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Report of the Second Annual Nebraska Conservation and State Development Congress

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REPORT OF THE

**Second Annual Nebraska
Conservation and State Development
Congress**

OFFICERS OF CONGRESS

G. E. CONDRA, *President*

HON. W. G. WHITMORE, *Vice-President*

HON. W. R. MELLOR, *Secretary*

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REPORT OF THE NEBRASKA CONSERVATION
CONGRESS.

BY G. E. CONDRA.

Nebraska was one of the first states to take up conservation along practical lines. The work has been directed by a commission appointed by Governor Sheldon and continued by Governors Shallenberger and Aldrich. The commission as thus constituted, includes the State Botanist, State Geologist, State Engineer, the dean of the Agricultural College and the professor of geography and economic geology at the University. These heads of departments are closely connected with the investigation of development problems, and are quite free from partisan and political influences.

The last legislature voted \$6,000 for conservation and the State Soil Survey, the same to be expended under the control of the University regents. This fund, so long as it lasts, will be used by the Director in making an inventory of the various resources of the state, in studying industrial problems, for the expenses in gathering reliable data concerning certain of the leading industries, for mapping the soil regions, and for such office expenses as may be necessary.

THE PURPOSE OF STATE CONSERVATION.—Much has been said during the past two or three years concerning federal control, inter-state relations and states' rights. This has, to some extent, drawn the attention of the people away from the more basic problems in conservation. A few states have been very insistent upon their right to control national resources within their borders. This has resulted in great injustice to the federal departments, especially so, when its officers did not show due diligence in the fulfillment of their duties. Those who were prevented from securing valuable timber land, coal land, and power sites at much less than their value have, as a rule, become opponents of Federal Control. The withdrawal and evaluation of certain National coal lands was, as some saw it, an act of injustice. The National resources have rapidly passed to private ownership and the control of the various states. No one will doubt the wisdom of this procedure, when it is viewed as a whole, but even a little study of the matter will show defects in the plan. The resources should have been studied and evaluated preparatory to the passing of title from the public to the individual or company. This would have served to protect the rights of the general public. It would have equalized matters, and, without doubt, some of the most valuable assets would have been retained by the Government subject to lease for a rental or royalty. Such a plan if adopted soon enough would have assisted in preventing monopolistic control. In some cases, the state has been easier to influence than the federal government and this may have caused a few opponents of federal control to advocate state rights. Be that as it may, the fact remains that there are resources to protect

and properly develop. This demands federal and state officers who shall be true to their trust, trying as their plain duty, to guard the interests of the county, state or nation for which they work and receive pay. Mr. Gifford Pinchot was a public servant of this type. He was guided by a strong sense of patriotic duty, a thing not possessed by all. Such a virtue is subject to severe criticism by those with whom its operation interferes. Much of the talk by states' rights advocates has a selfish bearing. In some cases it is perfectly valid.

Underlying all of this political discussion, is a line of practical conservation of vast importance. Its largest field is in the states. It is concerned with the proper development of the state. It demands less wasteful methods and the fullest possible development. It does not stand for the locking up of resources or withholding them from development except when and where it becomes necessary thereby to protect the general good of the people against sharp practice and selfish interests whether weak or strong.

One of the first purposes of conservation in the state is to make an inventory of the resources, this to serve as a basis of development. In Nebraska we propose to determine the extent of our stone, clay, sand, water power and soils of various types. Following this investigation will come the study of problems connected with the development of these resources. Among these studies and developments are those of the dry, sandy, wet and rough lands; also those of forestation, fruit raising, soil erosion, crop rotation, etc., all of economic importance. The matter of gathering reliable information relative to the conditions affecting the operation of the various industries and the publication of the same through lectures and state reports will be a large task.

So the subject state conservation starts with the natural resources, such as soil and water, and extends through the development of these along proper lines to the questions of social and educational matters of the state. It stands for good seeds in cropping, pure breeds of farm animals, and for efficient citizens. To cover this demand the Conservation Commission has outlined a large field of inquiry and study. The aim will be to learn the facts of each problem and to make them known without attempting to overdraw or misrepresent any of the conditions whether favorable or unfavorable.

The natural conditions in our state warrant a fuller development of manufacturing and transportation industries to supplement the agriculture, however, but few realize this fact. We have been too content with raising wheat and hogs and shipping them to markets in other states, not realizing the importance of developing home markets. The need for closer co-operation between country and town in this all-round development of the state is just beginning to be understood. The next step should be the putting into practice of that which we know to be best for the largest number.

The work of the commission is made known by lectures before schools,

teachers' associations, chautauquas, county fairs, state fairs and commercial clubs. Reports are made before the annual meetings of the Conservation and State Development Congress. Committees of the commission and those of the congress work in harmony, the commission standing for study and research and the congress being an open forum for the free discussion of Nebraska's development problems.

I will briefly outline the work of the second annual congress, which was by many called the best meeting of the kind ever held in the state. The attendance was large. The discussions showed the need for development along broad, unselfish lines.

THE SECOND ANNUAL CONSERVATION AND STATE DEVELOPMENT CONGRESS.

At this year's congress, held February 23 and 24, 1911, the program was divided into general sessions in the forenoon and evening, and five section programs in the afternoons. The sections discussions were under the heads, 1, Minerals and Waters; 2, The Lands; 3, Vital Resources; 4, Industrial and Commercial; 5, The Woman's Club Department.

Officers elected for the ensuing congress are: D. V. Stevens, president; W. G. Whitmore, vice-president; W. R. Mellor, secretary; G. E. Condra, chairman of the executive committee, composed of the officers of the general association and the chairmen of the five sections. Officers for the sections are:

Section I.—Minerals and Waters: Prof. E. H. Barbour, chairman; the state engineer, secretary.

Section II.—The Lands. G. E. Condra, chairman; C. W. Pugsley, secretary.

Section III.—Vital Resources. Geo. Coupland, chairman; Dr. R. H. Wolcott, secretary.

Section IV.—Industrial and Commercial. H. M. Bushnell, chairman; W. A. Campbell, secretary.

Section V.—Woman's Club Department. Mrs. W. G. Whitmore, chairman; Mrs. G. E. Condra, secretary; Mrs. G. J. Phelps, chairman of executive committee.

The congress convened in the Lincoln City Auditorium. At the first session addresses were made by the president, Gov. C. H. Aldrich and Dr. C. E. Bessey. These were followed by brief responses from delegates.

ADDRESS BY GOVERNOR C. H. ALDRICH.

Mr. President, Ladies and Gentlemen:

I have no set speech to invite your attention to this morning, consequently, no rounded periods. I am simply snatching a few minutes of time away from the place where I ought to be at this moment to come here in recognition of your attendance, as chief executive. I am profoundly glad to witness the good feeling and general interest that prevails here this morning in all of the important subjects that are necessary

to the upbuilding and development of the great state of Nebraska. I am glad to see the great common carriers of our state, the railroads, here represented, smiling with the farmers. Time was when the railroad man didn't think that the farmer ought to live, and the farmers thought that the railroad man, and the railroads, ought to do business for nothing. Today we have come to realize that these railroads are absolutely necessary to materially develop this state, and that they are essential to our comforts and luxuries; and the railroads recognize that the more prosperous and the more thrifty these farmers the greater will be the dividends. So we each have a mission to perform, and each must perform it with the help of the other. We have out here a common destiny, and to work out this destiny we must go hand in hand throughout this journey of life and either succeed or fall together.

In the position which I happen to be occupying at the present time in the state, I am a representative of no special interest. I am here as an advocate of the general development, both from a human and a material standpoint, of all the things that ought to be brought forward at this time in our state. There came up the other day a question which it seems to me is important in the state of Nebraska as well as in every state in this Union. It is the problem of the conservation of the human rights—that is, that we should look at this conservation problem from a human standpoint. In other words, are the children of the generation now coming up being as properly looked after in this state by the state authorities, by the people in general, as well as they should be? For instance, I had a committee of the legislature on finance and ways and means the other day in my office talking with them on the importance of furnishing a library for the great state institutions. I called the attention of that committee to the fact that down at the Girls' Industrial Home at Geneva, where I had been a few days before, I found 140 girls that were practically without a library; that they have no opportunities for general reading and information. Contrary to my expectation when I went down there, instead of finding these girls looking dissipated, wayward, uncouth and untractable I found them cheery, happy, cleanly and well-contented. So far as general appearances were concerned I found them looking like the average high-school girl; that, as a general thing, they were not sent there for the bad things they had done but to be taken away from bad surroundings; sometimes, vicious parents, debauched and demoralized. So the state of Nebraska should to a larger extent help in the solution of this important problem. The proposition will be difficult, for the tendency of every session of the legislature here and in other states is, when it comes to doing everything that will build up and make the highest type of citizenship, to refrain from voting adequate funds for this purpose. Isn't that strange?

Those girls ought to have access to the best reading there is to be had anywhere, but they are deprived of it. So we find similar conditions in the Boys' Industrial Home at Kearney. There are 175 boys without

the benefit of a library. If we would look at some of these problems that confront us from a human standpoint and commence taking care of the embryo citizen from the beginning it seems to me that we would be practically starting at the right source. Now, there never has been so much attention paid to the development of the individual being nor so much recognized of the mission of the individual in the life of this nation as there is at the present time, because, if you notice, every time we have a state or national association of this character, it is for the welfare of the individual and the future of the country. It is because we are builded upon the theory that each individual citizen of this state and nation will be of the style of architecture and quality that the Architect is himself; consequently, it is of vast importance both from a material and spiritual standpoint to see to it that we have young men and young women coming on in this state who are receiving the right kind of moral and mental training. So, I say, that down in this penitentiary, the state of Nebraska could do no better thing than to invest several thousand dollars in a library that would give to these people the opportunity to get abreast with the times so that they may know what is going on in the world, that they may be informed and have opportunity to read these industrial problems that are presented for solution in the state.

I hope that this congress will look into this matter. You can do a great thing for the state of Nebraska toward passing some resolution in favor of the purchase and use of such books well selected under the supervision and direction of the Nebraska Public Library Commission. You could do a great work to the state of Nebraska and probably help get through the legislature an appropriation for a library that can be used by the inmates of the penitentiary and other institutions. It is well known that if these boys and girls had the right kind of books put before them, selected with the view of their particular tastes and dispositions that we know they have, that a good general, moral uplift could be developed in these institutions.

I was talking with Doctor Cornell, the health commissioner in Omaha, and he told me that the great percentage of mortality in infantile life was due to the milk supply that comes largely from the country. There is another important problem of conservation that presents itself for solution. This could be prevented in a large measure if we had an appropriation in our legislature large enough to put a force of experts out through the state examining these various conditions and the general milk supply before it came in for consumption. A great work of conservation could be done along this line it seems to me, in saving the infantile and the future citizen life of this state. These are some of the important propositions which occur to me from a human standpoint that this Congress should take up and resolute upon; discuss and try to build up a public sentiment for the maintenance of the Pure Food Commission. This pure food law has only been in existence since 1907. It seems to me that we would spend at least as much for the promotion of pure food

and sanitation for people as we are under the experiments of hog cholera. We overlook the spiritual things of this life altogether too much. We overlook conditions that dwarf and blight the children of the present home and the children in these institutions. We are becoming entirely too material. We are experimenting upon crops, seeds and the productivity and fertility of the soil. That is a very good thing, but we can and ought to do other things too.

I do not wish to be confined to any one-sided proposition. Our state should be developed in an all-round way and in all of its departments.

You hear it often said in Nebraska that we have nothing but an agricultural state; that there is nothing here but agriculture. My friends, the manufactured products of this state are nearly equal in value to the farm productions. We have an agricultural state second to none in the Union, and these agricultural products are only about equal to the manufactured products; yet, if we would turn that same indomitable energy, skill and foresight into certain manufactures in the various towns and cities of the state we would soon have one of the greatest manufacturing states in the Union. We should do more than raise wheat, hogs and cattle and ship them out of the state.

I was in consultation with Mrs. McMurphy, one of the pure food inspectors, the other day. She read to me an article she had been called upon to write. In the course of the discussion of certain things she made the statement that of the billion eggs that were marketed, from 30 to 50 per cent of them were destroyed, becoming of no value as a food product. I asked, what is the cause of it? She replied, negligence in taking care of the eggs at the time they are laid; they become filthy and dirty. She went into detail and said: "All of this could be prevented if we had enough pure food inspectors to get out into the state and inspect these things and show the people that it is absolutely a matter of dollars and cents to them to keep the nests clean." So here is another problem, and we could go on indefinitely, but I have not the time now to do so, and I feel a little diffident about it, because on all of these matters that I have suggested I know there are eminent authorities and experts right here to talk to you before this congress adjourns.

There is one other thing I want to suggest and that is the subject of good roads. It is one of the settled propositions in this state that everybody is for good roads, ready to talk it and help build them. We have the sentiment clearly established in this state for good roads, and before we get through with this proposition there will be developed a central idea, a system for construction and maintenance. The reason we have made slow progress is because everybody had an idea of how a good road ought to be built; there has been no definite system and organization. You cannot carry on any great business without having a scientific organization behind it; without some one central thought in its development. We have come to the solution of the problem of good roads, but there ought to be a closer and more general relation between the cities

and towns and the country; there ought to be a better relation between these two, because the town or the city is the great commercial center that receives the raw product that comes from the country and makes the market.

In closing, I come back to the doctrine that we must live and let live; we must treat one another on the square. Whenever a concern makes a legitimate profit on an honest investment it is a benefactor to the state, community or nation. If it is a large concern we must recognize it and join hands with it in the forward march, working out our destiny in the fulfillment of the Divine plan. [Applause.]

The section programs presented many addresses and discussions of special interest and value. In this respect the Woman's Club Department was one of the best. The themes followed along the line of the conservation of people with reference to their health and efficiency. Chancellor Avery, Dr. A. O. Thomas, Prof. Lucile Eaves, Mrs. Haller, Prof. F. M. Gregg, Dr. J. P. Lord, Dean G. Ringer, Mrs. G. J. Phelps and Dean Charles Fordyce were some of the speakers in this section.

It will not be possible to run a complete account of the section programs in this report. The address on Manufacturing Industries by Mr. W. A. Campbell of Omaha, deserves special notice. It was published by the Omaha Commercial club and can be obtained from that source upon request. The following reports are selected from different departments:

GOOD ROADS ARGUMENT.

BY DAN V. STEPHENS, FREMONT, NEB.

In the fall of 1909 eastern Nebraska had the worst roads that the old settlers could remember in the history of the state. It gave the good road enthusiasts a splendid opportunity to create sentiment for permanent highways. The rainy weather commenced about the time the corn was ready to market. The bottoms went out of the roads and for two months it was practically impossible to move crops. As an example of the deficiency of the crop movement at that time, the Nye-Schneider-Fowler Co., who operate something like two hundred elevators, one day in December received from all their stations only fifteen hundred bushels of grain. This stagnation at a time of year when grain should have been moving by the millions of bushels, affected the whole state. Merchants in the towns were not doing enough business to warrant them to keep their stores open. In fact, the whole commerce of the state suffered tremendously during this period of bottomless roads. Farmers were marooned at home in a sea of mud unable to get into the fields or onto the public highways. They were so discouraged that even if they could have gotten to the trading points they were not in a humor to spend their money and all of this stagnation was caused by the want of permanent roads leading to the market towns. Had Nebraska been provided with perma-

ment roads this condition of the weather would not have affected commerce because farmers would have moved their grain and done their marketing at a time when they were not able to get into the fields. Thus it would make it possible to do the work of hauling when no other kind of farm work can be done. During the crop growing seasons when the public roads are usually in good condition, farmers are busy in the fields and cannot possibly use the roads. It therefore becomes imperative that they have permanent roads that can be used in the fall, winter and spring when work in the fields is suspended. Good roads are not only a blessing in the matter of utility but in encouraging and stimulating social life as well. The greatest period of social activity in the country is in the winter at a time when the roads are at their worst. But the vital arguments that will affect most men are those that show the economic value of permanent roads.

When I was a boy my father secured the construction of a permanent road from town to our farm. His tax for this road was \$800, to be paid in installments of \$100 each year. Many people objected to building this road on account of the expense. They could not see how anyone could be so foolish as to want to build a road to the market at this great expense. They prophesied ruin to all farmers living along this road. Many of the neighbors were so angry they would not speak to my father as a result of it, but the road was built and enough cord wood was hauled over that road the first winter to pay our full \$800 and leave us money besides. This was not only true of our farm but all the farms along the road. It is a direct credit to the stone road, because without it we could not have marketed the wood in the winter and in the summer, when the roads were passable, we had to work in the fields. Aside from the advantage to us, the good folk in town got their wood cheaper because there was no wood famine in town on account of impassable roads. These were not all the advantages. Every acre of land along this permanent road increased several times the tax that was assessed against it. This object lesson was so effective that the county commissioners were kept busy for many years afterward building stone roads in every direction from town, some of them reaching out twenty miles. These stone roads really made the county rich, strange as it may seem, since they cost so much money. At this period almost every farmer was poor and the land very cheap. Those same farms today along those stone roads have been built up and are selling at from \$100 to \$150 per acre. There are scores of possibilities of development on a farm that has a permanent road to market where there is one that has a dirt road that is impassable at a time when it is most needed. Land along this road that had been worth anywhere from \$10 to \$20 per acre jumped to \$30 and \$40 per acre within two or three years after the road was constructed, and it was poor land too, and I wonder even today at the marvelous increase of land that was apparently so non-productive. But dairies sprung up along the road, people built houses in the country, truck farms thrived, and in fact various kinds of agriculture were developed along this road which was not

thought passable, all of which contributed to making this land more valuable and desirable. Practically all of the development within a radius of ten miles of this county seat town was along this road rather than along the clay roads extending out in other directions where the land was even better. There can be no better object lesson of the value of permanent roads than can be traveled every day rain or shine than was this stone road of my boyhood days. It was not to exceed two years after this first stone road was constructed that petitions were filed for more roads leading out from town in other directions and every year after that the board of supervisors ordered a new macadam road constructed or an extension to an old one made until the county was thoroughly traversed by macadam roads. It is difficult for a farmer along these macadam roads to understand how the people of a community having any business at all will spend the major part of their lives along roads that are unfit to travel from one-third to one-half of the whole year.

Dodge county once bonded itself for \$100,000, as did many other Nebraska counties, to encourage building of railroads through it. It was a good thing to do because without the railroads the development of the country was impossible. Today the average cost of moving freight over railroads in the United States is one cent per ton mile; the average cost today for moving this same freight over dirt roads is twenty cents per ton mile. It would cost approximately seven cents per ton mile over petroliitic or sand clay roads, such as are within the reach of the people of Nebraska. If it were wise in the old days of poverty to bond the county for \$100,000 in order that we might secure a railroad to further agricultural development, then it would seem that it is equally advisable now to spend a considerable sum of money toward securing permanent roads over which perhaps three-fourths of the railroad freight must sooner or later move. It is estimated that if roads could be secured that would enable the farmer to haul one-third more to the load than they now haul, it would make a saving in the United States on grain and cotton alone to the sum of \$10,000,000 and this would be only a fraction of the enormous saving that would be made to the entire country if all the wagon freight could be moved over permanent highways.

The average farm of 160 acres in Dodge county will have in the course of a year sufficient freight to move over the public road to and from the market to amount to 175 tons. The cost according to government estimate of moving this freight an average of six miles from the market would be \$210 for each quarter section of land. If this labor cost was reduced from twenty cents per mile to seven cents per mile it would be a saving to every 160 acres of land of practically two-thirds of this \$210, or \$140. Estimating four farms to the section, there would be a saving of wagon freight alone, to say nothing of the pleasures of having good roads, of \$560 a year, which saving in ten years would build a mile approximately of the best permanent road fronting each of these farms. If one wanted to content himself with petroliitic or sand clay roads,

which are probably or almost the equal of macadam when properly constructed, these roads could be constructed and maintained for ten years for considerably less than the saving on moving the freight alone.

In addition to this, every acre of land fronting on a permanent road would be enhanced in value anywhere from \$10 to \$25 per acre.

SOME EXPERIMENTS.

Good roads are as necessary to agricultural prosperity as air is to life. A country cannot prosper without transportation facilities of all kinds adequate to handle its products in a prompt and economical manner. This applies to all kinds of transportation. So long as this rule of growth is applied to railroads even the most stupid agree, but when it is applied to wagon roads over which three-fourths of the railroad tonnage moves you will find that many men who are ordinarily shrewd fail to see the great need of good permanent wagon roads. Somehow they cannot imagine a good road—a road different from those they have always used. Within a few miles of Fremont there was a stretch of one mile of sandy road—so sandy that about one-third of the automobiles would get stuck in the worst place. This piece of road is a part of the famous overland trail. For sixty years poor dumb beasts struggled through that sand with heavy loads. For sixty years men lived along this road and drew their crops to market over it. Children were born, lived long lives, and died alongside of it without ever seeing it worked. Now and then some one more public spirited than the average would dump a load of manure in the worst sand which was found to do much good. Beyond that no one troubled themselves about this famous road that was first broken out by great, swaying, creaking teams of oxen bound for the Golden Gate. Last fall, thanks to our inheritance fund, we spent \$1,750 on that mile of road and covered it a foot deep with gumbo, which had to be hauled less than a quarter of a mile. Now it is a fine hard dirt road with the surface nicely covered with sand that blew in—just enough to take the stick out of the gumbo. Now think of the sixty years dead and gone, and the men and women and the poor beasts of burden that have struggled through that sand—all for the want of a bagatelle expense of a few hundred dollars. How can one explain it except on the ground that we didn't know—we didn't understand—we didn't get around to do it? But the road is fixed now, which could have been fixed by any of the fifty road supervisors that have come and gone had anyone told them how to do it. Now a farmer can haul twice as much grain to market as he could before the sand was covered. In other words, the cost of wagon freight passing over that is cut half in two at one stroke. It doesn't require a philosopher to see this argument.

Nor is this all. For sixty years a great hill obstructed the trade relations between Dodge and Saunders county—the Platte river bluffs; but last fall, thanks to the law that permits a city to levy for road improvements outside its limits, this hill was cut down, the grade greatly reduced and the surplus dirt was used to build a good grade over the sandy drive

road to Fremont. This road was so bad the farmers living near Fremont were turned to other towns that were blessed by nature with better road conditions. The natural obstacles are now nearly removed that the river crossing can be counted only as a trifling barrier to good trade relations.

Lying north of Fremont is a good grade across the valley to the Bluffs which Fremont has kept in shape with a King drag, but portions of this road was of very poor soil—gumbo—which was most difficult to keep in shape in rainy weather. Last year we built a mile of sand-clay road over the gummiest part of this road under the direction of the Government Good Roads Department. This road is now almost as good as a brick pavement in Fremont, and it will grow better every year as it settles and the weak spots are all worked out by securing the correct mixture of sand and gumbo. Gumbo and sand are ideal materials for a sand-clay road.

These examples are working wonders in converting our people to the value of good roads. This, too, in the face of the usual short sighted folk who prophesy failure while the work of improvement is in its formative period. These criticisms are often made by bright men and thru the public press which leaves many people who do not know the real facts in doubt as to the value of the improvements.

But a farmer with a heavy load struggling through wet and sippy roads is converted as soon as he strikes this sand-clay mile that the rain has not disturbed. There his load rolls over a hard sand-clay mixture almost equal to a pavement, and since the sand prevents the clay sticking to the wheels, which would cause ruts, the road is packed harder every time a wagon passes over it. All that is needed to keep it perfect is a drag to keep the surface smooth and rounded so it will pack evenly all over, leaving no depressions to hold water.

It was most startling during the construction of this road to listen to the criticisms of men of good average sound sense. Every man using this road could remember when the gumbo was rutted half hub deep and each wheel of his wagon carrying fifty to one hundred pounds of gumbo between the spokes. Yet on those fine summer days when all roads were good he could not see the sense of working six inches of sand into the surface of this sticky mile of road. So he would swear and talk about it all day around town telling how the road was being ruined. Now one would think that a man with any observation at all would have seen the wisdom of mixing sand with gumbo even if he knew nothing of road making. But it seems that such an assumption is wrong. Nothing but an actual demonstration without cost to the average users of the roads is sufficient to make good roads enthusiasts out of them. It is now a settled fact in the minds of many people who have seen with their own eyes these experiments, that all a clay road needs is a little sand, and all a sand road need is a little clay to make them good roads when properly handled with a King drag. Think what it would have meant to them in labor had they known this fifty years ago?

But the big idea of the value of good roads is coming through.

Everywhere the people are discussing the subject, and tomorrow we will wonder why it was ever necessary to produce facts to back up arguments in their favor.

GOOD ROADS AS A BUSINESS PROPOSITION.

BY PROFESSOR GEORGE R. CHIATBURN.

Many of the most important things in the world cannot be measured by the ordinary medium of exchange. For example, good health, the air we breathe, the education we get in the common schools, the roads we travel upon. We know and realize that poor health is a direct source of expense and indirectly the cause of great money losses. Men have given thousands of dollars to prevent the erection of high buildings which would cut off the supply of sunlight and fresh air. The lack of an education is so great a handicap to the individual and so detrimental to the welfare of the nation that we pay our biggest taxes to keep up the school. Bad roads are stagnation and even death to trade and commerce, resulting in large losses of time and money. While we realize all this—the great blessing that comes with the enjoyment of these things and the serious disadvantage their absence means, we are not sufficiently acquainted with the underlying data and do not well enough understand the intimate relationships existing between the various interests of life to set a definite value in dollars and cents upon any one of these useful and necessary elements. In fact they can not have the same value for all persons. Local conditions, individual differences, sentiment and many other elements must enter into any one's estimate of what a thing is worth. But notwithstanding this many efforts have been made by road economists to evaluate the benefits of good and the losses due to bad roads. For instance, the United States office of Public Roads several years ago published a bulletin in which an effort was made to show that the cost of hauling on the country roads was annually about \$900,000,000; and that with uniformly good roads there might be a saving of over \$600,000,000. Prof. Chase, of our own state, makes a very plausible calculation to show that the average Nebraska farmer would save each year \$147 if all the roads leading from his farm to his market were dragged after each rain. He also calculates that the average farmer would make a further saving of \$30 per year by using broad tires upon his wagons.

The chief value of good roads is not in the actual saving over bad roads in dollars and cents, but they are desirable for the same reason that a man buys a carriage or a carpet; that is, they appeal to ones desire for comfort, for beauty, for pleasure. In an early day Nebraskans lived in sod houses, they could do so today if they so wished. A man could go to church wearing overalls and jumper but he prefers other styles of clothing. In a great many things economic considerations are of minor importance. But as I am asked to speak upon Good Roads as a Business Proposition, I shall mention a few economic advantages.

Good roads decrease the cost of transportation by allowing larger loads to be hauled or by a saving in time. It is upon this argument that Professor Chase's calculation mentioned above is based.

Good roads save in the wear and tear of wagons, harness and horse-flesh.

Good roads and the possibility of daily marketing allow the cultivation of crops not otherwise profitable—of intensive farming, if you please. I have known whole families to support themselves upon small patches of five or ten acres by gardening. Other crops would require forty acres and still others one hundred sixty acres. As a rule the smaller the number of acres required to support a family the more perishable the crop raised and the consequent greater need for good roads and quick marketing. The same rule applies in mercantile pursuits. Novelties that are perishable or liable to go out of style and left on the merchants' shelves bring the greatest profit, while the staple article that is good year after year is handled upon the smallest margin. The safer the investment the smaller the interest charges. Still few large fortunes are made without assuming some risk. We occasionally read of fruit crops bringing \$500 per acre; strawberries, water-melons, tomatoes, like high returns. Ordinarily with such crops the risk is great. Early frosts, insects, drought, glutted markets, and bad roads may cut down the profits. The safer we can make such crops by improved roads and stable markets the more persons will go into this intensive farming. The rural districts due to the combining of farms brought about by the use of improved machinery and the prosperity of the farmers, are decreasing in population. Make it profitable to diversify farming and raise more perishable crops and instead of farms growing larger and the population smaller, the farms would become smaller and the rural population larger.

Good roads give a wider choice in the time of marketing. Taking this in connection with the possibility due to good roads of the rural delivery of mails, making it possible for the farmer through his daily paper to keep in touch with the markets and take advantage of high prices, may mean considerable to the farmer in the course of a year.

From the report of a first assistant postmaster general we quote: "This increase of the value (of farm lands reached by rural free delivery) has been estimated as high as \$5 per acre in some states. A moderate is from \$2 to \$3 per acre. In the western states especially, the construction of good roads has been a prerequisite of the establishment of rural free delivery service. Better prices obtained for farm products, the producers being brought into daily touch with the state of the markets and thus being enabled to take advantage of information heretofore unattainable." And then he forcefully adds: "To these material advantages may be added the educational advantages conferred by relieving the monotony of farm life through ready access to wholesome literature and the keeping of all rural residents, the young people as well as their elders, fully informed as to the stirring events of the day. The moral value of these civilizing influences can not be too highly rated."

But how will all this affect the urbanite, the business man of the town? In various ways, almost too numerous to mention. Savings in transportation will be more or less equitably distributed among the producer, middle men and ultimate consumer. Each will receive a portion. But suppose the whole or a major part remained with the farmer. As his profits increased so would his expenditures; he would buy lumber, nails, etc., to build larger and better barns and houses. He would install the modern conveniences, water, light, heat and sanitary equipment; he would buy a new range for the kitchen, a new carpet for the floor, new furniture for the parlor, china and silver for the table, a piano for the daughter, a gold watch for the son and an automobile for the whole family. A general increase in the prosperity of several members of a community is bound to make itself felt throughout the entire community. Then again, naturally, merchants want trade, it's the way they make their living. Usually the poorest roads are just on the edge of town where a large volume of traffic converges to enter the city. The citizens of the municipality should see that these poor places are made good, for every good road leading from town is a hand stretched out to welcome and invite trade. A single mud hole might be the means of turning much traffic to a neighboring town, thus unduly building it up at your expense.

Because marketing of crops must be confined to periods of good roads, there is at such seasons a glut in the market and a consequent reduction in prices paid the producer but usually no corresponding reduction to the consumer. Warehouses and elevators have to be built larger than would be necessary were roads uniformly good the whole year around. A greater number of railroad cars is necessary to take care of the congested traffic, only to lie idle on side tracks in seasons of bad roads. Interest and overhead charges upon these extra buildings and equipment must eventually be paid by the producer and middlemen and consumer, reducing the profits of the first and second and increasing the expenses of the last. Not only elevators and railroads feel the depression of bad roads, but all commercial and financial interest is affected. The United States is said to be "handicapped in all the markets of the world by an enormous waste of labor in the primary transportation of our products and manufactures, while our home markets are restricted by difficulties in rural distribution which not infrequently clog all the channels of transportation, trade, and finance."

Two farmers live some distance apart. The first devotes his time to dairying and makes butter and cheese, the other does not wish to bother with cows so raises grain. The first man says to the second, "I need your grain, you need my butter and cheese; if you will build a good road between our farms we can do business with each other." Do you not think the second farmer would insist on the first helping to construct and maintain that road? Ridiculous as the proposition of this farmer seems, that is the attitude of many merchants, the railroad or

other business and professional men of the city. Here is a merchant with a stock of goods; he wants the farmer to come and buy his goods, but he is not interested in the roads over which the farmer travels to reach his store and seldom thinks of him except when he pays his taxes; then grumbles because of the amount of the road and bridge tax. He virtually says to the farmer, "I have the goods you want, you have farm products I need; if you will build a road and keep it in good condition I will sell you my goods and buy yours." And he is more magnanimous, he further says, or his actions imply, "I will drive for pleasure upon the roads you have made and kept smooth," and he puffs himself up and pats Mr. Farmer on the back and says, "You are doing a good thing for the country; your savings because of these roads will be several times their cost," never once thinking that the town man is also reaping financial benefits because of the farmers' energy. On the other hand, the farmers should not expect the city man to stand all the expense for public improvements, public utilities and public welfare associations. Only a short time ago I heard a country merchant complaining that while the farmers of his community had grown more wealthy than the average merchant, they refuse to give of their wealth to keep up the village church, to support a lyceum bureau, or even to pledge beforehand a small amount to secure the success of a farmers' institute. He said they, the farmers, expect the village merchant to do all these many things that make for the social uplift of the community and still sell them goods at prices quoted by mail order houses in distant cities. It is a question of common fairness and the square deal. Each member of a community whether he live on a farm or in the town should be willing to share in the responsibility and expense of those agencies which make for the best interest, financially, socially or educationally, of the public at large.

While I personally do not own an automobile, or at present a horse or any other thing that uses the road except the two feet that I was fortunate enough to be born with, I nevertheless do not feel it a hardship to pay my poll or road tax. Everything I consume in my family has in one way or another to pass over the roads, and the better those roads the cheaper and surer the transportation, the more economically and efficiently will I be served.

To sum up then, this essay on the subject your secretary has assigned me, "Good Roads as a Business Proposition," let me say good roads constitute a profitable business proposition to the farmer because he can raise more remunerative crops, the cost of hauling will be decreased, he can sell upon the high market, his children can get to school, his family can attend church, his physician will be constantly at hand, he will have better mail service, more social life, his boys and girls will be contented to remain on the farm, and the material increase in the value of his land will be a measure of it all.

To the railroad man, because improved roads mean greater produc-

tion, consequently more traffic, prevent freight congestion, promote new industries, and attract tourists.

To the publisher or editor improved roads, by making possible rural delivery, increases his circulation, and because of greater circulation his advertising columns are more sought after, and if advertising pays, and it no doubt does, all commercial interests are stimulated, the improvement of roads thus becoming the most important economic question of the age.

To the proprietor of a hotel, because improved roads mean more tourists and more commercial travel. New England is said to receive \$60,000,000 annually from tourists alone. California values her tourist crop at \$15,000,000 and thinks it will be doubled as soon as her fine system of trunk line roads, for which the state recently voted \$18,000,000, is completed.

To the commercial traveler, because with an automobile and good roads at about the same cost as for railroad fare he can double the number of towns he makes per day.

To the user of an automobile, and the number of these is rapidly increasing, because he can get the benefit of his machine every day in the year, the time consumed on the road is minimized, longer tours may be projected with assurance, repair bills are decreased, larger loads may be carried, deliveries made quicker and more regular, and the general cost of transportation of passenger or freight reduced.

To the manufacturer or dealer in wagons, buggies and automobiles, because every mile of improved road means a greater demand for these vehicles.

To the manufacturer and dealer in road machinery and road materials, because the improvement of roads means a greater demand for these things.

To the dealer and manufacturer in all sorts of building materials and supplies, hardware, furniture, etc., because increased prosperity of farmers and other merchants means a demand for newer, larger and better houses, barns, sheds; for modern and efficient conveniences, appliances and furnishings.

To the manufacturers and dealers in dry goods, groceries, jewelry, drugs, musical instruments—in short, to all forms of mercantile and manufacturing business, because good roads are commercial feeders and every improvement in these roads means greater prosperity of the community, and greater prosperity raises the standard of living, producing new wants which must be supplied.

There is no one thing unless it be the public school that is of such universal interest to the people of the state as the common road. Every citizen, every organization, should see to it that our road laws are made equal to the very best. Nebraska can and should stand as high in the matter of road improvement as she does in the matter of literacy. Let us show our intelligence by enacting progressive and efficient road laws

The people can get what they want only by stating unequivocally through resolutions of organizations such as this, and by personal demands upon our legislators our needs and desires. Bring influence to bear by argument and proof that the money spent in road improvement is an investment which will return large annual interest in reduced costs of transportation, greater freedom of traffic and travel, closer social intercourse between neighbor and neighbor, between town and country, and increased joy, comfort and happiness.

REPORT OF THE DRAINAGE DEPARTMENT.

There is a great deal of land in the state that should be improved by drainage, both by open ditch and tile. The purposes are: (1) To relieve flood situations; (2) to carry the water off marsh and swamp lands; (3) to lower the water table. Drainage is not confined to bottom lands, nor to any one soil region. It is being installed on the Loess Plains and in the Sand hills as well. At present dredges are opening up canals on bottom lands along the Missouri, Logan, Elkhorn, Platte, Salt Creek, Little Nemaha and the Big Nemaha.

The Conservation Commission is now mapping the wet lands of the state. The Conservation Congress working in conjunction with the Commission has organized a Drainage Department with J. C. Robinson, president; L. W. Chase, secretary, and the following committeemen: D. V. Stevens, R. E. Grinstead, J. B. Weaver, R. B. Snyder, N. B. Randall, E. W. Badger, Joseph Roberts, A. N. Munn, J. P. Latta, E. C. Simmons, and H. T. Vauck.

Prof. L. W. Chase, secretary, reports the Drainage Department of the Conservation Congress as follows: The drainage section of the congress met on the afternoon of the first day's session. The meeting was well attended and a great amount of enthusiasm was shown.

Mr. L. C. Lawson, president of the Nebraska Farmers' Congress, called the meeting to order and in a very good natured and spirited manner kept the session running along smoothly. Mr. F. H. Allen, of Kinsman, O., a practical drainage engineer and farmer as well as extension man for that state, was the principal speaker of the afternoon. Mr. Allen illustrated with some of the most simple and yet plain illustrations how drainage affects the soil during both wet and dry seasons. His talk in part was about as follows:

"Tile drain the land, thereby getting all surplus moisture out of the soil and at the same time obviate the nuisance of open ditches. It is not essential that land be so wet that water stand upon it, either above the surface or within the surface, for it to be benefited by tile drainage. The water in traveling down through the soil to the tiles leaves paths for plant roots and low forms of animal life to work in. The roots dry and decay, leaving pores in the soil. These pores, formed principally

by insects and roots, become filled with air; rain falls upon the surface of the ground, sealing up the upper pores of the miniature channels, then the rain gradually settling through the soil forces the air down through and out by means of the tile. After the water has settled out again, air enters the pore spaces, more water falls and forces the air through the soil again. The operation is continually passing on, thereby aerating the soil. It opens the soil up so that it holds more moisture than previously. It becomes so porous that the roots can work in it far better than before drainage. As a proof of this statement that drainage aerates the soil, causing it to expand and become porous, Mr. Allen cited the audience to many illustrations of where tiles had been laid in the bottom of siews for a number of years and that although the soil at one time just above the tile was lower than that on either side of it, the aeration incident to tiling caused the surface to stand from five to eight inches higher over the tile than on either side.

"It is shown by laboratory experiments that soil finely pulverized or plowed holds more water than packed soil. As a rule, land too wet during part of the year has a very hard packed soil; consequently it does not hold very much water during the dry part of the season. When such a soil is drained it becomes so much more porous that it holds a much greater quantity of water. This is the explanation of why drained land withstands the drouth so much better than that undrained."

After Mr. Allen's speech, Mr. Dan V. Stevens produced quite a little enthusiasm by giving his experiences on his land west of Fremont. Mr. Stevens bought a farm in that part of the state and soon after learned that it was entirely too wet; having heard of drainage, he investigated the matter and got some drainage men to come up from Missouri and put in a drainage system for him. This system was put in with the tiles about 200 feet apart, and they were not well placed, consequently the benefits to Mr. Stevens' farm were not great. However, he did not become discouraged, but soon after got an engineer to go over the work, lay out the system again, put in a larger outlet ditch and lay as many more tile. The result is that Mr. Stevens has made one of the best producing farms in the state out of one which was of such a nature that it was nearly impossible to get onto the fields part of the year. Mr. Stevens thought that his home place was one of the best illustrations there ever was, of endeavoring to do drainage without a drainage engineer in charge of the work. Last year was the first time the land had been cropped to corn since the tile was put in. The yield from 125 acres averaged something over seventy bushels to the acre.

Mr. R. E. Grinstead, one of the oldest engineers in the state, and a man who has absolutely given a great deal of his time for the benefits of drainage, told what had been done in the southeastern part of the state along the Nemahas. The work in that section of the state is somewhat different from that referred to heretofore. It is concerned principally in straightening and opening of stream channels and may

prove of more value to the state as a whole than the matter of tiling. It will prevent overflows and make land, unusually fertile, worth from \$125 to \$150 an acre. Furthermore, a stream crossing such a farm should traverse it in the very shortest possible path, thereby permitting the farmer to use far more of this valuable land. There is no doubt that there is more of such bottom land in the state to be benefited by the straightening of streams than there is that can be irrigated. The sooner the farmers learn this the sooner the men who own the creek bottom farms will commence to pay interest on the money they have invested.

At the close of the session Dr. D. V. Stevens took the chair and the State Drainage Association was organized with the following officers: J. C. Robinson, of Waterloo, president; L. W. Chase, Lincoln, secretary.

After the drainage session adjourned, Mr. Allen went out over several farms in Lancaster County and pointed out several farms, both smooth and rolling, that might be improved for more than the cost if tile drained.

REPORT ON THE SANDHILL REGION.

The Soil Survey will finish its preliminary survey in this region within three or four years, mapping the dry valleys, wet lands, lakes and dunesand lands. During this time a committee composed of R. J. Pool and assistants will make special studies of sandhill forage with the idea of finding a desirable substitute for the lean bunch grass. Dr. R. H. Wolcott will continue his study of the lakes, making analyses of the water and determining the nature and amount of fish food. The problem concerned with the fencing and control of the land should be solved by the ranchmen.

Your committee on the Sandhill Region respectfully submits the following statement:

1. The sand hills are primarily grazing lands, and as such they should be developed and improved to the fullest possible extent.
2. Grazing problems in the sand hills demand immediate scientific investigation.
3. The valley and hay flat of the sand hills are fertile, and it is believed that much of this land may be made to yield valuable products by certain cropping systems if properly managed.
4. Methods of conserving and improving the fertility of both grazing and agricultural lands should be put under immediate investigation and practice as soon as practicable.
5. Landowners should co-operate in working out grazing principles in order that the range may be conserved and made to yield its largest returns.
6. Landowners and corporations should co-operate with scientific men in a study of shifting sands and methods for their control.

7. Many sites in the hills will support stands of certain timber trees. The cottonwood (grown on valley land) should be planted and managed by the woodlot method. Numerous cases of successful cottonwood plantations have been recorded.

8. Plantations of other trees, especially Scotch Pine and Jack Pine, should be placed under experimentation by landowners in co-operation with the United States Forest Service.

9. The fish and the game of the Sandhill Region should receive very careful study in order that this resource may be developed and conserved.

10. The different classes of land and soil in the Sandhill Region should be surveyed, mapped and described.

REPORT OF THE SPECIAL COMMITTEE ON LAND EROSION.

One of the large problems in our state is that of checking the erosion of soil and land by wind and water. A committee, composed of N. A. Bengtson, P. B. Barker, Mr. Filley, L. S. Herron, R. J. Scarborough and C. W. Weeks, have begun a careful study of soil wash and land erosion. Their report to the Conservation Congress is condensed thus: Unchecked water erosion is a menace to the continued prosperity of the southeastern half of the state, an area of approximately 40,000 square miles, and to a lesser extent in the High Plains section of the West. The muddy streams of eastern Nebraska are notorious, for they have impressed visitors with their lack of beauty. Our own people have become accustomed to them, have accepted them as a matter of course, and have not studied them from an economic standpoint. Until recently we have not awakened to the fact that every cubic foot of muddy water that empties into the Missouri or its major tributaries represents a loss of part of the very basis of our wealth.

Erosion caused by running water may be outlined under three heads:

1. The cutting of the banks by streams.
2. Gullying of uplands and slope lands.
3. Soil wash from slope lands, whether steep or comparatively gentle.

The extent of erosion by streams cutting their banks is not always appreciated. Fairly careful studies made of the work of the Missouri river at four places along Nebraska—Santee, Decatur, Bellevue, and Peru—show a loss of at least 5,640 acres since 1880. This land was all high grade, ranking with the best in the United States in productivity. Thus a money value of about \$600,000 has been suffered in four places along our border. Similar losses are annually occurring at other places along the Missouri, and along the Republican, the Blues, Nemahas, Loups, and Elkhorns. The control of channels is a problem deserving attention.

Gullying of lands is a serious problem, particularly on that of glacial

origin, as the hilly land of the southeastern part of the state. Thousands of farms in Richardson, Nemaha, Pawnee, Johnson, Gage, Otoe, Sarpy and Douglas counties are being scarred by the encroachment of gullies and ravines. The southern counties have similar conditions. As yet the relation of soil type to erosion is imperfectly understood, but many truths have been worked out. Toward the solution of these problems the committee suggests the need of studying carefully the soil texture that will offer effective resistance, the maintenance of organic matter in the soil, rotation of crops, cultivation of legumes, proper soil tillage, contour cultivation, and the use of cover crops such as grasses, alfalfa, shrubbery, fruit trees, and forest trees, should be carefully studied, for it is known that these are effective weapons against soil erosion. There should be more effort to check gullying by the use of straw, brush, etc.

Soil wash from steep slopes is another phase of the problem that needs attention. Outside of the sandhill district there are few counties that do not have many steep hillsides under cultivation, where erosion has removed the soil to the extent that common agriculture is unprofitable. The presence of barren hillsides in Nebraska is generally unnecessary, even criminal. Where slopes are too steep for retention of soil under intelligent management, the land should be used for grass, fruit or forest trees, according to conditions. Education along these lines should be undertaken by this congress.

Wind erosion is active in the areas of lighter soils, particularly in the western part of the Loess region, in the transition zone from Loess to sand hills and high plains, in the Sandhill Region and in many parts of the high plains. As examples of the first class may be mentioned the counties of the southwest extending from Red Willow and Furnas to the east and northeast, including such counties as Clay, Fillmore and York; of the second class, Custer, Greeley, Holt and Antelope; of the third class, the counties in the Sand Hill country; and of the fourth class, Banner, Box Butte and Sheridan. In these regions the same problem is presented; *i. e.*, how shall the soil be held in place, resistant to the shift of the wind? The answers will vary with soil and climatic conditions. Unorganized efforts have given some hints of the solution, in the protection afforded by proper tillage, cover crops, and grasses.

We have thus but outlined the field. We trust that this statement will cause you to realize the need of devoting careful study toward the solution of the problem of soil erosion.

REPORT ON FORESTATION.

The congress committee includes C. E. Bessey, C. J. Ernst, A. A. Tyler, O. L. Sponsler, E. F. Stephens and R. V. Pierce.

Report and recommendations:

1. One-fourth of the area of Nebraska should be covered by forests.
2. Every community should preserve considerable areas of its natural forests.
3. Every community should seek to enlarge the area of planted forests.
4. Every wealthy landowner should be encouraged to preserve some portion of his natural or artificial forests.
5. Every farmer should be encouraged to make the planting of forest trees one of his annual duties.
6. Even the owner of a small town lot should be encouraged to plant trees upon his little plot of ground.

In justification and explanation of the foregoing principles we submit the following additional statements:

A forest area is by no means so much idle land, but is constantly accumulating values, just as is done by our savings banks.

Properly handled, a forest area will maintain itself for centuries, yielding an income in timber and fuel, to say nothing of the protection from heat and cold it affords to man and beast.

In nearly all parts of the state, especially in eastern Nebraska, there are many remnants of the natural forests, often near enough considerable towns, which should be set aside for public parks and playgrounds. Even in the country there is no valid reason why the county or the township should not become the owner of certain forest areas for the use of the public.

We here urge that planted parks be made by every prairie community, beginning with the school grounds, the church grounds, and the roadsides, and eventually including more formal parks for the general use of the whole community.

We call attention here to the worthy example of J. Sterling Morton, whose generosity has preserved to us the beautiful natural forest area at Arbor Lodge, and commend it to the men of means who have similar opportunities. Let there be parks innumerable in every portion of Nebraska bestowed in like manner.

We specifically recommend that all slopes, all rough lands, all ravines, all lowlands subject to frequent floods, and many barren hilltops in eastern Nebraska be planted to forests; that in the Sandhills some valleys and large hill areas be planted with pines, while the rougher stream borders be planted mainly with native hardwoods; and that in the western Highlands the mountainous slopes be planted with pines and the stream border be planted with hardwoods, mostly of the native species.

REPORT ON FRUIT RAISING.

The committee, consisting of C. G. Marshall, C. H. Barnard, R. F. Howard, Geo. A. Marshall, and G. S. Christy, reported the following:

"The experience of fruit-growers in general in Nebraska has proven the natural conditions favorable for fruit production in the state. Pioneers found splendid wild fruits growing along almost every watercourse, extending out into the state where protection from forest fires was afforded. They found wild plums, grapes, crabapples, raspberries, blackberries, etc., growing in abundance and their quality being even better than wild fruits of other sections. The varieties were also greater, and aside from the annual prairie fires, conditions seemed ideal for the growth of these wild fruits."

Gen. J. C. Fremont, the pathfinder, noticed this indication of natural and favorable conditions for fruit development, and wrote:

"The best indications of the richness of the Nebraska river (Platte river) country is the luxuriance and prodigality of wild fruits, found growing wherever there is the slightest protection of trees. Our men gathered and enjoyed more than twenty different varieties of plums and grapes, all very much finer than any we had ever seen before. There were also many varieties of blackberries, raspberries, dewberries, and other kinds of fruit new to us."

General Dodge, in one of his reminiscences of the building of the Union Pacific railroad, said: "We were seldomly without an abundant supply of some sort of wild fruit during the time we were working in Nebraska, throughout the season from June till September, and from the Missouri river to the Rocky mountain foothills. The rich lands produced the finest wild fruits we have ever seen, with the finest flavor and in the greatest varieties."

Since that time there has been great development in fruit culture in the state, and today almost every farm-house has its orchard and fruit garden. Many mistakes have been made and many orchard and small fruit plantations have not been profitable to their owners. We find, however, that the natural conditions are not responsible for these conditions, but that lack of information as to varieties best adapted, location, culture, etc., and neglect of these important factors, which are necessary to successful fruit culture, are usually responsible for failures.

On the other hand, we find that in practically all of the state where proper varieties have been planted on suitable locations, and where reasonably good care has been given, that apples, grapes, cherries and other fruits grow remarkably well and bear fruit of good size, color and quality.

Plantations of commercial proportions have been very profitable undertakings for those who have given the business the required attention. We find this true, especially in the older counties along the Missouri river. Orchards, vineyards and small fruit plantations are proving exceedingly profitable in this section, and much of this land is better

suitable for fruit culture than for any other use. The soil is rich in potash, phosphates and other elements favorable to the best development of both wood and fruit. Its texture is such that it readily absorbs the water of heavy rains and melting snows. Then, due to its sponge-like nature, it is able to hold sufficient moisture in reserve. The topography of the land also provides for good drainage, both soil and air, which are important factors in fruit production.

We believe this section of Nebraska is unexcelled, everything considered, by any and equalled by few of the widely advertised sections of the country for commercial fruit growing; that with the same energy expended in growing apples and some of the small fruits commercially, better returns for the investment may be secured than is secured in many of the famous fruit sections of the country. The advantage of being from 800 to 2,000 miles nearer the principal market than western fruit sections, thereby saving the growers much in freight charges and loss from the long haul that the western fruits are subjected to, are also great advantages to the Nebraska growers.

As a result of the success of a few commercial apple growers in this section who have practiced thorough and up-to-date methods of handling their orchards, a revived interest in this business is shown and indications now point to more thorough methods being practiced in handling the old and heretofore neglected orchards and to more planting of orchards for commercial purposes. During the seasons of 1909 and 1910 growers reported returns of from \$100 to \$1,000 per acre from their orchards.

Vineyards and small fruit plantations have also proven very profitable. Numerous instances may be cited where such plantings have returned from \$100 to \$800 and \$1,000 per acre.

With the natural conditions favorable to fruit growing in this section, growers by observing four important factors; *i. e.*, cultivation, pruning, spraying and heating, can make crop failures very rare and the business a source of great profit.

We recommend that this congress go on record as favoring and encouraging the development of the fruit industry in eastern Nebraska to its fullest capacity, and that the attention of the farmers and growers of fruit in general be called to the much neglected condition of the orchards and fruit plantations of the state and that they be urged to give better care and culture to their orchards and fruit gardens.

REPORT ON SEED SELECTION AND DEVELOPMENT.

E. G. Montgomery, John Aye, R. S. Griswold, H. Hogue, Wm. James and Dr. E. M. Wilcox, the committee for this department, made the following summary report:

The Nebraska cereal and forage plants are now producing annually a great wealth. It is possible to increase, and probably double this production within a generation by use of the best methods. By the develop-

ment and use of better seed we increase the profit of production without increasing the cost per acre, and this becomes a matter of great importance in a new country as soon as the margin of profit becomes low. We are approaching that condition in Nebraska, which accounts for the new interest all over the state in better grades and qualities of seed. It is probable that scientific improvement of seed can only be undertaken under the direction of scientific experts, but when the stock of this seed is once secured, its dissemination will depend on a large number of pure seed farms to be scattered over the state and be under some form of official inspection board for the benefit of the growers, to enable them to maintain the quality of their seed, and for the benefit of prospective buyers. It would also be a great help in carrying on a campaign for better seed and grain of better quality if a universal reform could be instituted by the buyer in the custom of paying a flat price for all grades of grain at the local market. Let the interests give the seed growers and the Experiment Station proper support in this matter and progress will be carried on much more rapidly than it is possible at present. Every man in Nebraska is either directly or indirectly interested in the problem of seed selection and development, and if proper support be given by all interests, Nebraska not only will have no difficulty in conserving her present enormous resources in cereal and crop production, but there will be greater production within the next two generations.

REPORT ON FARM ANIMALS.

The congress committee, consisting of H. R. Smith, J. A. Ollis, Jr., E. Buckingham, J. H. Gain and F. C. Crocker, reported the following:

Your committee on farm animals deems it wise to make the following recommendations, all of which are of vital importance to the development of the state in general and the livestock industry in particular:

1. **The land** in many parts of the state where a continuous crop growing has been practiced now gives evidence of depletion. Methods should be at once adopted to restore such land to its original state of fertility to even make it more productive than it has ever been before. This can be done by the intelligent rotation of crops and by the feeding of a large part of the material grown to farm animals, thereby returning to the land approximately 85 per cent of the plant food removed from the soil. The 15 per cent lost from the farm in the form of meat can be more than replaced by the growing of clover and alfalfa in the rotations. Nebraska needs many more farm animals than are now to be found within its boundaries to consume such hay and a large part of the grain grown on the farms.

2. Not only can our land be made more productive by the keeping of a larger number of farm animals but the total revenue coming to the state can be increased if we ship out more animal products and less plant products, providing good methods are used in the conversion of

the raw material into the condensed product. To this end we recommend the larger use of improved types—animals which through generations of careful breeding possess inherent qualities that make them serve their purposes better and more economically than the unimproved. We need throughout our state a greater number of pure-bred draft stallions of good type and more that are sound—that may produce a more efficient class of horses to do our work and to sell to eastern markets. We would produce a better quality of meat in a shorter time if there were in the state a larger number of pure-bred beef sires possessing good size, conformation and quality; more boars capable of transmitting to their offspring size, thrift and quick-fleshing qualities, and more rams of mutton-producing tendencies. The increase in our butter output could easily be doubled if we could bring to our state more dairy bulls from heavy producing families, selecting from the offspring only the really profitable types of cows, which can be done by the use of scales and the Babcock tests.

3. In feeding our farm animals we could increase the yield of meat or milk from a given weight of food from 25 to 50 per cent by the general use of well-balanced rations. To this end we would recommend that a greater effort be made to get the information we now have before our people and to secure new facts, through experimentation, that may be applied with profit to the practice of feeding.

4. In eastern Nebraska the greatest hindrance to an increase in the number of animals kept on our farms is the lack of pasture. During the winter months we waste approximately two million tons of cornstalks. We could make this waste winter roughage offset entirely our shortage of pasture by preserving it in the silo for summer feeding, and we would recommend the larger use of silos as conservers of our food supply. A large part of the cornstalks could be preserved for fall feeding as shock corn. The complete utilization of this well-known by-product in one or both of these ways would add nearly \$4,000,000 annually to our state's wealth.

5. Alfalfa is proving to be wonderfully well adapted to the soil and climate of Nebraska. As a source of protein it is the best of all foods at prevailing prices. It is so valuable for supplementing our great corn crop that we urge strongly the extension of land devoted to this crop. This plant is capable of making Nebraska one of the wealthiest states in the Union if given the attention it deserves.

6. Your committee also urges a greater dissemination of information concerning the proper construction of farm buildings. Tuberculosis would be less prevalent in our herds of cattle if more attention were given to proper methods of ventilation. The sanitation of hog houses could be much improved. More attention should be given to the supplying of well bedded, comfortable quarters for all classes of farm animals. It will mean a better conservation of our food supply, because animals unduly exposed and compelled to stand in muck most of the time use more feed for a given gain.

7. The government land in western Nebraska could be made to support double the number of cattle and sheep it now supplies with grass if long time leases were to be made to ranchmen so that they could afford to build fences and adopt methods which would increase the yield of grass.

8. In the matter of diseases, it may be said that tuberculosis is now very prevalent among the cattle and hogs of eastern Nebraska. It is more prevalent in dairy herds and breeding stock of the beef breeds. The State Veterinarian reports that 28 per cent of the dairy cows supplying milk to our cities have this disease. In some of our breeding herds of pure-bred beef cattle as high as 50 per cent have reacted to the tuberculosis test. Ten per cent is nothing uncommon according to the report of the State Veterinarian. About 3 per cent of the hogs which come to our markets have tuberculosis and are condemned as unfit for food. This is approximately true of the cattle which are slaughtered in our packing houses. If cattle were sold subject to inspection this disease would be greatly lessened. According to our present system the packer stands the loss on condemned cattle and hogs, but he necessarily spreads this loss over his entire receipts, and the result is the owners of cattle free from the disease pay for diseased cattle owned by those who will make no effort to clean up until forced to do so by a system of selling subject to test. If we can lessen the disease among cattle we necessarily lessen it among hogs, for it is untransmitted from cattle to hogs. Our loss from swine diseases amounts to from 300,000 to 500,000 hogs annually, mostly from cholera. By the use of the government serum treatment it has been found in this state that 93 per cent of the hogs which have been exposed to the disease but not yet afflicted with it may be saved. The manufacture of serum should be greatly increased so that the loss from cholera may be reduced to a small figure.

There are fifteen states that now have laws providing for the issuing of state licenses to those stallions which are properly recorded in certain approved stud books. In fifteen of these states, provision is also made for a veterinarian's examination of the stallion in question. The laws of some of the states, notably that of Wisconsin, are so formulated that unsound stallions are disqualified. In other states, for example Kansas, unsound stallions are not disqualified, but the diseases are enumerated on the certificate which is posted for public inspection. Our Nebraska law and that of two other states makes no provision for an examination for soundness. Any stallion, therefore, properly registered, no matter how unsound he may be, perhaps possessed of diseases which are readily transmitted to offspring, is allowed to stand for public service. Unless this law is amended to require an examination for soundness, Nebraska is certain to be made a dumping ground for unsound stallions from states where they are disqualified for public service. It is recommended that the present legislature take some action to prevent this.

REPORT OF THE COMMITTEE ON GAME, FISH AND BIRDS.

Freely interpreted, the field assigned to this committee includes all the native animal resources of the state, and it may be said in regard to these that we know comparatively little about them, and we also know comparatively little as to their utilization. It is to be regretted that so many animal forms are being exterminated in the United States before any opportunity has been allowed to determine the possibilities of their cultivation and development. What has been done has shown that the cultivation of certain fur-bearing animals is feasible, and carried on under proper conditions by those who are skilled in this field, is highly remunerative; also that among our wild animals are those which can be regularly marketed and add greatly to our food supplies, while bringing in the aggregate large sums to those engaged in their collection and shipment. A score of years ago none dreamed of the wealth represented by the shells of our fresh water mussels, but today there has been built up on this a great industry. This committee would urge that this congress, and that the Conservation Commission endorse and assist as far as possible in investigations calculated to develop the extent of the native animal resources of the state and to place before the people of the state the possibilities offered by them.

It is true that the commercial possibilities presented by these resources are not at all comparable with those offered by the major agricultural industries of the state; but as it is not that which we earn but that which we save that makes us rich, as it is the by-products which furnish profit to many industries, as it is the extras which bring luxuries within the reach of many families, so it is that in the aggregate the development of many lesser resources all add greatly to the wealth of our state. And it is exactly such neglected sources of wealth, small though they may be individually and easily overlooked by those whose eyes are fixed on the larger things, but considerable in the aggregate, that conservation work finds its peculiar opportunity.

It should also be pointed out that among our native animals are such as are injurious, menacing either our health or our property, and in the interest of conserving both it is equally important that these forms be studied and proper means for their control and elimination be discovered and made known.

Our game animals are of great value to the state for the food they furnish to our people, for the opportunities they give for recreation and healthy exercise, and for their value to the state in attracting to it sportsmen from outside, who leave in the aggregate a considerable sum of money with us.

The ideal handling of the game and fish problem is such as tends to maintain the supply at a level, the amount killed being such as to absorb only the increase and not materially cut down the stock. If the stock be depleted, a closed season, systematic supervision, artificial propagation, the intelligent introduction of game birds, and the planting of fish, are the remedies. To this end we must have an efficient game and

fish commission. Such a commission is already in existence, but its efficiency is greatly reduced by lack of funds. The efforts of the state game and fish commissioners to secure the necessary support for their work should receive our hearty endorsement, and all those interested in the preservation and development of the game resources of the state should lend their active influence to secure the proper legislation.

We have in the center of this state in the sandhill region a vast territory which must in the nature of things be for many years to come sparsely populated, and which is capable of being developed as a great hunting reserve, a source of large revenue to the people living in that region. In northern Michigan, Wisconsin, Minnesota and other regions of the United States noted for the fishing and hunting which they afford, the caring for the visitors who come for these purposes engages the attention of the people for a considerable portion of the year, and affords a large increase to their annual income. If the people of the sandhill region of this state could be awakened to the possibilities afforded by the region, and, in co-operation with the State Game and Fish Wardens, would take steps to conserve and develop these resources in that area, they would lay the foundation of a large and permanent source of revenue which would be bound to increase constantly as our country develops and such areas become less and less numerous. The vast amount of game which these prairies afforded a generation ago is greatly reduced. The time is not far distant when in order to secure any hunting whatever it will be necessary to resort to such areas as the sandhill region of this state, and if the people of that area, by preventing interference with the breeding of the game birds during the breeding season, by preventing the shooting of immature birds and allowing no hunting until they are sufficiently strong that there is an even chance for the bird as against the sportsman, and by limiting the bag in such a way as to prevent danger of extermination, will anticipate that time and prepare for it, they will be conserving one of the most important natural resources with which nature has endowed them.

Nebraska is not a state in which fish abound. It is one, however, which as we increase the number of artificial ponds and the area of impounded water for irrigation and other purposes will afford constantly greater and greater possibilities for fish culture. The increasing value of foodstuffs in this country, and especially of meats, warns us that we must conserve every resource tending to increase such products. It is highly desirable that our people be made acquainted with the possibilities in the way of fish culture afforded by the opportunities referred to above, and that they be encouraged to make the greatest possible use of these opportunities.

The value of birds as insect destroyers has been emphasized so often that it seems unnecessary to go into an argument at this time to prove the point. We believe that we are all in hearty sympathy with every effort that may be made to protect our native birds, which are almost without exception beneficial.

In conclusion, we ask that this congress endorse the following recommendations:

1. We recommend to the State Conservation Commission that it give all reasonable aid and encouragement to investigations designed to discover and make known facts regarding both the beneficial and injurious animals of Nebraska, and particularly regarding our animal resources.

2. We commend the work of the State Game and Fish Commission and recommend increased financial support on the part of the state to carry on this work.

ROBERT H. WOLCOTT, Chairman,
 HENRY N. MILLER, State Game Warden,
 W. J. O'BRIEN, State Fish Commissioner,
 LAWRENCE BRUNER,
 GEORGE CARTER,
 DAN GEILUS,
 R. OBERFELDER,

Committee.

The attendance at the evening session of the first day was large, filling the lower floor of the large auditorium. There were addresses by Hon. Henry Wallace and Mr. C. J. Blanchard.

ADDRESS BY HON. HENRY WALLACE,
 President National Conservation Congress, Editor of *Wallaces' Farmer*.
Mr. President, Ladies and Gentlemen, and Farmers of Nebraska:

Students of living languages know that there is a perpetual change being made in the meaning and use of words; the more extensive the language the greater the number of changes. The meaning of words is changed, sometimes degraded and sometimes elevated. We drop out some words and introduce others and we give new meaning to old ones. In the early version of the English Bible in the new testament we find the following expression, "I, Paul, a rascal of Jesus Christ." I suppose it was so written because at that time servants were termed rascals. So we have the word "servant" now, instead of the word "rascal." There is not a person who can not prove everything right by quoting Scripture. "Let everyone speak," not his own but his neighbor's way. Then, we have another word, "weal." When that word was first used in our language it meant "welfare" but in modern times the meaning has been changed and the word "weal" has been changed into "wealth." The word "conservation" furnishes the finest example of the change in the meaning of words. You will look in vain in any dictionary for the meaning of "conservation" in the sense in which we conserva-

tionists use it. Dictionaries give it as the idea of saving from waste. The word "conservative" in politics stands for maintaining the statu quo. Some of them stand for retaining all that is good, another for giving another meaning. We have the expression "conservatory of music," the idea being to retain the science and the practice of that noble and beautiful art. Conservationists have put a new meaning in the word "conservation." They have not eliminated the idea of saving from waste, but the idea of a wise use. When we talk about conservation of water we don't mean that these streams shall flow on uselessly as they have done for thousands of years, but we mean that they shall be chained and put to work for humanity. We mean they shall not be absorbed by a few and made a mighty engine of a person of the many. [Applause.] When we talk about "conserving our timber" we don't mean that it shall grow on and on as it has been doing for thousands of years, not being improved; and when we talk about the "conservation of the forest" we mean treating it as we would a grain crop or as we would a herd of cattle. We mean disposing of the rot, dispose of a portion and keep the rest growing and always keeping the forest full. When we speak about "conservation of coal" we don't mean to retain it in the hands of the government, but we mean a division of it in such tracts that it can be mined economically and that it shall not pass into the hands of corporations who will use it for their sole benefit. We don't mean that one-third of it shall be taken and wasted. So, the word "conservation" has a variety of meanings, but they all come to the central fact, the wise and economical use of the resources of the government. We mean that the government shall not sell another acre of coal, nor give monopolistic rights on another stream of water; that it shall not allow the timber to be slaughtered and sold for the immediate benefit of the man who controls. We mean that ultimately the rivers of the United States shall be kept for a wise use and not allowed to fill up with silt nor allow all the mining places to go into the hands of corporations.

When President Roosevelt went down the Mississippi river it is stated that his boat was tied to a railroad track while he went ashore, meaning thereby, I suppose, there was no place where he could land, it having been given away to corporations. That is what we mean when we put a meaning into the word "conservation," that it is to make a wise provision for the use of natural resources. When a new idea takes hold of men they must either coin a new word or put a new meaning into an old one, and is just what we have been doing in the use of the word "conservation." That is what we conservationists stand for, meaning on the one hand to avoid the waste, on the other hand to avoid monopoly and that it shall always be used for the future as well as for the present. We will soon get to a point where we will see that conservation does not limit itself to these resources to which the government has not passed title. It is nation wide.

When the government has once passed the title the duty of conservation belongs to the states, and the states will discover that they have the power to conserve when the people become filled with the idea. So it is that when a man has title to a farm, it is not absolute title—he is a trustee and he must use it for the benefit of his fellows. I do not know how it is here in Nebraska but over in Iowa we don't allow thistles to grow along the roadside nor in a man's field, for thereby it becomes a menace to the neighborhood. On the same principle they don't allow a man in the city to build a wooden house in the business district. You can not build a wooden sidewalk, you must make it of brick or cement. And they are getting to the point where they don't want a man to spit on the street. [Applause.] Why? Because when consumptives spit on the street more damage is done to the people in the spread of tuberculosis, except it might be out in the country. So, the state has the power to conserve. It is just and it is right, gentlemen, whether we practice it or not. Every man is his brother's keeper. It is the old story of Cain and Abel. Cain denied that he was his brother's keeper.

I will state to you, gentlemen of Nebraska, that Nebraska has two great assets, and I will now speak about these tonight, first the fertility of the soil, second, the efficiency of your men and women.

Farmers complain of the sins of the lumbermen; that they have gone into the woods and picked out the best timber, took the best part of the best trees and left the rest for the fire. You have done the same thing yourself. Bring no accusation against the lumbermen. You never bought a stick of lumber in your life in any lumber yard but what you paid far less for it than what it cost to grow it. You never will in all your life buy a stick of lumber but what you will get it for less than what it costs to grow it. Lumbermen have just gone in and selected the best trees and left the rest to go to waste, which waste is now considered very good lumber. You have done the same thing.

Early in the nineteenth century came the soil robber. This land naturally came into the possession, first, of the pioneer, then the man who farmed it to make money and to live easy. He built a sod house, let his cattle run on the range. He took hay from the government land, and when the tiller of the soil came along the pioneer moved on farther west. After that the land fell into the hands of the soil miner, otherwise known as the soil robber, who farmed it for the unearned increment. Most of you made your money, not by farming, but by taking the unearned increment. My dear sir, your grandfather, with his old mold board plow or with his grain cradle, would have had to live to be as old as Methuselah to be able to do anything like the work on the farm to rob the soil as it is done today. The fertility of the soil has been mined and wasted. The greater the improvement in machinery the more rapidly we can mine the soil. You understand that this mining of the soil in the Mississippi valley has had world wide influence. We have simply sold corn and fed it to the cattle at the cost of mining

it and we enabled great cities to grow up in the old and new world. Our railroad friends have helped along in this matter because they have given us the benefit of the long haul. We can not blame them because we have prayed and plead for it. Every mother's son of you wanted it. So you built up these great centers to a point where they can not get even room for their business and have to locate their stockyards and car barns from fifteen to twenty miles out in the country. Whenever you get one of your stock cars in those stock yards you may not be able to get it out for a month. The long haul which was all right, enabled you to build up these large centers. The average rate of a common freight car is twenty-five miles a day, little faster than the old canal boat, a little faster than the old Canastota wagon hauling dry goods across the Allegheny mountains to build up these great cities. We mine the fertility of our soil too much. We will have to quit being miners of the soil, we of the soil robber breed, some of us thorough-breds and some of a lower grade. We must get into our minds the idea that the soil of this great state of Nebraska, is given to us for our children and for our grandchildren down to the remotest generation. Further, that if we are to be a great nation we must be a people of great farmers. There was no nation of fools until the people began to move to town. That was that was the matter with Rome. Virgil himself, with all his poetry, did not succeed in bringing the people back to their estate. Then there began the greatness and decline of Rome. for Rome fell not by the arm of the farmer.

We must, therefore, conserve our soil fertility as a most priceless possession. We are learning to do without timber. We can, in a pinch, get along with less iron and steel. If we don't have stone we can make it almost as good as nature made it—but we can not live without agricultural products. We can not live without beef steak and pork. The greatness of our nation depends upon maintaining the fertility of our soil.

Another thing, and I am done, for I know you want to hear Mr. Blanchard. You cannot have a great soil without you have great men to till it. The virgin soil, rich with the fertility of ages, will not make a good governor. You must have a good man for governor. When I talk to men of the city they say the hardest man to get along with is the farmer. He will do such mean things that the merchant and the lawyer would never think of doing. Farmers do a lot of little mean things. I know of a farmer who would fill his hogs with butter milk before he shipped them. I rejoice in my heart that we don't have to resort to things like that. We must seek to be square men, doing business on our honor, doing business in the sight of the Lord and not in the sight of men. And you professors in college should teach your students that anything won unfairly is dishonest; that the aim of life is not to get through it by hook or crook but to do things squarely and honestly.

The aim of conservation of the fertility of the soil and the conservation of manhood and womanhood are matters of education. "Just as the

twig is bent so is the tree inclined," and we need the use of everything that will tend to build up character. You know in some respects we are about as mean a people as live on the earth. We starve our preachers, giving them a half of what they ought to have; we make martyrs of their wives. I don't know of any greater martyrdom than going on a country circuit in the west. We starve our school teachers, we exact of them the impossible. You cannot build up splendid manhood, you can't build up intelligent farmers without education. We are now beginning to understand that education is not the heritage of the few but that it belongs to all men everywhere. Of course, you can't get along without agricultural education, and you must consider the means by which the development of our nation is brought home to the people in the language that they can understand, and the great point that we have now before us is to educate our farmers. You can not restore the wasted fertility of the soil without education. You can't ever build up Nebraska as a great state without educating the farmer. You can't build up the fertility of the soil without brains. Some one asked a painter how he mixed his paints and he replied, "With brains, sir." Not altogether the knowledge of the class room, but with common sense, that power of observation, that ability to turn to account what we see and hear. That is what makes men great farmers. Of course, there are many things to be considered. You can't build up land by selling everything off it and thus retain its fertility. I receive many letters every week in the year asking what they can do to restore wornout soil. I have never yet had one of those letters from a country where they produced dairy products, or where it was a stock farm. Everything that tends to build up a large stock interest tends to build up a better soil as well as a better manhood. In this country one of the great branches of farming is dairying. No man can succeed in dairying unless he is a gentleman. It is said that you must speak to a cow as you would speak to a lady, and that means with kindness and sympathy.

Our great hopes are first for the boys. There are a lot of old fellows too old to learn. "They are joined to their idols; let them alone." You may as well let them alone because you can't pound anything into them for the reason that they know more than you. Our great hope in Nebraska and Iowa, in the matter of conservation, is in the boys and girls. Let us see that the next generation shall be wiser than we, more intelligent than we, more efficient than we. You can't have great boys unless you have great girls. You can't have educated men without educated women no matter what that education costs. There is not a township in Nebraska that cannot afford to spend \$200 a year for every quarter section to have the right kind of schools. [Applause.] You will never build up this state until you are willing to put your money into it. The time has gone by for cheap skates.

Now, gentlemen, the next twenty years will determine whether this state and Iowa are to be states of strong, able men or not. The time

has come when there will be a contest as to whether the great organized interests are going to put halters on us and have us eat out of their hands, or whether we are to be great, strong, brave, and true American citizens, worthy of the heritage which we have received from our fathers. The boy-crop and the girl-crop are the crops from which all other crops are grown. [Applause.] I pity the old bachelor who don't have a share in growing this great crop and the old maid, who don't have the opportunity. [Laughter.] Look at everything in the light of the children that are to bear our names either in honor or in dishonor, that are to make your land a garden or make it a desert. You can't put too much education into your schools; you can't put too much power into your church; you can't spend too much money in building up a great institution like the University of Nebraska. [Applause.]

THE NORTH PLATTE IRRIGATION PROJECT—SOME FACTS ABOUT RECLAMATION WORK THERE.

BY C. J. BLANCHARD OF THE DEPARTMENT OF INTERIOR.

In his illustrated lecture before the Conservation Congress C. J. Blanchard of the reclamation service of the United States Department of the Interior gave especial attention to a discussion of the North Platte irrigation project. Illustrating his lecture with splendid views of the large dams, reservoirs, and the beautiful country that is to be watered by the canal, he spoke as follows:

"Nebraska has a profound interest in the North Platte irrigation project. Its full development will add to the crop producing acreage of the state and area greater than the total cultivated area of Rhode Island. It insures the permanent settlement and growth of a region heretofore regarded as of little value, and which, by reason of its uncertain rainfall has remained almost undeveloped. A new and brighter era is dawning on this section of the state, an era of assured and abundant crops, of continued and increasing prosperity.

"No other river in America, and but few others in the world, is of more importance in irrigation than the Platte river. Its sources are in northern Colorado where the Rockies attain their highest elevation. It drains an area of 90,000 square miles in three states, and upon its perennial flow approximately 2,000,000 acres are dependent for crops. It offers insurance against drouth for 14,000 farms, and with 12,000 miles of main canals and ditches it is guaranteeing crops valued at more than \$80,000,000 annually. A conservative estimate of the total value of the irrigated farms in this drainage basin is not less than \$200,000,000. Without irrigation the value would not exceed 10 per cent of this amount.

"Within the drainage basin of the Platte is found the largest area irrigated by one stream on the continent. The average value of the

agricultural land is probably as high as that of any other section of the United States with the possible exception of the fruit belts of California, Washington and Oregon.

"All of the natural flow of the Platte river has long since been appropriated. Private capital has overlooked no feasible opportunity for developing the water supply, and an enormous outlay of money has been made for great reservoirs and many miles of canals. The field remaining belongs peculiarly to the government because further extension of irrigation involves enormous expenditure and offers little in the way of ultimate profit to the capitalist. Wanting no profit, and owning large tracts of undeveloped land, the government, which asks no interest, is alone qualified to carry out the broad and expensive plans required for the complete utilization of the floods of this somewhat turbulent stream.

"These apparent facts had much to do with the coming of the federal government into the field. The passage of the reclamation law in 1902 found the reclamation service quite well equipped with data relating to the discharge of the Platte river, and also with relation to possible reservoir sites. Plans were quickly prepared, surveys were made, and in as short a time as possible actual construction was begun. First a contract was let for the Pathfinder dam, the principal and most important engineering work connected with the project. This structure, which is one of the great dams of the world, is located three miles below the junction of the Sweetwater and North Platte rivers, in a narrow canyon varying in width from 60 to 100 feet on the bottom. The vertical walls of granite rise several hundred feet above the river. The site is forty-five miles from Casper, the nearest railway station, a fact which naturally added greatly to the difficulties of construction and to the cost. All machinery, supplies, cement, etc., had to be transported by wagons across a forbidding desert, waterless, dusty and with poor roads.

"The contractor's power plant was set up on the cliffs above the dam site, and the work of exposing the river bed was commenced. Bed rock was found at twelve feet. Cable ways were swung across the canyon. Giant cranes were set up in the bottom and along the sides of the canyon. A huge tunnel was excavated in the wall around the dam to carry the normal flow of the stream.

"By day and by night the desert stillness was broken by the dull roar of dynamite, and huge masses of granite were blasted and fell into the river bed. The heavy cranes lifted and placed them in their beds of cement in the dam. Slowly a beautiful arch of masonry began to rise from the river bed, regular in its courses and graceful in its outlines, as such a monument should be. Floods came, and with mighty force swept over it, but left it unharmed. The contractors simply waited for them to subside, and then took up the work again. On May 2, 1909, the Pathfinder dam was completed.

"This structure is 218 feet in height, and 500 feet long on top. Its cubical contents are 60,400 cubic yards. It cost approximately \$1,200,000.

The remarkable features of the structure as a conserver of water will be made clear by comparison with other storage dams of this country. The Pathfinder will control absolutely the greatest flood ever known in the North Platte. Its reservoir capacity is 1,025,000 acre feet, or considerably more than enough to cover Rhode Island a foot deep. The new Croton dam of New York, which cost \$7,631,000, or nearly six times as much as the Pathfinder, stores less than one-tenth of the water. The Wachusett, New Croton and Ashokan reservoirs in the east, cost \$22,557,000, or nearly nineteen times more than the Pathfinder, yet their total storage capacity is only a trifle more than half of the reservoir on the North Platte.

"At the present time the stored water is utilized only on the lower section of the project. A comparatively narrow strip of land in eastern Wyoming is served. The area broadens as the canals pass into Nebraska. Later a very large acreage in Wyoming will be supplied. All this region for years has been given over to the cowmen. It is rich in historical incident, occupying as it does more than 250 miles of the old overland trail made by the gold seekers in the mad rush for the gold diggings of California.

"Winds and rains have worked capriciously with the buttes and bluffs, carving them into grotesque and freakishly shaped forms. These natural monuments are rich in pioneer associations, and their names are interwoven with the early history of the region.

"The irrigable lands are typical of the great plains region. Slightly rolling upland and prairie, with long strips of level valley. For a generation this has been the free common for the stockman whose herds and flocks have had access to it and have overgrazed it. Its population was small, the lonely ranch homes isolated and devoid of homelike attractions were always far apart. In those days the stockman wanted no neighbors, and as a rule opposed the cultivation of the land

"To bring the water to the land it was necessary to construct a diversion dam in the river about 150 miles below the Pathfinder. This is known as the Whalen dam, and diverts the stream into a large canal having a total length of nearly 100 miles. For many miles the canal passes through difficult country, with shifting sand hills around which canal construction was expensive. In places the canal passes through rock formation, and in others it was necessary to line the canal with cement to avoid loss by seepage. Across the deep coulees the water is carried in underground siphon or overhead flumes of concrete. Substantial bridges have been built with concrete abutments. All structures of importance are of concrete to insure permanence and efficiency. From the main canals and laterals the farmers' ditches lead the water to the irrigated lands. A remarkable transformation has taken place in the last three years. In 1904 one could count the houses within the radius of vision on the fingers of two hands. Today this same section looks like an old settled country. More than a thousand homes now dot the prairie.

"Fifty thousand acres have been plowed, leveled and made ready for crops. Last summer many thousands of acres were in grain, and the change from a vast expanse of desert to a well established agricultural country seemed well nigh miraculous. Here was a picture to content the eye, to gratify our pride in the achievements of our fellow man.

"The landless man has come into his own, and one of the chief purposes of national reclamation has been accomplished. In this golden harvest which was being garnered there was promise of future comfort and the blessings of contentment.

"Nor was prosperity alone reflected from the farm. In the numerous towns and villages in the valley there were numerous evidences of the same well being. Artistic and beautiful homes attested the coming of good times. Wide streets shaded with fine trees, broad lawns and flowering plants spoke of civic pride and fine ideals.

"The economic value of a work like this cannot be measured in dollars and cents. The desert made fruitful offers a home and independence to the homeless. Our nation's greatness has its foundations in the home of the man whose feet are firmly planted on his own land. Creating additional opportunities for our citizens to own their own land is a national duty too obvious to require argument. In every home thus established there will be a yeoman ready to answer his country's call in time of war, or to take his part in the councils of the nation. In these homes there will be born citizens who will constitute a bulwark against oppression, and who will impress upon our national thought the fine sense of personal honor, the higher ideals, and the lofty purposes which are developed in the land where every man has his heritage, a home and the opportunity to make himself independent.

"I say to you that the day is not far distant when the nation, yea, the whole world, will be glad to listen to the exultant voice that comes from out the conquered desert. We have only to mark the trend of human events during the past ten years to realize that the west is becoming more and more dominant in national affairs. Conservation, the commission form of municipal government, the broad, progressive policies, the cleansing of political machines, these are all western, and they threaten to sweep the whole country.

"When the vast expanses of our treeless plains and the vacant and voiceless valleys of the mountain region shall have been reclaimed; when ten million families shall have been provided with homes of their own; when blossoming orchards and fields of golden grain replace the wastes of sand and sage-brush; when the stirring sounds of a thousand industries break the age-long silence of the desert, who is there here whose vision is so clouded he may not look behind the veil of the future and see a civilization better, higher and nobler than the world has ever known?"

At the general sessions of the second day a set of conservation principles was adopted and addresses were made by Hon. Chas. Sloan, Mr. D. A. Brodie, Hon. Henry Wallace and Hon. W. J. Bryan. Failure to secure Mr. Sloan's manuscript prevents its publication in this connection.

CO-OPERATION IN AGRICULTURAL EXTENSION.

BY D. A. BRODIE, U. S. DEPARTMENT OF AGRICULTURAL EXTENSION.

Mr. President, Ladies and Gentlemen:

In the co-operation branch of the Department of Agriculture we have sent out different men in conjunction with state experiment stations. An example of how we work, making the money go twice as far, is to enter into an agreement with the experiment stations to put up half the money, and we the other half. In that way we can get good men. In Missouri we have such a contract and our man spends half of the time at the experiment station and the other half in the field. He goes out among the farmers, selects some topic and finds out where the farmer is making a success and where he is making a failure. After studying with a certain number of farmers, say 100, the expert is able to select the most successful one and can say why he is making more of a success than others. A man who does nothing else but study a state in this manner is bound to make himself an authority on agriculture in that state. When he gets the farmers going in good style and many things rounded out nicely he holds institutes on the farms. We held several of this kind in Missouri last year. They were larger than had ever been held in that state.

Another method of carrying on co-operation with the farmers is through farm organizations. In California the citrus growers are organized for mutual protection and profit. The department sent a man out there at their urgent request. He is helping to solve their problems for them. One problem is how to prepare fruit for market; another, How to prepare fruit to ship to any part of the world without waste or loss? The department sent two men to California to study this problem. They looked the situation over and after studying it in detail found how to help in the best possible way. Fruit pickers, I think 100 in all, were selected and trained. Then when the picking season began the proper methods were followed. This method was extended throughout the state by demonstrations. The experiment was successful and showed how to save many thousands of dollars to the growers and to the organization.

In Pennsylvania we put a man in the field at our own expense at the request of the farmers of a certain section. Mr. Ross went there with the farmers teaching them how to pick apples, and then he went to

Philadelphia and showed how to market the apples; he is still in Philadelphia selling apples for the farmers.

Mr. Hunter, a native of Iowa, was sent in the early days to Oregon to study the settlement of irrigation lands. Then, when a new project was opened for settlers from many states, Mr. Hunter was ready to assist in the solution of their problems. An urgent request came for the department to help solve these problems. Hunter had found where settlers had made a success and where they had made a failure. He put the facts in the form of a bulletin which cannot be printed fast enough to meet the present demands.

In New York they once had a lot of land that was very unproductive. Those people were in hard luck. They sent an organized effort down to Washington, and made an appeal to the Secretary of Agriculture, to send them help to see if something could not be done. The request was granted and Munroe was put in charge of the work. He knew a good farmer as well as a bad one. He was like Hunter of the West, he knew from long training what the success of farmers was due to. He also knew why so many failed. In two or three counties he got the farmers growing crops according to new methods. He advised in regard to certain rotations. He introduced new seed corn, new potatoes and in three years he had made such a success that last year Colonel Roosevelt went with him and visited those sections and saw what the government was doing to help the farmers of New York.

In South Carolina we have a man who is co-operating with the state department of agriculture. He has an office in the commissioner's office; he is co-operating with the state college and the experiment station. He is co-operating with every organization in the state and he is producing results. Last year he went down near the coast where an appeal came for help. Their lands were worn out and they could not grow crops. Our man took in the situation and being an Illinois man and familiar with drainage he gave the farmers a practical application of what tile draining would do, and the next year a great crop of cotton was raised on the experiment field. Today hundreds of farmers in that county who have not yet done so, will put in tile drainage. In another county, near Columbia, the same man was sent out to help a farmer who wanted a dairy. The problem was to grow a crop to feed dairy cattle on land that had for a hundred years been cropped to cotton. Our man planned a system to meet the demands of the dairy. I was out there myself three years afterwards and I found alfalfa growing—something that I didn't think could be done. There were fields of oats and wheat. A little further out on the red clay of that state a man asked for help in the matter of producing a crop for hogs. He was a city man and didn't know anything about hogs or a crop system. (Once in a while it is a good thing for a city man to go out into a section of the country where they have lost the art of farming.) Our man went out there and planned a rotation of crops for the city man who wanted to

raise hogs. He looked around to see where he would get leguminous soil with which to inoculate the field. He found an old worn out peach orchard in which were legumes. This was dug up and spread on a few acres. The city man was so impressed with the proposition that he sowed forty acres, contrary to Mr. Smith's advice. He carted out five wagon loads of this soil, spread it on every acre that he sowed. "Now," he said, "I am going to see whether that soil has anything in it or not." I saw the farm afterwards, and it proved the theory. It was a success.

Now, how is this service of the Agricultural Department secured? First the problem for investigation must be one of importance. Next, no matter how important it is, money enters into the proposition—that is why we co-operate with the Experiment Stations. Where the problem is important enough we put up part of the money and you put up part of it. The way the department looks at it is, "here is something to be done for all farmers and if possible we will do it." The plan calls for a willingness on the part of the co-operators and half of the money. An organized band of farmers can do far more, not only with your own Experiment Station but with the Department of Agriculture, under organization, than you can individually. Consequently, if the farmers organize and make a request for these things, if there is a possible way of putting a man in the field to solve the problem, it will be done.

I was in Dr. Bailey's office at Cornell University in conference with him and a representative of the Lackawanna Railroad for the special purpose of devising a plan to put men in the field in the vicinity of Binghamton to help the individual farmers. The railroads were interested, of course, for obvious reasons, in the upbuilding of Binghamton. The university was interested for the state of New York; and we were interested from the standpoint of the nation. During that conference Dr. Bailey introduced to us a fellowship organization he had worked out in order to get at a certain problem. The organization was composed of fruit growers and farmers. They came to Dr. Bailey's office and said, we need the men for investigation, and so the arrangements were made for co-operation between the college and the people. That was only the beginning of what proved to be a good work.

Another illustration is one that has interested me during the last year not only because it is rather new but because it has such wide bearing on certain communities. It is in Texas on a section of country known as the Black land. For forty years those farmers have been growing crops on that land, all the time without leguminous crops at all. It is rather unusual to find such a condition where farmers grow cotton, wheat, oats and corn in rotation without legumes. Our man, Mr. Youngblood, went in there. He had been raised on black dirt and did not think it needed any leguminous crop, and it was unusual to think of a section of country that had been farmed that long without leguminous

crops. I looked the situation over and inquired as to what the Experiment Station had done. I found that the experience of everybody was that when they tried alfalfa or clover the roots rotted and died. The black land is naturally alfalfa land, but they could not grow alfalfa for the simple reason that the roots rotted. The Experiment Station had not tested out this thing and our own people had not tested it out, but something had to be done. These farmers had paid \$150 an acre for the land. We got the help of the Experiment Station, and they supplied all the leguminous crop plants and seeds grown in this country and some imported from other countries. Mr. Youngblood went onto the land, picked out twenty-five of the best and most conscientious farmers in the section. He spent the summer going among them and watching how the different crops were doing. At the end of the season he was able to report the experiment a great success and a solution of the problem. [Applause.]

THE COUNTRY LIFE COMMISSION.

BY HON. HENRY WALLACE.

Mr. President, Ladies and Gentlemen:

I will try to condense under two heads what the National Commission found, and what your commission of this state should find. Our National Commission did not make any exhaustive investigation, and could not do so in three months. We merely looked over the field and, unfortunately, its findings have not yet in any official way been published.

We organized, sent out 500,000 circulars asking information on a number of leading subjects such as Sanitation, Education, Transportation, Co-operation, etc. We received about 125,000 replies, some of them rather interesting. We received a vast amount of circular reports covering everything connected with life in the open country. We made a tour of twenty-nine states, and it is the result of this tour alone that has reached the public. We found lack of sanitation everywhere—hook-worm in the South, and one of the best results of this commission has been that we have been able to proceed in reclaiming and cleaning up the South. We found butcher shops in the East; we found men who sold their cows with tuberculosis; we found where hog's entrails were fed to other hogs and where rats frequented and carried the poison to the neighbors' farms. So, don't shake your heads and say that the Southern people are wormy; you have a great problem at home.

On the subject of education we found dissatisfaction everywhere. In twenty-nine states the dissatisfaction was so universal that after visiting three states we knew what was coming. The only state in which dissatisfaction was not expressed was Nevada. There were young girls who were teaching awaiting promise of marriage or else getting experi-

once preparatory to teaching in the city or town schools. We heard everywhere that these girls preferred town life; they did not say a word about it but left the impression that town life was better than country life. We found dissatisfaction everywhere with transportation, sometimes expressed justly and sometimes expressed unjustly. Everybody was in favor of parcels post. These are some of the things we found.

The commission, let me say, gave its time free; the expenses were about \$5,800 (a little less than the expenses required to send one man to the U. S. Senate); \$5,000 of this was paid by a party who is spending great wealth in just such enterprises as this; and the other was paid by the commissioners themselves. It was a bad thing to make people do this work for nothing and board themselves. Roosevelt said: "You can't have any money; your expenses will not even be guaranteed; you must work for nothing." In fact he said that "the greatest amount of work I get done is from men who work for nothing and for the love of it."

When the commission made its report Roosevelt sent a message to congress asking them to put \$25,000 in the hands of Secretary Wilson for the purpose of tabulating and digesting the information gathered as we had no time to put it in such shape that it might be available for investigators and social life.

A suggestion came to me the other day in a most interesting report, and surprising to me because I had not heard of it, from my old county, where an enterprising president of the Farmers' Alliance and an enterprising superintendent of schools and another party had sent out a tract to every rural school in that county asking reports of the number of boys and the number of girls; the number of boys who fed hogs, cattle, or sheep; the number of boys that can harness a horse, and the number that can hitch him up; the number of boys that do chores; the number of girls that can wash dishes, can bake a cake, the number that can cook a meal, number that feed chickens, and so on. In the next place the town people took the matter up, and the merchants of the towns got up a report, but it took in everybody, as to the amount of money paid out for necessaries; the amount paid for luxuries by the average farmer and by the average citizen in the towns; the amount or per cent that it costs to distribute farm products in the towns; the number of merchants that sold on tick; the number that required cash; the number that paid interest; the number that received interest, and I don't know what all. It is astonishing to note the difference between the amount of expense of the farmer and the amount of expense of the townsmen. The townsman spends three times as much in luxury as the farmer; that is what you would naturally expect. It seems to me that the townsmen and the farmers should get together in the matter of business interests. I often think of that scrap just outside of the Garden of Eden with Adam's dog and Eve's cat—they got into a fight that has continued ever since—that is, the fight between the people of the

town and the people of the country. In the town the people don't want any parcels post; the farmers, wherever they have sound judgment, want it. They are all afraid of the big stores, department stores. The merchants complain of the farmer whenever he has cash he sends it to Chicago, but whenever he wants credit he comes to them. It is a very important matter that you people in Nebraska get together, get acquainted, and get in touch with each other, the people of the state, and get in fellowship. That reminds me of a story that a fellow was telling me the other day—he said for a good many years he was studying the difference between fellowship and acquaintance. He had an acquaintance, an uncle, a Scotchman, that he never liked, but as a matter of conscientious duty he went out to see him; it was on a cold, raw day. The old man met him by a miserable peat fire; he hardly asked him to sit down. After a while they got out the table, spread the cloth and the old man and his family sat down to their meal but did not ask the visitor. To his surprise about ten o'clock the inner doors were opened and there the table was spread for the old man's family and his intimate friends who were in fellowship with them. He said that they were just acquainted on the outside, but on the inside there was fellowship.

In other words, the farmers are not only not acquainted with the city people, or city merchants, but are not acquainted with each other. It is no wonder that the boys leave the farms for the town, because the boy must not be an acquaintance but he must have fellowship. You will have to stop making boys go to town; you must make farm life pleasant.

All over the country you will find four preachers where one ought to be; all looking out for rich, respectable people who come in the neighborhood; the church should be open for everybody; there is more fighting between people of the church than there is fighting the devil. Why not make the rural church one of social life? You can if you get the right kind of a preacher. I am spending some money in that direction myself in one of our theological seminaries in trying to turn the attention of our preachers to business life by putting \$150 as a first and second prize to the person who can apply the principles of Christianity to actual human conditions. [Applause.] I am nominating the men who are to be the judges, leaving out all church members and putting in large-headed business men to decide who will get the prize. I am doing it for the simple purpose of eventually getting preachers started off right, to get more practical preachers and less theology, so that when they go to the country they will start in with enough knowledge to ask sensible questions to farmers to lead the farmer to believe they know something about it, and then the farmer can give them credit for all the theology they want to know.

There must be improvement in country life, in the schools and churches. You must organize clubs, you must get together if you are ever going to do anything for your betterment. That is what your com-

mission here will ask you to do—get the farmers together; get them to understand each other, as well as to come to proper relations with the citizens of the towns; get the farmer in proper relations with everything that touches their interests. There is no use of this perpetual squabble between the different interests; there is no use of lying about the merchants, and there is no use of his telling you where you should buy or sell.

You must not starve the boys and girls by withholding from them their games. If you say to them: Let us plan our work. If you do the work as planned you will have next Saturday afternoon to play baseball or football [Applause], and if I were doing it, I would have the preacher there to umpire the game. You can do this best when you get the centralized school, and the farmers instead of moving to town and die from eating too much by not working enough, will find it is just as cheap to build a house on the farm as it is to build it in town—and cheaper, and when you get that idea then we will have the socialization of rural life. You will never do much good until you come to know each other socially.

I was reading an article not long ago where it stated how the farmers took up this subject and settled it for their good. They decided they should have a place to meet, and would organize a club. They thought of going to the village but concluded that was not the best place. In casting about they learned there was a vacant church in that neighborhood so they rented a room in it and afterwards bought the church. They put in a cooking establishment and then put in a library and then a Babcock tester, a seed tester, a microscope tester, and there they met each other and discussed matters of interest, both social and business. This would develop the rural life and be the means of extending their knowledge. I would like to speak to you much longer, but will discuss only one thing more. I took dinner the other day with Secretary Wilson and his friends and the subject of extension came up and during the discussion I said, "You are out of date, you are three thousand years behind the times." I reached over and took Secretary Wilson's Bible and turned to a chapter in Chronicles where it spoke of extension, and that Jehoshaphat had started a great reform. He tore down the heathen altars and destroyed the pillars built by the heathen and instituted a great reform. He restored the services of the Lord. That is just what you find here today. Some people would not go to church, so Jehoshaphat took the church to blame for it and established an extension department. I can not state the chapter you will find it in, either Chronicles or Kings. This was during the reign of Jehoshaphat. He sent the Levites out to the people. He told them to get out in the country and teach the people who did not come to town; and the record says that they went out and taught the people and took the book of the law with them. It was the first extension that I know of, something like three thousand years ago. You must do that same thing right here in Nebraska. You

must come to the idea that you will have an uplift of the farmer's life. Unless you get the farmers to understand that knowledge is not altogether for the preacher, the lawyer, the doctor, not altogether for the professor in agricultural colleges, not for the students in agricultural colleges, but it is for everybody. There are people who don't know it and you must give them a taste of it and then they will want more.

Give the renter on the farm a taste of real practical knowledge; get his mind awake to see what is going on around him; get his mind awake to this continuous miracle of life that is performed before his eyes and that he may become a creator of values. If you get him to see this wonderful mystery, what wonderful things are going on all about him, by teaching him in words that he can understand and by experiments which he can conduct himself, get him to see all this, then, the farmers will draw together as the small dew drops melt into the rain drops. Education is for all, and only by education can we develop sterling manhood. The creator is always greater than the creature, and the only foundation of our government is based on splendid farm life. You can't pour knowledge into a man unless he is willing to receive it. He must appropriate it himself. Give these people a taste of knowledge and then you will have to put up three or four times the number of buildings you now have.

THE CONSERVATION MOVEMENT.

BY HON. WILLIAM JENNINGS BRYAN.

Mr. President, Ladies and Gentlemen:

I hope you are all here because of your interest in the subject of conservation, and that none of you will feel you have been disappointed even if I speak for a short time. It is not that I lack interest in this subject, but rather because it is so large a subject that I have yet not been able to get it systematized in my own mind, as to how I should proceed with it. It is rather a recent subject, too, not one of the things to which I have devoted a great deal of time. Yet no one can have this subject brought to his mind without at once realizing that it has great importance.

Not only that, but as you consider it, it grows upon you, and as I have been revolving the subject in my own mind, it seems to me it is like other great subjects. When one takes up a subject and begins to study it and to follow it out as it connects itself with other subjects, he finds that every great subject is really related, more or less intimately, with all the affairs of life, with all the departments of human activity and every line of thought. So, as I have been considering this subject from time to time, I have become amazed at its enlargements, and I feel that it is fortunate for all of us that our attention has been drawn to a subject so vital at a period like this.

The conservation of the resources of the country is like the conservation of one's own strength and powers. It is a thing that does not suggest itself in the beginning of a nation's development. We think little of our health until we see signs of disease approaching. We don't plan our eating or our exercise, as a rule, with the purpose of removing these beginnings or preventing the approach of disease. Instead of eating the things we believe will be conducive to health, we generally eat the things that we like, and not until a pain somewhere takes us to a physician to learn from him that there is a break-down, or a threatened break-down, not until then do we begin to select our food with real reference to our health.

So it is in the conservation of the resources of a nation. When our ancestors came here they found virgin forests and they went to work supplying themselves with such wood and timber as they needed, with no thought of exhaustion. When mines were discovered they brought forth the minerals and they had no idea of the size of the mineral deposit, and, of course, no thought of ever reaching the end of the supply. We have gone on until our nation has grown from a little band of three millions, when our independence was secured, until now we have ninety millions of people, and we are just beginning to ask ourselves if we have not been wasteful; have we not consumed more than we need to have consumed, and what is going to be the result when we have reached the limit?

I believe that the call issued by President Roosevelt for a conservation congress was one of the greatest acts connected with his administration. I believe he gives the credit to Pinchot for having brought the matter to his attention. I believe in his speech to the Governors at that conference he paid Pinchot the compliment of saying that it was his reasons and his insistence that brought the matter actively to the attention of the president. If this be true, then Mr. Pinchot deserves a very important place among those who have conferred a great advantage upon the country because the country has taken hold of this idea of conservation. And we have already had, in the Federal congress and in the various states, legislation as the result of this first conference, as it was called at the suggestion of Mr. Pinchot, and through the official act of President Roosevelt we already see the people are thinking on this subject and we see how that thought is developing new lines.

I shall not attempt to exhaust this subject tonight, nor shall I attempt to go into detail in regard to any part of it; for I need to come to these meetings more as a student, as an inquirer, than as an instructor. Rather, in the time that I shall occupy, let me call your attention to the magnitude of this subject and show you how a suggestion is likely to develop until a multitude of people will be turning their thoughts upon a multitude of phases of conservation. There are several kinds of resources and each kind needs the conservation peculiar to itself. For instance, there is the mineral, when it is exhausted it cannot be replen-

ished. When we reach the end of an ore deposit, then there is no hope of retaining that deposit. We do not know how near we are to the end of our ore deposits except that we know that we can now calculate how long it will take us to exhaust the coal, and the years are in sight; that is, when we calculate approximately. I believe that in the discussion of the subject in congress there was quite a wide range in its estimate. I recall a little bit of humor like this: One senator presented statistics to show that it would last not more than sixty years. Another man says, "Yes, that is very well, but another authority has fixed the quantity sufficient to last three thousand years." Another senator said: "Gentlemen, the discrepancy is too great. You ought to get together. There is too much discrepancy between 60 years and 3,000 years." Another senator said there was enough to last 1,500 years, and the senator who had called attention to the wide gap, or range of difference, said, "We are making progress, gentlemen; we have got half way back."

Well, it is possible that there may yet be a wide difference between the estimates of those who have been calculating the quality in sight, still, we have reached the point where we know that unless there are future discoveries upon which we cannot calculate, with certainty, we are approaching the end of the supply. But there is this that we should take into consideration, and that is as we approach the end of the supply the price is likely to rise, and the fear of exhaustion and the increased price working together are likely to bring out substitutes that were not before known, and thus the end may be, to some extent, delayed.

I read the other day that the cost on aluminum has been reduced, I think from \$20 a pound to something like 20 cents a pound. I remember nearly twenty years ago when a man came before the Ways and Means Committee and asked for tariff on aluminum; that he gave the cost of the clay, and it was quite a high cost, and he thought it would be cheaper, but I think he never suggested that it would be as cheap as it is today. But what interested me, in his testimony, was that he spoke of the supply of the metal being practically inexhaustible. That was the first thing that interested me, because whenever I find anything that is inexhaustible I feel a much deeper interest in it than in something that can be exhausted. For instance, I have never felt any great enthusiasm in an oil well or gas well, because experience shows that in the course of time they give out. I have felt much more interest in agricultural landscapes, when, in looking over the land I could feel that not for a year or ten years, but for thousands of years, people might draw their living from this soil of ours.

Then, aside from the cost of any of the minerals, we come to the supply of timber, which is not like minerals—when it is once exhausted it can be renewed, but it cannot be renewed immediately; that is, it takes time, so that when we waste the timber upon a watershed it means that it is going to take a long while to replace it. Then we come

to those resources that can be expanded. We cannot expand the mineral resources of the country, except we have found beds of the amount of the deposit, but when we come to the other resources there is a likelihood of conservation. I think it properly comes within the definition of conservation—it is the increase that can come from the expansion of the resources. I imagine that this part of this subject is going to receive a very large amount of attention. We shall not only bring under cultivation areas that have not been cultivated heretofore, but we shall intensify the cultivation in fields that have long been cultivated. We have today under construction many vast projects that have for their object the knowledge of the cultivated area in this country. We have almost reached the limit of the amount of land that you can have for the asking. There is quite a large area of swamp and arid land. I have had the opportunity and pleasure of seeing the development of some of these sections of the country. I spoke yesterday with an official of the state of Missouri, who told me how down in Missouri they had a great tract of land that was only worth 50 to 75 cents an acre a few years ago, and now they have commenced to drain it and have formed themselves into corporative bodies and commenced building dykes, and that they have already reclaimed land that is producing as much as seventy-five bushels of corn to the acre. That land is destined to become even more valuable than the lands on the uplands that were first taken. I visited a year ago that section of the country known as the Everglades in Florida—I do not know why they call it the Everglades, but I remember when I went there I experienced a surprise. I realized that I had had in my mind a picture of a country that was overgrown with semi-tropical vegetation. I had thought of great trees growing in swamps and of underbrush, making a place that would have a wild aspect or look like a wilderness. But when I went there I found that the Everglade country was largely a pine country with only occasionally a clump of trees; that it was a big saucer, if I may so describe it, a limestone saucer, that had been filled with black dirt to the extent of from 2 to 4 and 10 feet, and that that was covered with water that had been drained over it out of a lake. They are now digging a ditch and draining that water off. When they drain that water off it does not require clearing, but you can go on the land, put a stick down, making a hole, plant a tomato or other plant, and it grows. There is a large tract of land you will find along the Gulf Coast and along the Atlantic Coast and these drainage systems are being established; and thus an additional area is being brought under cultivation. Then, going out into the semi-arid country you will find that vast tracts are being brought under cultivation by irrigation. A year ago I visited the Roosevelt dam in Arizona, where they are storing water that will make cultivation for something like—I suppose you can tell more accurately than I—150,000 to 175,000 acres. As I came in a few days ago from Arizona I passed through El Paso. I learned something of the details of the dam that will bring into cultivation a large area along the Rio Grande.

Down along to Rio Grande and the Gulf you will find developments of land that not many years ago was worth only a few dollars an acre, land that people supposed would never be used for anything except pasture land. There they are drawing water from the Rio Grande and running it back as far as four, five, six, and even eight or nine miles from the river for irrigation in raising large crops on land that they supposed a few years ago would never be valuable for tillage. Now, this way in which we are extending areas and bringing new land under cultivation to my mind is not the most important part of this branch of conservation. Nobody can travel in the old world without realizing that we have not yet commenced to farm with economy in the United States. No one can compare the farming in thickly settled countries like Belgium, Austria, Germany, Java, Japan, or China or in India with the farming in this country. No one who has seen their cultivation but what has been impressed with the thought that we are not yet making full use of the land that has been under cultivation for a long while. So that conservation will have as one of its results the better cultivation and better utilization of the land that we have.

Then, there is the question of the improvement of the soil and the prevention of waste. At a congress, or rather a conference at the White House, Mr. James Hill gave a very instructive treatise in regard to the loss that comes to the soil by the failure to preserve its fertility. I imagine that this will be, possibly, the most important branch of this work of conservation; to take the soil that we have and build it up and prevent its being ruined by the wasteful use of it. Here, it seems to me, is an opening for the students in agricultural colleges. These young men who are qualifying themselves for farming in agricultural colleges that have multiplied and increased in attendance, these young men have here an opportunity by which they can render a real service to their fellow men in experimenting and ascertaining what can be done to bring this soil up to the maximum of its productiveness and to keep it there. Go through some of the countries of the old world and you will find where a few thousand years ago there were fertile fields, that there are now deserts. You will find that where cities once existed are now barren wastes. It is all because no attention was given, or an insufficient amount of attention, to the protection of those soils, and people have wasted them until there is no foundation left to build upon. I repeat that I think we shall find this particular branch of this subject probably the largest one, and that more of our young men will be inspired to search and experiment in this field than in any other; and conservation will have brought a great blessing to this country if it does succeed in turning attention to these things.

We now come to conservation on a large scale in a dual form which has already raised some questions as to how best to proceed. I remember not long ago attending a meeting where there was considerable discussion as to the proper sphere of the state and of the nation. I

have not spent a great deal of time trying to find out the exact limits between the power of the state and the power of the United States. I have not carefully read the decisions of the courts, and the reason is this, that I have felt that 90,000,000 of people would take care of their own interests, that the first thing to find out was not just what the courts have said, but to find out what is necessary, for if we have any constitutional provisions that prevent the conservation of the resources of this country, it will only be a question of time when those limitations will be so changed as to give the people the power to do what they find it will be necessary to do. [Applause.] When I say this I am sure that you will not think that I am speaking as one who places a small estimate upon the work of the state. I believe that our form of government is good, because it combines the idea of local government with national authority, and if there were a doubt as to whether a thing could best be done by the state or by the United States, I would be inclined to resolve the doubt in favor of the state. But there are certain things that are fundamental and we must apply fundamental rules to the discussion of a great question. Here is one of the fundamental rules that I think we can safely apply and that is that no one man is able to attend to other people's business as well as he can his own, and that no state can attend to the business of people outside of that state, and that wherever you find interest is national in extent you find an interest that must be protected by national authority; that is, that you can not trust the people of any state to act wisely upon a question where the people of other states are also vitally interested. This was brought up when I had to consider the question of watersheds in a mountainous state. I traveled across the mountain range some two years ago and I had an opportunity to see what I had not seen before because my attention had not been called to it when I was in the mountains before, and I had a chance to see what I had not seen before, the difference between a mountain side covered with timber and a mountain side bare. As I crossed over this mountain range I could see open places where timber had been cut off or burned off and there was no snow, but immediately adjoining it there would be a tract of timber and there the snow would be to the depth of from ten to twenty feet. I found in June this melting and running down and forming little streams, and it occurred to me why should the general government build great reservoirs at such large expense and at the same time permit God's reservoirs to be destroyed without need. [Applause.] At El Paso they told me that the engineers calculated it would take about eighty years for the great reservoir, some forty miles long—to fill up with silt to such an extent as to really be hurtful. That seems a long time and yet while it is a long time in the life of an individual it is not long in the life of a nation. Eighty years will soon pass, and if at the end of eighty years the waters coming down and being impounded in that reservoir, have deposited silt and sediment until the reservoir fills up, it will mean

a tremendous expense to remove it or to build another reservoir—if another site can be found. These natural reservoirs on the side of the mountains have been there for ages and they are as good today as they ever were. Why should a lumber company be permitted to take the timber off of these water sheds? Now, if a state will give to a nation a sufficient protection I am willing that the state shall do it but back of it must be the power of the nation to protect itself if there is an inexcusable waste on the part of those who are in immediate possession of the country. I have thought of these states that are mountain states what would we do if these sources of water supply fail? I have not made a study of the water courses in the ground, or the veins in the earth. To me they are great mysteries. I do not know how inexhaustible the quantity is, but I do know that when we grow from 90,000,000 to 190,000,000 of people, probably within fifty years, there will be a much larger demand upon these underground waters than we are making today, so why should we take our chances on water exhaustion? Here is a subject upon which our estimate cannot be approximately correct, where we cannot tell, we cannot see, cannot calculate. Certainly, if it be true that in those mountains we find the storage of this water that comes to us as underflow, then we, who live even remote from the mountain peaks, have an interest that must be protected by national conservation.

But, my friends, I have a faith in the intelligence and in the patriotism of the American people. There is such a sense of justice in the human heart that when this subject reaches a point where it must be settled when the facts have been presented and the people understand, I have not the slightest doubt that there will be a way of adjusting every interest the nation has without injuring a single right that the people of the state possess. These meetings where both sides are presented are vastly valuable for they will give us a discussion out of which will come that which is best. The same intelligence that leads the people to begin now before the end is reached, will lead them to devise ways and establish means for the protection of every right and the guardian of every interest; and the patriotism that we can rely upon at all times and under all circumstances will not fail us when we come to deal with this question of supreme importance. You see as we go over this subject it becomes a very large one. I have spoken first of those deposits that are exhaustible and then of those resources that are capable of expansion, of cultivation that can be intensified and of that conservation that looks towards the prevention of the exhaustion and of the restoring of the vitality to the soil, then of that division of government power, a question that confronts us as soon as we enter upon the discussion of the subject.

There is another branch of the subject that I desire to mention. It is the matter of monopolizing the resources of the country. I believe it is about as important, not quite, but nearly as important, to prevent the monopolizing of resources as it is to conserve them and perpetuate

them—I say nearly, not quite, because the first thing, of course, is to keep this wealth, but if we allowed it to get into the hands of a few so that it was of much less value to us than it ought to be, at any time when we awake to the necessity, to destroy the monopoly. But, my friends, I think it is just as well to prevent monopoly as it is to destroy it. In fact, I think it is in this as it is in everything else, that an ounce of prevention is worth a pound of cure. I rejoice that we have already commenced to provide against monopolizing of these resources. I am glad that some of our mineral lands have already been withdrawn so that they can no longer be bought up like our farming lands were. I am glad that we have already commenced to put a limit to the greed that was attempting to enslave the nation through the possession of these mineral resources. I am glad that a cry was raised in regard to our water power, for the water power of the country was in the very beginning of its development. The use of electricity and the fact that we could carry the electric power many miles has given to water power a value that it did not formerly possess. It was necessary formerly to build the mill by the side of the dam; now the current can be generated at the stream and the factory may be erected a long distance away; and these companies seeing the possibility of its development were reaching out and taking possession of these streams so that the water as it tumbled down the mountain side should be to them the means of becoming landlords of the whole people. I rejoice that we have already done something in this connection. I hope that there will be no meeting of a conservation congress in any state, or in the nation, that does not have as part of its program the study and discussion of the efforts that are being made to monopolize the resources that remain.

My friends, this subject is larger still. I have gone briefly over several phases of it. When we get into this subject we find it opens out. There is another part of this conservation subject and that is the conservation of the strength of those who are to convert these resources into material wealth. As we study it we find that this is the largest part of the subject, for the conservation of the health and strength of those who are to inhabit this country is of far more importance than the mere conservation of the resources of the nation. So this conservation movement is connected with our institutions for the preservation of health. We will find people quickened in their search for a remedy that will stay the hand of disease. I have reached the point where I believe the government should encourage in every possible way the research into the causes of diseases that afflict mankind, a search for remedies that may relieve. But, my friends, we don't consider this very much or very long until we think also of that voluntary waste of human strength. Then we wonder if mankind can be so foolish while stimulating the investigation into diseases that have not been prevented and yet be so indifferent to that wasting of the body that comes from dissipation and from the destruction of man's vital forces. [Applause.]

So, before we get very far we are going to consider questions that might be regarded as debatable questions, and yet I am not willing to concede that this question is debatable. I think we will see that nobody appears before an intelligence audience to debate the proposition that society is entitled to the services of the whole man and not the services of a half a man as a citizen. [Applause.] That anything that has for its object the destruction of the vitality of man; anything that has for its object the wasting of man's strength or the destruction of that impulse that gives mentality to his strength, anything that impairs man as an asset of value to his country—that that thing deserves the attention of those interested in the conservation of the nation's resources. Who will say that this man of flesh and blood, this man of brain and muscle, this man of heart and spirit is not infinitely more valuable than inanimate matter; and if we are going to try to find remedies for the diseases that attack us against our will, ought we not to find some way of preventing the diseases that can only enter the body when the will invites it and can only stay as long as the will permits? So we will turn our attention to the prevention of disease and waste, and the conservation of the strength, vitality and the productive power of the American citizen. This will bring us to the subject of education, for it makes a great deal of difference whether our citizens are sluggish in mind or quick and active. Thus, those that are interested in conservation, in the expansion of our resources, in the multiplying of our products, will be interested in establishing that idea of education towards which the world is moving; that idea that every child born is entitled to the advantages of mental instruction. Then, we will not go very far in the consideration of the mind as a national asset before we find out that morals are more important than vice, for when we have trained a man and made his mind alert we are then more interested in his not using his mind against us than when it was a mind of less strength. We cannot justify the expenditure of money raised by taxation for the education of all the people unless there goes with it the education and moral development that will compel the citizen to use his education for the benefit of others and not for the overreaching of others. We started out with the preservation of a piece of timber, but the protection of the wasting mind becomes at last a subject so large that it embraces every form of industrial development and every phase of human life. Then as we proceed we find that government becomes an important factor in conservation.

If you visit the Valley of Jordan you will be told that it is as fertile as the Valley of the Nile. If you ask why that country is a waste, why that land is not cultivated, they will tell you that it is because under the Sultan there is no protection for the man who tills the soil. They will tell you that those lands lie idle because if a man dares to cultivate the soil by the time his crop is ready to harvest the Bedouins sweep down from the mountains and take what he has raised. So we see that one of the elements in conservation is a government that will protect each citizen from

every hand uplifted for his injury. After we have studied the subject of conservation a while we find that, like other subjects, it touches every question with which we can deal.

It is only another one of those inspiring causes that will result in a larger intelligence and therefore in the application of a larger patriotism to the solution of the problems of our country. We find after we have discussed all these questions that they bring us all together, make us interested in each other, and I am glad that as the world moves forward we are coming to understand more and more our relations with each other; we are coming to understand more and more, whether we like it or not, that we are indissolubly linked each one to every other and that we must all rise or fall together.

Conservation is a very large subject; the more we study it the bigger it becomes and that at last we see that it touches us and all others everywhere, and then it becomes a part of our lives, and we are ready to do our part to conserve the resources of this nation, its material resources, its human resources and the government under whose beneficence and the beneficence of God the human being develops. I thank you. [Applause.]

DECLARATION OF PRINCIPLES BY THE CONSERVATION AND STATE DEVELOPMENT CONGRESS.

I. We endorse the general principles of development adopted by the National Conservation Congress at its session in St. Paul, Minn., 1910.

II. We urge that a class known as grazing lands be included in the government classification of the public domain, and that the State Soil Survey classify and describe all land within the borders of the state to serve as a basis for taxation and farm management.

III. We favor a careful investigation of the resources and possibilities of the Sandhill Region.

IV. We call attention to the serious decline in soil fertility due to erosion and continuous cropping and urge methods of cultivation which will check this loss, and a system of crop rotation which will conserve the fertility.

V. We urge more active tree planting in all parts of the state.

VI. We call attention to the practicability of increasing the fruit production of this state, and the need of the renovation of neglected orchards.

VII. We favor the improvement of our cereal and forage crops, and urge state supervision of our seed industry, suggesting that this can best be carried out by growing and selling seeds under rigid inspection.

VIII. We call attention to the necessity of the further development of the live stock industry, realizing that it is one of the best methods of conserving our soil fertility and that it affords the most profitable method of disposing of the grain and forage crops. To this end, we urge the use of silos, greater care in selecting breeding animals, a system of in-

spection of the same, and measures for the eradication of contagious and infectious diseases.

IX. We urge legislation and investigation tending to conserve and develop our native plant, bird and fish resources.

X. We heartily endorse the idea of creating a National Department of Health.

XI. We recognize the social and economic importance of good roads and urge the necessity of speedy and permanent development along this line.

XII. We favor the development of home industries which will use native raw materials and also the by-products of our manufactures, and urge closer co-operation between country and city as an important factor in this development.

XIII. We urge a thoughtful consideration of the opportunities for investment afforded by this state, and we further urge state aid as a means of gathering and publishing facts concerning the resources and possibilities offered in Nebraska.

XIV. Recognizing that our basic industry is agriculture, we endorse the principle of agricultural education, but also urge the importance of special education for the various professions and industrial pursuits.

XV. This being a declaration of principles, we have referred all detail recommendations to the special committee having the subject in charge, their action to be subject to the endorsement of the executive committee of this congress. This statement of principles is subject to amendment by future congresses.