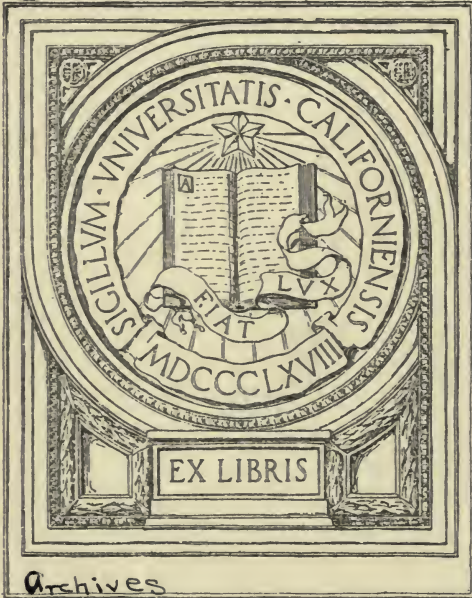


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Sec. 35. During the balance of the year after the expiration of the academical term, said
2 College shall be opened, deemed, and held as a seminary of learning, and shall be under the
3 control of the Board herein established.

Sec. 36. All interest accruing from the sale of the one hundred and fifty thousand acres
2 of land granted to this State by Act of Congress, A. D. eighteen hundred and sixty-three, and
3 the interest that has and may accrue from the sale of the seventy-two sections of land donated
4 to this State for a seminary of learning, shall be subject to the order of the State Board of
5 Agriculture.

Sec. 37. The said Board shall purchase lands for a College Farm, and cause to be erected
2 thereon such buildings as they may deem necessary; *provided*, that any contract for building
3 shall be let to the lowest bidder, after reasonable notice; and, *provided*, further, that the farm
4 shall not be of less than one hundred nor more than one hundred and sixty acres of land.

AGRICULTURAL COLLEGE.

ADDRESS

OF

HON. A. A. SARGENT,

DELIVERED BEFORE

THE STATE AGRICULTURAL SOCIETY,

SEPTEMBER 21, 1865.

SACRAMENTO:

O. M. CLAYES, STATE PRINTER.

1866.



AGRICULTURAL COLLEGE.

ADDRESS OF HON. A. A. SARGENT,

DELIVERED BEFORE THE STATE AGRICULTURAL SOCIETY, SEPTEMBER 21, 1865.

LADIES AND GENTLEMEN:—I have been requested by the officers of the State Agricultural Society to address you upon the education of the industrial classes, with particular reference to the means by which the legislation of Congress granting land for an agricultural college may be made available to the State. It occurs to me that a report would be a more convenient form in which to present suggestions upon a subject of this character; but I comply with their request. The advantages of a thorough education for those who discharge the practical duties of life, who give motive power to all industries, and thereby create the prosperity and enhance the security of the commonwealth, need scarcely be discussed. They are to a considerable extent secured in this country by a broad diffusion of elementary knowledge and better facilities for the scientific training of youth. The lights that once shone only on the apex of the social structure have gradually gleamed downward, relieving the shadows at the base. The result has been stimulated invention, higher virtue and self-respect diffused through society, and intelligent patriotism, which has given strength to the national arm and steadiness to the national will during the desolating struggle through which we have passed.

The spot where we are assembled is one of no ordinary interest. Here, within the memory of nearly all of us, a busy city has grown up. A few years ago the occasional visitant found, as the only evidence of civilization, the little fort whose ruins are still in the outskirts of this city, where Sutter traded with the vanishing Indian tribes. In this great inland valley, hemmed in by the Coast Range and the Sierra Nevadas, were widely separated, here and there, the rude homesteads of pioneers. Now, the Sacramento and San Joaquin roll their waters through hundreds of miles of cultivated fields; and thriving towns and cities have started into existence on their banks. Central among them all, because the centre of the creative railroad interest, and the principal inlet of the trade that flows into the mountain communities, and over the mountains to the empire beyond, is this city which now spreads out

iron arms in three directions to embrace the country, and chiefly aspires to the honor of urging onward that great enterprise which shall bind the continent in everlasting bonds of fraternity, and give new direction to the exchanges and industries of the world. Sixteen years have witnessed greater changes on the margin of yonder river than the world can elsewhere show in the same space of time. What may we not expect of sixteen years to come! By that time one or two Pacific railroads will have broken through the inclosing mountains, and their impetuous tides of travel and business will ebb and flow through this city. Then, perhaps, Oregon will be united to you by the iron bonds of a railway, two links of which are already forged. The railroad that will skirt the bays, and the steamers that will crowd the Sacramento, will connect you more intimately with the great Queen City of the Pacific, then doubled or trebled in population and wealth, and fairly started on that great career of prosperity that will build up a city within the Golden Gate to rival the proudest capitals of trade the world can boast.

Some observers complain that the population of this State decreases, and seek for remedies in financial experiments, or by disturbing the tenures to the vast mining property of the coast. But it is apparent that our people have fed the growing numbers of other mining States and Territories; that Nevada was born of California; that Washington, Idaho, Montana, and Arizona, deplete our population; that Mexico has attracted many of the most adventurous of our people. This drain upon our population has been caused by inducements held out by the undoubted richness of those regions, and by the fact that a few dry winters have injured our miners and agriculturists. But our State is prosperous, and its future is assured. Exhaustless veins, rich in gold, are at our feet, almost untouched by the miner; vast placer fields still pay tribute to labor; and our fertile valleys, wealthy of golden grain, and blushing with luscious fruits, promise ample reward to skilled and patient enterprise. The great remedies for our depleting population are increased manufacturing enterprises, in which our State has already valuable interests, and the completion of the railroad that will bring to us a strong tide of emigration from the East, and pour it out along the line of the road into the territories that now wait, like ourselves, for more laborers to develop their resources—an emigration now deterred by a sickly Isthmus trip, or discouraged by the hundreds of miles of weary journeyings over the plains. The communities in the interior of the continent, which we have created and fed by our very life-blood, will make rich markets for our products, and return therefor their abundant silver and gold. We are yet at the dawn of our greatness as a State, and I read no ominous signs in this our morning sky.

Yet, great as is our need of more population, its influx would be undesirable if it merely swelled the too large class of non-producers of this State—its force of unemployed labor. Hundreds of men hang about our towns, engaged in no useful employment, listless and drifting year after year. With abundant opportunities for labor, they seem to lack the disposition or energy to better their condition or be of use to the State. If they could be drafted into the army of workers it would be better for them and the community.

To guard against accessions to this class, more correct information of the real condition of things on this coast should be disseminated in the East. We have painted to the imagination of the world the riches of our domain in such glowing colors that many who came here on our representations expected to pick up gold on the hillsides, and to make

speedy fortunes without capital or labor. Disappointment waits on all such. The day of rich surface diggings has passed. The miner must now toil early and late, and he is considered fortunate if each ounce of gold does not cost much of its value in extracting it. He must penetrate the centre of the mountains with his rock tunnels, and sink shafts deep beneath the surface, to find the yellow deposit. Improved machinery and laborious application are essential to his success, with constant hazard of failure. Prosperity thus toil-earned is better for individuals and the community than the flush times of our early experience. Money then came easily, and was spent freely. Recklessness in expenditures and too general dissipation prevailed. Gilded gambling hells were scattered through all our cities and mining camps, affording facilities for casting away the prodigal harvest gathered from thousands of claims where the gold glittered among the grass roots. Such a state of things could not but be corrupting to the virtue and manhood of individuals and disastrous to society. Now, mining has resolved itself into a business which generally yields fair returns only to economical and intelligent enterprise.

The farmer's skill and labor are rewarded by ample returns; but Nature, here as elsewhere, needs the inducement of honest industry to yield her favors.

Those who come here under such delusions soon become discouraged by the reality. Then they are apt to fall into the crowds of small gamblers and other hangers-on at saloons, to increase the purchasable material at elections, and many become lost to all the proprieties of life. The great business interests of the State move on independent of this class—a rushing current sweeping past stagnant waters.

It should be our aim to truthfully depict the condition of things upon this coast, that those who come here may know that while labor reaps a higher reward here than elsewhere, the labor must be furnished to merit or receive the reward. We shall thereby not only secure an industrial class of population, but also educate them before they arrive in ideas very material to their own and the State's interest.

It is well for the State that the drones are outnumbered by the industrious workers of society; and it is far pleasanter to turn to the contemplation of the scenes around us than to dwell upon the considerations I have suggested. While this spot is remarkable as the centre of so many interests growing into importance, and as the Capital of a great State, the scenes by which we are surrounded are peculiarly pleasing and suggestive, because they are apt illustrations of the value of intelligent labor. Here are gathered the lavish abundance of cultivated nature, the fruits and flowers of this productive soil and genial clime; the mechanisms that almost think as they work; the noblest specimens of animal life, and a vast concourse of intelligent men and women, who represent a powerful and growing State.

“ We come with firstlings of our grain and flocks,
 With luscious fruit whose tint the sunset mocks,
 With rare inventions, and with cunning tools,
 With choicest fabrics of our mills and spools,
 And many things by mind and fingers wrought,
 Born of a tasteful or a useful thought;
 All these to offer 'neath a common fane
 In generous rivalry, for praise, not gain;
 While mingling gratulations for the yield
 Of liberal orchard, vineyard, fold, and field.”

These displays are the result and evidence of modern civilization. Greece and Rome had their festivals and games; but their recognition

of nature was pronounced in orgies which the pen now refuses to describe; their highest aim the development of the athlete in qualities now chiefly prized in the thoroughbred. This development may have been necessary when the pressing ambition of chiefs, and the perpetual bickering of States, made every man a soldier; when weapons were rude; when power of arm to cast the spear, and fleetness of foot to advance or retreat, gave victory or retrieved disaster. Our civilization has a nobler meaning, founded on universally diffused intelligence. We recognize the power that knowledge has in enabling man to master nature; guiding its immense energies to labor in his service, freeing his mind from superstitions, and creating beauty and prosperity in manifold forms in our broad commonwealths. Look around you, and see the result of enlightened industry. Look out into the world for the effects of that inventive development which has seized on the wildest forces of nature, as steam and lightning, and taught the one to labor in the workshop, field, and mine; to draw the loaded car, or plough the deep with swift obedience; and the other to flash intelligence across oceans, and circle the earth, pregnant with thought. The rude forces that once spoke only in terror to man, enfeebling his mind with their awful manifestations, seemingly the work of subtle and fiendish spirits, now calmly labor in his service. His intellectual nature is emancipated, and vindicates its mastership over all earthly created things; for intelligence has allured these invisible and impalpable agencies to the use of man, adding to his industrial strength beyond estimate. So the cunning hand of the artisan, informed by education and experience, gives being and purpose to myriad forms of machinery, which perform the labor of the farm and workshop, and illustrate this age as the noblest the world has ever seen in the development of science applied to the uses of everyday life. The economy of time and labor produced by modern machinery is wonderful. The work of one hundred millions of men is performed by machinery in Massachusetts alone, in a single year.

Not only has intelligence given us control over the subtle elements that once roamed destructively and masterless around the pendant globe, the objects of fear to abject superstition; not only has it evoked from the forest and mine the cunning mechanisms that plough and reap, that measure and weave, that dig, and sew, and print; but it has beautified our homes, enhanced our comforts, conserved our health, lengthened our lives, made life desirable by many additions to its enjoyments, and added to our resources, our wealth, and our power. "The educated man," says Carlyle, "stands in the midst of a boundless arsenal and magazine, filled with all the weapons man's skill has been able to devise from the earliest time; and he works accordingly with a strength borrowed from all past ages."

In no department of human industry has education produced more valuable results, or may more future benefit from it be expected, than among agriculturists. Sir Humphrey Davy once remarked, when speaking of the future influence of agricultural chemistry, that "nothing is impossible to labor aided by science. The objects of the skillful agriculturist are like those of the thoughtful patriot. Men value most what they have gained with effort, and a just confidence in their own powers results from success. They love their country better because they have seen it improved by their own talents and industry, and they identify with their own interests the existence of those institutions and pursuits which have afforded them security, independence, and the multiplied enjoyments of civilized life." Of so much importance to the community is the subject

of education in reference to agricultural pursuits, that our national and State Legislatures have fostered it by well intentioned legislation, and by occasional grants and subsidies. The idea is being exploded that the mere rudiments of education are all that are necessary for the boy who intends to be a farmer. There is no pursuit in life where thorough instruction, especially in the physical sciences, is more needed; none where scientific and practical knowledge more increases man's power—not for the purpose of compact and elegant farming merely, but to preserve our vast agricultural domain from waste, to renew the powers of nature with adequate fertilizers, to bring our domestic animals to higher perfection, and extend the range of useful productions. By thus developing and preserving the wealth of the soil, we promote the prosperity and progress of the country. To do all this effectually, the farmer needs contributions from every branch of science, and aid from every art. Genius, as well as industry, is needed; intelligent and patient experimentalism to discover the abstruse processes of nature, and apply them to everyday use. And the want is not for a few scientific agriculturists merely, but that the great body of farmers shall have that practical and experimental knowledge that will call to their aid all the resources of nature. Where a pursuit is the basis of all others, no improvement that can be secured for it is to be neglected. For adequate improvement a State University, founded on a proper basis, commensurate in extent with the number of scholars for such an institution the State can furnish, with professors of the highest attainment, and furnished with ample means of experiment, should be erected in our midst; an institution that will supply to the future farmers of our State that scientific and practical knowledge of their profession which cannot otherwise be obtained, and make all means of knowledge tributary to the elevation and efficiency of their pursuit. Our ordinary educational institutions furnish instruction within a certain range, and within their sphere are invaluable. But something beyond that range was in the mind of Congress when it made a grant of land to each State for the purpose of a college that should have, "for its leading object, without excluding other scientific and classical studies, and including military tactics, to teach such branches of learning as are related to agriculture and the mechanic arts, in order to promote the liberal and practical education of the industrial classes in the several pursuits and professions in life." If less than this is aimed at, the project had better be abandoned; for all that is less than this is supplied by our ordinary schools and colleges, and better supplied, each year. The object in view is to reach the industrial classes with practical knowledge useful in their various pursuits, and chiefly the agriculturist.

Who are the industrial classes? They are not merely the men who hold the plough or strike the anvil. They are not only the laborers who furnish muscle to mechanical pursuits. The designation includes the men of combining mind and inventive genius, who penetrate the domain of nature and adapt its great forces and principles to human needs. Thus Franklin, investigating and experimenting upon electricity and lightning, and practically applying his brilliant discoveries by producing the lightning rod, was as clearly identified thereby with the industrial classes as when he set type or worked the rude old printing press. When Morse demonstrated the practicability and utility of electro-magnetic telegraphs, he vindicated his right to be ranked among the most eminent of the industrial benefactors of mankind. The elder Brunel, the son of a farmer, whether inventing machinery to cut blocks for the rigging of

ships, or engineering his Thames tunnel amid immense difficulties, in all he undertook distinguished by untiring perseverance and inexhaustible fertility of invention, gave evidence of the benefit of education to this class, as did the younger Brunel when he invented the broad-gauge locomotive, and constructed the Great Eastern and Leviathan. The Stephensons, elder and younger, illustrious for their mechanical inventions and magnificent structures, shed imperishable honor on the industrial classes. Sir Humphrey Davy takes this rank by his electro-chemical researches and discoveries, not less than by his invention of a safety lamp which has saved the lives of thousands.

Kinglake, an English historian of the Crimean war, whose able work has excited much notice, objects to the application of the phrases "true honor" and "true glory" to men like these, as a desecration of terms, which he deems should not be borrowed for such a purpose from warlike heroes. He ridicules the "extravagant veneration of mechanical contrivances" and glory of the mechanic arts which were indulged when the "cathedral of glass," or Crystal Palace, climbed high over the stately elms at Knightsbridge. In the magnificent exhibition of the industries of all nations, he saw signs which might lead to the conclusion that England was failing in her ancient spirit. In his view "an army is but the limb of a nation, and it is no more given to a people to combine the possession of military strength with an unmeasured devotion to the arts of peace, than it is for a man to be feeble and helpless in the general condition of his body, and yet to have at his command a strong right arm for the convenience of self-defence." How false his theories are our own national experience amply shows. What more sublime instance of devotion, patriotism, and courage has the world ever seen than that displayed by the American people during the desolating struggle through which this nation has passed! We had been deeply engrossed in the pursuit of wealth, devoted to the arts of peace, were unused to war, but were not corrupted or enfeebled. From the farm, the workshop, the profession, our people poured forth in countless numbers to sustain the national arm, and vindicate the national cause. Amid discouragements and disasters, the frown of Europe darkening our cause, with accumulating debt weighing heavily on the resources of the country, with hope deferred by seemingly endless sacrifices, our people evinced a heroic and king-like power and constancy, and vindicated the power of a people among whom labor is honored to preserve their liberties and the integrity of their country. Devotion to the arts of peace may be immeasurable, and not inconsistent with spirit and excellence in war.

The eminent men whom I have named are illustrious instances of the power of genius applied to mechanical and scientific pursuits, and some of them furnish examples of the power of intellect in creating for itself distinction in spite of defective education. Franklin relates that he lived on vegetable diet to save a few pence from his day's wages for the purchase of books, learned a little geometry from a treatise on navigation that he picked up at a bookstall, and got his clear and powerful style by studying the *Spectator*. Perhaps his experience in a printing office, that excellent school, supplied the lack of other teaching, or his powerful mental organization needed little extrinsic aid to produce admired results in physical and political science. What more Franklin might have accomplished with thorough education cannot be estimated. George Stephenson began life in poverty. He was a self-educated inventor. He created English railroading, and perfected the locomotive engine. But the genius of his son, apparently of the same character, was carefully cultivated by

the best instructors, and took a broader sweep. The finest engineering successes of the world owe their existence to his splendid conceptions and execution.

Capacity to achieve such brilliant results is rare, but is confined to no class of men. There is as little a royal road to genius as to learning. General education will reveal it. The benefits to the world of the labors and discoveries of one such man outweigh all the cost of the education of a generation. But while such splendid issue may be rarely expected from thorough education, the stimulus of intellectual culture upon average minds is strikingly marked by the constant improvements in every branch of mechanics, as witnessed by the patents issued by the Government, and the fact that those States which have carried instruction to the greatest extent furnish the greatest proportion of inventors. Look over any list of patents issued, and you will see evidence of restless intellectual activity among our mechanics in improvements upon every conceivable article of use or luxury—from a pencil-sharpener to a piano-forte; from a cheese-press to a steam fire-engine; from a horse-rake to a quartz-crusher. Wherever there is a want, invention struggles to supply it. A thousand busy brains contend with any obstacle until it is removed. The vast grain fields of the West required facilities superior to the sickle and cradle, and lo, the reaper! that sheared by the acre. The demand for rapid communication created the steamer, the railroad, the telegraph. The war demanded destructive agencies, and its wildest energies had gratification in swamp angels, monitors, and repeating arms. Agriculture has had its share of the benefit of its improved machinery, in the useful experiments which have been made in the nature of soils, the value of fertilizers, the improvement of stock, the introduction and propagation of new and valuable plants, and, in fact, in every department of its extensive domain. Intelligence has done much to direct the labor of the farmer, and much more to lighten it. Yet, after all the discoveries and improvements in this great branch of industry, how much remains to be known! Natural laws are infinite, and their application to the uses of life immeasurable. We must yet acknowledge our ignorance of these laws, and our perplexity at their familiar operations. Science, practical and speculative, was baffled at the potato rot and the cattle disease, and has never certainly discovered the causes or remedies. Organic husbandry is one of the richest departments of science, and yet is almost wholly in its infancy. And of that which is known of agricultural chemistry, of vegetable and animal production, of physics, meteorology, vegetable and animal physiology, and geology, all necessary to be known for thorough farming, there is less of scientific application than in any other pursuit capable of being enriched by research. This is so because it is easy to be a careless farmer, and even an ignorant one, and yet to be moderately successful, where nature does most of the work herself, and does not immediately resent and punish a violation of her laws. To extend a knowledge of nature's operations, and of the laws which govern them, and to enforce the practical application of the discoveries of science in this broad department, generous facilities must be afforded for experiment and instruction.

To aid this object, an Act of Congress of eighteen hundred and sixty-two provides for the establishment of colleges of agriculture and the mechanic arts in such of the States as avail themselves of its provisions, and grants to each State thirty thousand acres of land for each Senator and Representative in Congress under the apportionment of that year, to be selected from the public lands within the State subject to sale at

one dollar and twenty-five cents per acre, if these be sufficient, and if not, then the State is to receive land scrip for the requisite amount. The principal derived from the sale of these lands is to be invested in stocks yielding not less than five per cent, and the interest to be appropriated to the endowment of a college for the liberal and practical education of the industrial classes. The principal fund is to remain inviolable, except that ten per cent of it may be expended for the purchase of land for a site, or experimental farm; but no portion of the fund is to be applied to the purchase, erection, or repair of any building. The States were required by the Act to express their acceptance of its benefits within two years after its passage, and to provide within five years at least one college of the character stipulated. Our State Legislature accepted the benefits of this Act by joint resolution passed in eighteen hundred and sixty-three, but has taken no steps toward providing a college. Under this Act the State is entitled to one hundred and fifty thousand acres of land. This sounds like a munificent gift, and was such an intention; but it is qualified by the provision that this land is granted only after survey, and from lands subject to private entry; that is, from those only which have been offered at private sale and no purchaser been found; which in this State could be of but little value. Besides, the United States makes no surveys of its lands here unless the fees of its officers are advanced by the parties desiring the surveys. The grant of land to this State, to be selected within its borders, is not likely to be available for any purpose except to promote litigation and uncertainty, if we may judge by the present condition of titles to land heretofore nominally granted to the State, but really withheld from it by the failure of Government officers to provide for its segregation.

By the report of the State Surveyor-General of eighteen hundred and sixty-four, it is shown that of all the grants of land to this State for various purposes, not a single acre of any description has been listed or patented to the State, although all the duties required of the State officers have been zealously performed for fourteen years, and very much of the land has been sold by the State. Notwithstanding frequent attempts of the State Legislature to remedy the difficulty, and equitable decisions of our Supreme Court, the titles of nine thousand citizens, pioneer purchasers, are in an inchoate state, subject to attack, a frequent source of litigation, and consequent distress and poverty. The prosperity of the State must be greatly damaged by this unsettled, uncertain condition of titles, for thriftlessness must result. The only remedy is further legislation by Congress to compel the subordinate officers at Washington to comply with the terms of donation, and rescue the titles of our farmers from embarrassing uncertainty. I am not hopeful that the State can realize for many years to come any substantial benefits from the grant of one hundred and fifty thousand acres for an agricultural college. The public lands heretofore ceded to the State for specific purposes must first be segregated, and the titles granted by the State in good faith be recognized by the Government. The remainder must be surveyed and brought into market. Such portions as then fail to find purchasers will be subject to private entry, and will be available under the college grant for what they are worth. The lands granted for the purposes of this college will thus be the very last in the State upon which there can be anything realized, and nothing can be expected from this source for a long time to come. Yet by the Act we are required to establish the college within five years from the passage of the Act, or we shall forfeit the donation. The next Legislature must take the

requisite steps for this purpose, or we lose whatever advantages may be derived from the grant.

The benefits of the Act of Congress being so questionable and remote, is it the best policy to let the grant relapse by inaction? or only take such action as shall secure the gift, and wait for further legislation of Congress to make it available? or proceed in earnest to found a college that shall fill the conception of Congress and prove a blessing to the State?

It seems to me the Legislature will not desire the unpleasant responsibility of allowing this grant to be lost by its failure to take the necessary steps to secure it. The time will come when there will be lands within the State available under this grant; and if not, the grantees of the State may use the scrip in other States, or in the Territories. The peculiar complications of our landed interests depending on congressional grants would disappear with judicious legislation. The General Government should act upon the principle that grants of land to the State vested an interest from their date—that the Acts of Congress operated as conveyances. This would be equitable, and solve the difficulty, provided it would also adopt the extensive surveys made by the State officers, to which there can be no valid objection, and then list the lands to the State which the latter has selected and sold, for the benefit of its grantees.

If the Legislature shall determine that it is not best to forfeit the grant by inaction, such a result may be averted, in my judgment, by the passage of an Act providing for and the organization of a Board of Commissioners for the location and establishment of a college. This Board should have the power to fix the location of the college, and be authorized to accept a suitable site. I do not understand that the requirement that the State shall provide a college in five years involves the necessity that the college shall be in full operation in that time, but simply that such legislative action shall be taken to provide for a college as indicates a purpose to comply with the terms of the grant. By this we shall gain time for enforcing upon the Government proper action for confirming the rights of the State and its grantees in the public lands, and for making this grant productive for the purpose intended.

Is it the best plan to actually establish a college, realizing as far as possible the requirements of the Act of Congress, at the expense of the State? I think so, for the benefits of such an institution will amply repay the cost; but the State should understand the duty it assumes, and the necessity of making continuously the requisite appropriations. The interest of the Seminary Fund can be applied to this purpose, but there must be liberal appropriations for the erection of the necessary buildings, the preparation of an experimental farm, and the employment of competent professors. As the State is able to give title to the lands donated by Congress for the purpose of such a college, a fund will be created, and the interest of that fund will lighten the burden. Private donations and bequests will gradually create an endowment for the college, until it becomes independent of State aid. The great universities of the East have risen from small beginnings until their property is valued by millions. We may lay the foundation of a great university now, and do much toward securing for it a useful and powerful future. But to realize the great needs of this Pacific empire in this respect will take long years of labor and patient waiting. We may expect much

from the gratitude of the future towards our undertaking, far less from the present. If we educate the youth of our State in the practical duties of life, and embark them in the pursuit of science, or art, and of wealth, we may reasonably expect that the benefits conferred will be remembered in future years by those who look back upon the university with affection, and that gifts and bequests will enrich its endowments and extend its usefulness. This has been the experience of all eminent educational institutions. For the present, a few public spirited men may bestow of their means to aid in the establishment of a college, but our principal reliance must be upon the State. A special tax of seven cents on the hundred dollars would raise a fund yearly of one hundred thousand dollars, which would sustain an institution of the character I shall describe, with moderate tuition fees, and which I deem the proper foundation for the future university. The tax which a State pays for the education of its children is the lightest of its burdens, and the most useful; for ignorance is an implacable foe of liberty and order, the fruitful parent of crime, misery, and disgrace. Every dollar expended to elevate the character and enlighten the minds of the young is saved from prospective expenditure to repress or punish crime. The duty of the State to provide means for the education of its children does not end with common schools. Higher institutions of learning cannot be sustained by the income derived from the pupils. They must be directly supported by the Government, or largely endowed by the munificence of individuals. The education which is imparted in them is not more for the benefit of those who are taught than it is for the good of society; and the State should provide the kind and degree of instruction which its own interests demand. The university should not be absolutely a free school; but superior education should be placed within the reach of the industrial classes by the liberality of the State at such rates of tuition that the poor may be benefited as well as the rich. I doubt not, if the State will organize such an institution on an adequate basis, that before many years private liberality will provide scholarship funds for the benefit of poor students, and thereby give the means of higher education to many best fitted by natural gifts to receive it, but who would otherwise be debarred by poverty. The benefits of this expenditure, like bread cast upon the waters, will doubtless return tenfold to the public wealth. From scientific culture springs inquiry, and from investigation, discovery. Should this undertaking produce one agricultural chemist like Leibig, the mere material advantages resulting from increased production would far outweigh its entire cost. Ancient Egypt raised pyramids to the monarch who taught his people to cultivate the valley of the Nile, and profit by the swellings of the sacred river. But what monument could properly attest our gratitude to him who should give to fertility and man the vast tule lands of this State? What values could estimate our gain, or the measure of our obligation? Our benefactor would be gone, perchance forgotten, ere the magnitude of his work was half comprehended. In the brain of an unknown English artisan the steam engine was begotten; but with its first pulsation Britannia started with a new and resistless vigor upon her unchecked course of empire. The cotton gin, the invention of a Connecticut artisan, had well nigh crowned a weed the king of the world. Humble and obscure may be the hand that kindles the beacon of discovery, but it is the world that watches the rising flame, and nations that read and profit by the light.

Observing that a very able report to the last Legislature, made by the State Geologist and others, objected very decidedly to an experi-

mental farm in connection with the proposed college, I requested the opinion of the officers of the State Agricultural Society as to the kind of institution required, and as to the propriety and feasibility of conducting agricultural studies or experiments without such experimental farm. The reply of Mr. Hoag was in confirmation of my own views:

“The Act of Congress donating the land describes the very kind of institution we want on this coast; one in which those branches of learning relating to agriculture and the mechanic arts shall have prominence; in which the education of the student shall be liberal and practical, so that he shall be fully prepared to successfully undertake the several pursuits and professions of life. This embraces the whole scope of physical and exact sciences; for all are required in prosecuting and particularly improving agriculture and the mechanic arts. They must all be taught, and taught practically. The branches of learning relating to agriculture can be thus taught only in an institution possessing all the facilities of an extensive laboratory, for an examination of all the materials of which the earth is composed, and for an analytical examination of all the products of the earth. It must also possess the facilities of testing the conclusions drawn from experiments in the laboratory, by applying them directly and practically to the operations of the farm, where the chemical actions are performed by nature herself in her own great and well appointed laboratory.”

Hence an experimental farm is a prime necessity to such an institution. The value of experimental farming has been demonstrated in France under the patronage of the Emperor, who has done more for the improvement of agriculture and rural economy during the last ten years, than all the other rulers of Europe. In addition to lectures on agriculture and horticulture, delivered by first rate men in the Capital and in the provinces, agriculture is taught by precept and example on experimental farms, with excellent results. There are hundreds of agricultural schools in Europe, some wholly sustained by Government, others by private effort, and some by the two united. With scarcely an exception, whether independent schools or dependent on colleges for their teachers, each is connected with a farm. The great advance in agricultural chemistry in Europe is due to the constant experiments conducted in these institutions.

The valuable results produced by this system in Europe have excited emulation in the United States; but from a variety of causes such schools have not been so numerous or well sustained here, the principal reason being, probably, that the fertility, abundance, and cheapness of our lands, render less necessary the efforts of scientific men to supply the drain on the resources of nature. The exuberant productiveness of our domain, far excelling the capacity of artificial stimulation, and the readiness with which worn farms may be exchanged for virgin soil, prevent the interest that would be otherwise felt in agricultural chemistry. Yet several agricultural schools, under the patronage of State governments and private liberality, are in comparatively successful progress, and in every instance in connection with experimental farms. I must confess that I am among those who “argue that an agricultural school would be an absurdity without an experimental farm attached.” The school may be dispensed with from considerations of its cost, inconvenience, or doubtful benefit; but if it is established, the farm is an indispensable auxiliary. In the great number of such institutions in

Europe and the United States, the farm has been considered a necessary aid to the studies and experiments pursued, and undoubtedly was in the mind of Congress when the grant was made, for it authorized the expenditure of ten per cent of a principal fund, otherwise inviolable, for the purchase of land for such a farm.

The location of the farm should determine the location of the school. To be of any use to the school for practical teaching or experiment, it must be near at hand. To make the experiments of any use to the farmers of the State generally, the farm must be so located that its soil shall be a medium of that of the State, its climate the medium of the climate of the State—not in the fogs and winds of the sea coast, the greater heat and rarer moisture of the extreme southern part of the State, or liable to the uncertain climatic changes and late frosts of the Sierras. As near as possible, convenience of access should be considered, and a point on the main thoroughfares of travel in the State would be desirable, if it united other necessary conditions. Such a school, under the patronage of the State, its reports made to the Legislature, and printed by the State Printer, embodying a statement of the result of its experiments, should not be so remote from the Capital but that the representatives of the people may easily visit it, and see for themselves its practical workings and benefits, that they may legislate intelligently upon its interests, and convey correct intelligence of it to their constituents.

Among the industrial pursuits of the State, second to none in importance, whether judged by the numbers engaged in it, or its contribution to the wealth of the State, is the business of mining; not that kind of mining which is done at a broker's board, where speculators play with stocks that are often not worth the paper consumed for certificates. The real honest mining interest of the State needs scientific aid to develop and guide it. A knowledge of geology applied to mining, of metallurgy, etc., would be of vast benefit, and save many foolish enterprises and much waste. A professorship in the branches allied to mining should be instituted in the Industrial School, with facilities for teaching geology, metallurgy, and practical mining; and it should be the duty of the Professor to visit the mines with his class, and teach them mining, engineering, and surveying, by actual work on the ground. The advantage to the State of having our mining engineers and metallurgists trained here in a practical acquaintance with the conditions and processes of this coast is beyond estimate, and an ample field for observation, instruction, and experiment is open to them.

Four great interests should work harmoniously together in the future, for the benefit of this State: agriculture, mining, manufactures, and commerce. There can be no occasion for conflict between them, or between the sections of the State which thrive by them respectively. I so insist, because the attempt is made to persuade the agriculturists that it is proper to encourage a jealousy of the miners and mining section. Nothing can be more unwise for all concerned. The mining communities furnish ample markets for the products of the farmer; they buy his grain, his fruits, his cattle, and pay therefor with their own staple product. The greater the advance of the mining section of the State, the better customers are its people. Hence it is to the interest of the valleys to promote the rugged prosperity of the hills. So the miner buys his necessities more cheaply as the farmers of the State prosper in their useful pursuit. The commercial centres have an advantage in fostering the prosperity of the interior, whether mining or agricultural, because trade is thereby enlarged. All classes should be proud of our growing

commerce, and glad of any facilities by which it is extended. Our State extends over so large an area that it binds into one bundle these diversified yet concordant interests. But each of these performs its part in creating the prosperity of the State, and each has a concern in the success and stability of all. Hence political or social jealousy should be ignored. That man is an enemy to the State who stirs up such jealousies for any purpose, or who seeks to combine one interest or section of the State against any other. These considerations are of particular importance now when threatened legislation by Congress may throw the principal business of the mining communities of this coast into confusion, and impede the production of gold to an extent disastrous to the general welfare. Again, if the facilities afforded by such an institution as I have indicated, advance mining as well as agricultural interests, I desire that you farmers may see that your own good is thereby promoted by the extension of your markets, and greater demand for your products.

I concur in the suggestion of the report referred to, that it is better for the State University to select portions of the great field of science not now cultivated here; that it ought not to invade the domain of colleges now established. Our common schools and colleges will furnish the necessary training to fit the scholar for the practical and scientific courses to which the university should be confined. In the university there should be professorships of practical agriculture, botany, and vegetable physiology; geology, and mineralogy; zoology, and animal physiology; general and agricultural chemistry; mining, and metallurgy; mechanics, and engineering; drawing, and design; mathematics, and astronomy; military tactics, and engineering. Such an institution can only be sustained by the large annual expense to the State which I have indicated—a large expenditure, but one that would add to the future development, wealth, and distinction of the State beyond the power of figures to estimate.

I have purposely avoided minor details in this sketch, for the reason that they are better settled by experts, and their treatment is inconsistent with the limits or proprieties of a popular address. But there is one limitation in the Act of Congress making the donation of land which is of great importance—that military tactics shall be included in the studies of the university. Military discipline and drill have not occupied a sufficiently prominent place in our educational system. We have learned within the past few years the importance of this branch of education, and military schools have increased in number and popularity. We were totally unprepared for the late war, and to appearance devoid of military spirit. Aside from the superior efficiency our arms would have had early in the war if the volunteers had had a preparatory military training, the effect of the display of that martial spirit by the North, which is best exhibited by a people educated to arms, would have gone far toward deterring the ambitious leaders of secession from plunging into civil war; perhaps would have saved the sacrifice of hundreds of thousands of lives and thousands of millions of treasure. It is not necessary to keep a large standing army to be prepared for war. The same result may be reached by educating the people in the use of arms, so that efficient volunteer forces may be organized at the sudden call of the country. Great military leaders are more likely to be developed by training in the National Military Academy; but the masses of the people may be transmuted into efficient soldiers in a few years by teaching military tactics and engineering in our schools. Boys will take naturally to this kind of instruction. It will furnish a pleasant change from ordi-

nary studies; and they will delight in learning the use of arms, company and battalion evolutions, and in observing discipline. These are the elements of successful soldiery. By means of them, implanted by the instruction of our schools and colleges, our youth may be so trained that when another war shall threaten or assail our land, the call for volunteers will rally to our standard, not a mass of raw recruits, soldiers only in spirit, but intelligent, enthusiastic, drilled masses of troops, scarcely inferior to a regular army in efficiency, and superior to it in moral characteristics.

I have treated this subject in its practical aspect, as the occasion seemed to demand. To many, the employment of large sums of money to organize and maintain such an institution will seem useless expenditure. It may also be urged with force that the State is already largely burdened with debt, and should practice strict and even parsimonious economy, until its debts are paid. There is an element of truth in the latter objection, and perhaps enough to determine the Legislature against the enterprise. But I believe the real interest of the State, even its monetary prosperity, will be so greatly advanced by the successful workings of such an institution, that the return will be manifold above the expenditure. We cannot afford to neglect any means of improvement on this coast. We have capacities for development here far exceeding the most ambitious statement. Our mines are practically exhaustless, and will be liberal of wealth on full development. Our geographical position, aided by rapid communication across the continent, will make tributary to us that vast commerce now awaiting inlet, and which flows as naturally in currents as rivers run to the sea, wherever it flows depositing riches. The caravans that traversed the East, carrying the trade of the Orient to the Mediterranean, built cities of palaces, and made empires great in power and opulence. Our agricultural domain lies open to enterprise, and is capable of feeding the thronging millions who will inherit this fair empire. Our mountain streams await the busy machinery that will ply upon their banks; and all the great industries that maintain powerful communities will be set in motion here to meet the necessities of the growing future. With such a destiny before our State, shall we neglect the means that will guide these results to the happiest consummation, and make those who come after us worthy of their inheritance, and able to secure it? Shall scientific knowledge be the only essential element of success that we shall not possess? Or shall we be content with sending a few of our children to the East or to Europe to procure the necessary instruction which our indifference or false economy denies them at home? Such is not the true policy for this State. We should attract men of culture and experience. We should secure original thinkers, men of genius, men of research, to teach our youth and stimulate and guide the development of our resources. That we may not lack advanced minds to lead in the race of progress, we should aim to develop intellect and true manhood here. It is better to exhaust all our wealth than to let the public heart decay or the public mind become attenuated. That State is greatest, though poor, where man is noblest, where labor is intelligent and free, and dignified with virtue.

“ 'Tis your's to judge how wide the limits stand
Between a splendid and a happy land.”

This age is marked by the progression of thought, and we must not be content to remain outside of the current. More is required of public

and private liberality now than ever before to build up noble institutions of learning, and more is conceded in other enlightened communities. Our State is old enough to undertake this duty, perhaps too long deferred, and secure to its children the advantages which are elsewhere deemed of leading necessity. To do so is true economy, for it is wise provision for the future.

To the agriculturist the future of this State is full of encouragement and bright with hope. Lured to these shores by dreams of sudden fortune, he found the blind goddess fickle and coy in his search for the grains of gold, but kind and constant when he wooed her through the golden grain; and he has discovered that in the rich loam of these valleys he has exhaustless treasuries. From the lowlands the farmer is invading the mountains—the foothills he has long since taken with his countless herds of sheep—while like emeralds the little valleys gleam amid the hills, the brightest gems of the mountains. He guides the torrents from their rocky beds to the parched hills, and they return to him in streams of ruby wine; and fruitful orchards and smiling vineyards nestle at the very feet of the granite Sierras. With a soil of every variety, with the climate of every zone, with the children of every land, with a population whose enterprise knows no limit, and their energy no obstacle, he may without regret bid adieu to the golden days of the past, in which folly, recklessness, and crime, the wild offspring of sudden wealth, ruled the mad hour. He may turn from this to the bright dawn of that golden future in which California shall lay anew the foundations of true prosperity; shall build upon the sure basis of exhaustless agricultural resources with patient, intelligent industry, the empire of the farmer, to endure while there shall be seedtime and harvest, and while the earth shall bring forth her increase. Farmers of California, this it is your high mission to accomplish. Let us all, of every pursuit and profession, strive to be worthy our part in the lot of this great nation, which has passed through the fierce fires of civil war to emerge purified, ennobled, and strengthened; purified of slavery which chained industrial millions; ennobled by the great act of justice that established liberty; and strengthened by the closer knitted bonds of union that war could not sever.



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