breeds of horses and cattle; but our first care has been to grow a harvest of Men. Fine animals and great crops will come in their turn.

Our course of study includes the arts and sciences which are pursued in the best American colleges, except the ancient languages. The omission of the classical course enables our students to devote more time to chemistry, botany, mineralogy, mathematics, mechanics, and other sciences of practical utility to the industrial classes. But while Greek and Latin do not form a part of the regular course of study, instruction is given in those languages to students who have time and inclination to pursue them.

It has been the aim of the trustees and faculty to discard a rigid and invariable routine of study, for that, like the fabled bed of Procrustes, would require the stretching of some minds beyond the endurance of nature, and the curtailment of the fair proportions of others. They have preferred an elastic and flexible course, which may be expanded or contracted to suit the varying capabilities and aptitudes of the students.

Our experience has demonstrated that students who work three hours a day, will make as much progress in study, in the long run, as those who do not work at all. While, therefore, their labor causes them no mental loss, it is productive of the physical gain of better health and more robust constitutions. At the same time they are acquiring a practical knowledge of the rearing and feeding of stock, the use of agricultural machines and implements, the preparation and application of composts and other fertilizers, the planting, budding, grafting and trimming of fruit trees, the culture of table vegetables and small fruits, the construction of fences, the planting and trimming of hedges, the culture of shrubbery and flowers, in connection with the scientific and economical principles which are applicable to these varieties of work and production.

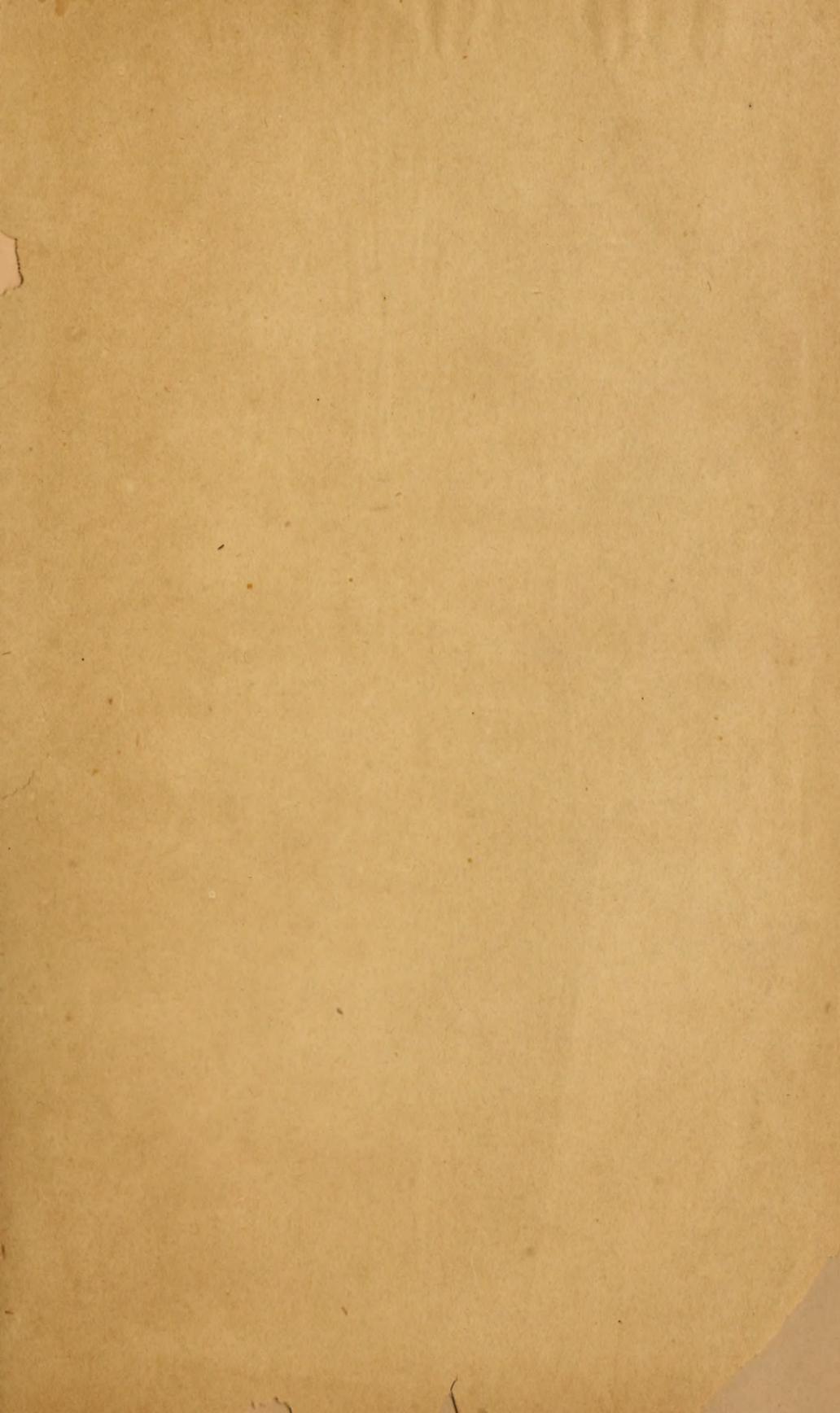
It is not to be expected that the labor of the students will be a source of revenue to the college. They work for instruction, for health, and when

they feel an interest in the results of their labor, for recreation. They work for a practical application, in the field, of those principles of science which they are taught in the class rooms; and as they are all learners, their work will hardly be performed with the celerity, skill and finish of adepts. An experienced ploughman would detect many imperfections in the furrows they turn; and when they cultivate the corn, they sometimes tear up more than the weeds. They are beginners, and like all such, they give the supervisors of their work large scope for the exercise of patience. Yet they succeed in making very fair crops, and we hope in time to have something worth exhibiting to your society.

Our number of students this year has been one hundred and thirty-two, one-fourth of whom are from other States. We have representatives from Massachusetts, New York, New Jersey, Delaware, Maryland, Ohio, Indiana, Iowa, Wisconsin, Arkansas, Louisiana, District of Columbia, and the Island of Cuba. We desire more representative from Pennsylvania. We have ample accommodations for three times our present number. The industrial classes, for whose benefit the college has been founded, and who govern and direct its operations, through the agency of the State and County Agricultural Societies, number more than two millions of the inhabitants of the State; and yet the number of Pennsylvania students is less than one to twenty thousand of its people. Send us, next year, one for every ten thousand people, and the capital which has been invested in roof and rooms for their shelter and comfort, will lie idle no longer. Enable us to send forth a hundred educated, industrious young men every year, and the benefits of the college will soon be diffused through every county of the State; a new impulse will be given to agriculture; brains and sinews will unite their forces to augment the productions of our fields; and the applications of science to industry will succeed to a blind and profitless empiricism, as well as to a stubborn hereditary routine. The economy of intelligence, through the agency of thoughtful and practical men, will prevent the waste of material which is the natural result of mind-waste, and by the saving of fertilizers, labor, food, and all forms of capital, will add millions every year to the pockets of the farmers and the wealth of the State.









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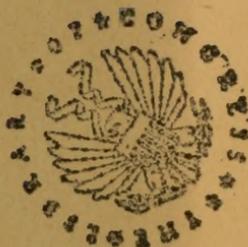
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