

Proceedings of the Iowa Academy of Science

Volume 12 | Annual Issue

Article 6

1904

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Recommended Citation

Shimek, B. (1904) "Presidential Address - Botany in Its Relation to Good Citizenship," *Proceedings of the Iowa Academy of Science*, 12(1), 1-6.

Available at: <https://scholarworks.uni.edu/pias/vol12/iss1/6>

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PRESIDENTIAL ADDRESS.

BOTANY IN ITS RELATION TO GOOD CITIZENSHIP.

BY B. SHIMEK.

There are devotees of science who are impatient at every mention of any connection between their favorite branch and the every day affairs of men. There are those to whom purely scientific attainment is so sacred that any attempt to profane it with suggestion of profit or practical return is sacrilege. While we must admire the unselfish devotion which has prompted men to give their lives to scientific effort without hope or thought of material reward, we must also recognize the fact that the days of exclusiveness are past—that learning is no longer confined to the cloister of the monk or the den of the savant—and that the greater availability of means and methods of investigation, together with the prospect of practical application of scientific principles, have produced a thirst for knowledge which exists far beyond the walls of the laboratory. Men now seek results from every effort, and on all sides we find scientific principles applied to the profit and the material advantage of man. He employs them to combat disease; to add to his personal comfort and convenience; to preserve or increase the fruits of his labor; and for direct personal profit in the countless industrial pursuits in which these principles are applied.

Scientific truth is not so sacred that it can not serve for the improvement, the uplifting, the comfort and security of the human race. Upon its foundations are erected the temples of modern civilization; the search for it has re-

sulted in an intellectual renaissance; and the discovery of its treasures has produced that wonderful industrial development which marks the present age. The latter fact, unfortunately, has also resulted in a tremendous abuse of those natural resources which are everywhere being drained to meet the constantly increasing demands of industrial interests. Almost every community in the land bows down to the fetich of industrial and resultant commercial activity. Young men have been taught, by implication if not by direction, that money-making is the great goal of all ambition, and the result is a lowering of standards of public and private morals. Let a schemer propose the building up of a business enterprise in any community and, no matter how questionable the means or uncertain the methods by which the scheme is advanced, the public becomes its enthusiastic supporter on the ground that it will "bring business", and that men will secure employment.

It is not my purpose to decry activity in legitimate business or enterprise, but I do insist that the best citizen is not necessarily he who is most expert in the art of money-making, and that the enterprises and undertakings which are of the greatest value to the community are not those whose results can be measured by ordinary commercial standards. The desire for making money, and for booming business enterprises, so completely dominates our people that public opinion has frequently permitted the grossest violations of the laws of justice and common sense, if only business activity could be promoted. Sometimes this is due to ignorance, but more frequently it is an exhibition of the spirit which was manifested by the railway promoter who, desiring a portion of one of the parks in a large city in this state, sneeringly publicly declared that if the people wanted grass they could keep their parks, but if they wanted business they had to have railroads.

Again and again certain business enterprises have been represented as the hope and salvation of the communities

in which they were developed, and for the time being public interest centered in them, as though the prosperity of the community depended for all time upon their encouragement and support. And yet how often have industries so heralded resulted in ultimate failure, with possible great profit for the few, but loss and suffering for the many, besides so often entailing the depreciation of individual and public moral sense! In many cases these industries have been almost forgotten, yet they have left a curse behind them in the form of recklessly wasted resources. Our "business enterprise" has often cost us dearly.

A number of industries were dependent on the American bison, but the bison is no more. The products of the beaver gave employment to many men, but the beaver is fast disappearing. The pearl button industry revived the drooping business spirit of some of our own river towns, but clams are no longer found within our borders in sufficient quantity for profitable manufacture, and again disappointment and disaster are following in the wake of "business enterprise." The forests of this country were thought to be inexhaustible, and everywhere the hum of the sawmill was welcomed as the harbinger of prosperity. Yet today many of the great forest areas are reduced to barren wastes, and while a few private fortunes were piled up, suffering for the many stares us in the face; indeed, the increased cost of lumber is already working hardships. Only a few years ago a large part of the southern peninsula of Michigan was covered with splendid pine forests which grew upon the poorest soils. Today the forests are cleared, and there remains only a sandy, barren tract of stumpland which will not even sustain sheep! Other portions of the country have fared equally badly, and everywhere there has been the same reckless disregard of consequences. It has simply been a game of grab, and no thought was given to the morrow. No attempt was made to husband or perpetuate our natural resources, and in almost every case the result has been the killing of the goose that laid the golden egg.

But the loss of these resources is not the only calamity which has befallen us. So widespread was the idea that everyone was entitled to anything which was "public" that the land-grabber and the timber-thief came to be regarded merely as enterprising citizens, and the standard of public morals was lowered to such an extent that the courts and public opinion sustained various so-called "vested rights," even when they were secured through fraud and collusion. But to some extent there has been a public awakening, and even the cold-blooded, self-satisfied business man is beginning to turn to the scientist, asking that he save him from his own folly.

Science, through its discoveries, has stimulated business enterprise, and has, therefore, been largely responsible for the havoc which has sometimes followed in its wake,—but science must also come to the rescue and point out the rational means and methods by which the good things which we enjoy may be perpetuated for the benefit of our descendants.

No scientific branch is more intimately connected with our everyday lives than botany. To plants we owe, directly or indirectly, practically all our food, and much of the shelter and protection which we enjoy. Agriculture, horticulture, and countless industries owe their existence to plants, and are based on scientific botanical principles. To plants we are also indebted for the comfort and beauty of our surroundings, and in every relation and activity of life, from the cradle to the grave, we have more or less to do with them. These relations involve not only personal profit and private interests, but common weal and public welfare as well. It follows that a knowledge of plants—a knowledge of botany—will the better enable us to derive the greatest benefit from this close relation. It will enable us to perpetuate and utilize that which is useful, and to protect ourselves against that which is harmful. It will convince us that we must concern ourselves not only with immediate profit, but with future consequences.



FIG. 1. Original pine woods. Sacramento mountains, New Mexico.



FIG. 2. Pine woods and saw mill. Sacramento mountains, New Mexico.
The beginning of the end.

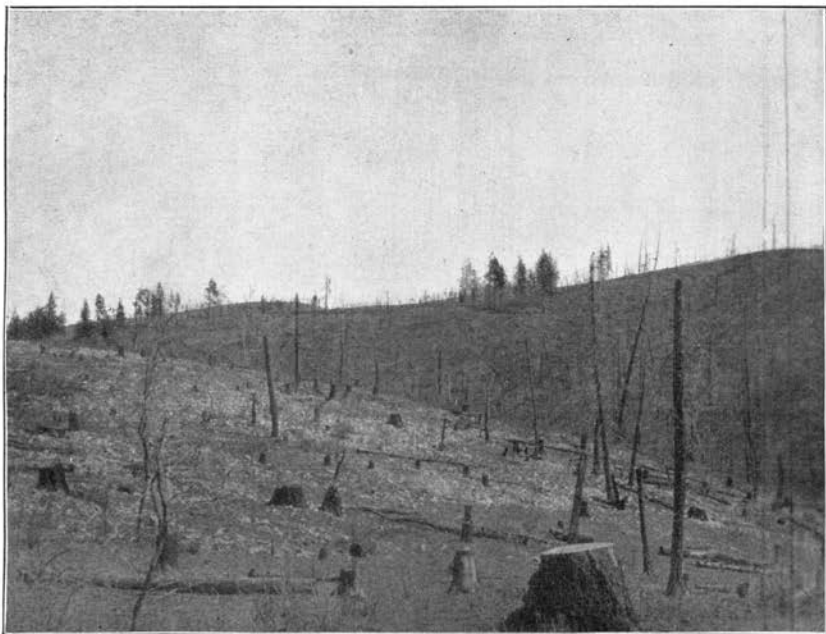


FIG. 1. The cleared mountain slopes. Sacramento mountains, New Mexico.
The end.



FIG. 2. Young *Pinus ponderosa* springing up on slope protected from fires and sheep. Sacramento mountains, New Mexico.

PLATE III.



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Red Hills, Dubuque county, Iowa. Neither pastured
nor burned.



FIG. 2. Native *Pinus strobus*, Dubuque county, Iowa.

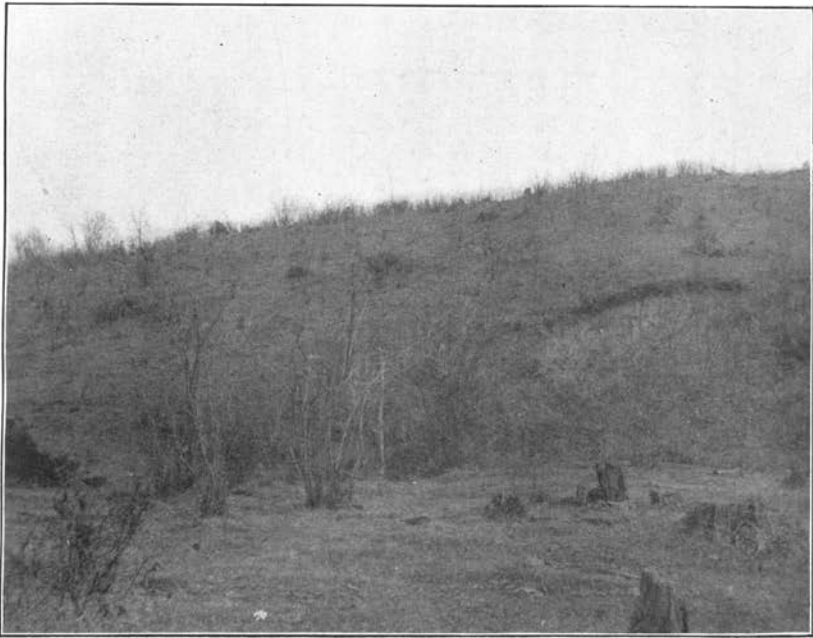


FIG. 1. A gravelly hillside stripped of its forest. Shows beginning of erosion. Algona, Iowa.



FIG. 2. A loess hillside stripped of its forest and now deeply eroded. Near Iowa City.

In no case has there been a more wanton disregard of these consequences than in the treatment of our forest resources. Before the conscienceless greed of the individual, encouraged by the lack of appreciation and understanding on the part of the public, splendid forests vanished in a few years. Not only was there the legitimate cutting of timber for the sawmill, but enormous tracts were devastated by fire, sometimes through carelessness, oftener by design. Nor has the destruction of wood been the only resulting calamity. Our forests grew naturally upon the poorer soils. When they were cleared, the veneer of soil upon the clay and gravel ridges, and of alluvium upon the sandy river bottoms, was soon removed, and the clay and sand, often unfit for cultivation, were brought to the surface. The erosion which followed the clearing of the forest permitted the waters to run off rapidly from the surface, thus causing the disappearance of springs. It also filled the streams with sand and mud, and made their formerly clear waters turbid. The effect of this destruction was felt not only by the owner of the land which was thus denuded, but by all his neighbors, and the question became one not of individual rights, but of common good and public welfare. But information upon this subject so intimately connected with good citizenship was at first lacking, and as it gradually developed, it usually came too late to be of value in preventing wholesale destruction.

As we approach the danger line as a result of our past recklessness, public interest in this question grows more and more in intensity. Our citizens are beginning to cry out for the preservation of the remnants of our forests, and to cast about for means and methods by which forests may be restored and extended. They are seeking information upon the great question of conservation of forest resources, and the botanist has here an opportunity which should not be allowed to escape. Our citizens should be taught that the forest yields other than material products; that it is often most valuable when undisturbed; that it will grow upon soils which will produce but little

else,—the poorest of our lands; that it can easily be encouraged by keeping out ground fires, cattle and other destructive agencies, thus giving the seedlings, as well as larger trees, an opportunity to develop; that there is no section of our own state which will not successfully produce trees, and that by a little forethought we may insure to the coming generations a splendid heritage which will form the basis of material prosperity, and the means of mental and moral uplifting.

There are grave questions of public policy the solution of which depends upon a knowledge of the growth and influence of forests, and a full appreciation of which is impossible without a knowledge of the fundamental principles of tree growth and treatment on the part of the citizens who must ultimately solve these problems. What shall be done with the great arid tracts in the western part of the country? The citizens of the interested sections are clamoring for government aid to their plans of irrigation, yet they are rapidly destroying the forests on the mountains which, in many places, alone insure a sufficient water supply. What shall be done with denuded tracts in more favored sections of the country, to prevent lasting injury to our streams? Shall this be left, as heretofore, to the neglect and selfishness of individuals?

There are questions involved in the parking of streets, establishment of parks and forest reserves, in the preservation of birds and game, etc., which must be settled by our citizens. Shall this be done intelligently? These questions can not be solved by a few enthusiasts, they must be met by an intelligent public, aware of the errors of the past, and educated to an appreciation of the possibilities of the future. And this campaign of education can, and should, be carried on in large part by the teachers of botany in the public schools and the colleges of our country.