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THE
FIRST EXPOSITION
OF CONSERVATION
AND ITS BUILDERS

An Official History of the National Conservation Exposition, held at Knoxville, Tenn., in 1913
and of its Forerunners, the Appalachian Expositions of 1910-11

EMBRACING

A REVIEW OF THE CONSERVATION MOVEMENT
IN THE UNITED STATES

FROM ITS INCEPTION TO THE PRESENT TIME

Edited by
W. M. GOODMAN

CONTRIBUTORS:—Gifford Pinchot, President National Conservation Association; Don Carlos Ellis, in charge of education U. S. Forest Service; Miss Julia C. Lathrop, Chief Children's Bureau, U. S. Department Commerce and Labor; John H. Wallace, Jr., Commissioner of Fish and Game, Alabama; Fairfax Harrison, President Southern Railway; Gardner T. Swartz, Manager Educational Exhibitions Co., Providence R. I.; Dr. C. H. Gordon, Associate State Geologist, Tennessee; John A. Switzer, Associate Professor of Experimental Engineering, University of Tennessee; B. R. Strong, President East Tennessee Audubon Society; Cyrus Kehr, Secretary Tennessee Highway Association.

KNOXVILLE, TENNESSEE

1914

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FOREWORD

The purpose of this book is twofold: to record valuable facts of historic interest, and to teach lessons that will make history in the progress of civilization.

Conservation is a subject that cannot be treated, even in a general review, as relating solely to things accomplished. Every application, every discussion of its principles, point unerringly to duties involved in all the affairs of life.

Economy is the avoidance of waste. Conservation means economy, and something more; it also means such development of natural resources as will make them conduce to the beneficent purposes for which they were created.

There can be no greater work for the nation, nor for the world, than the promotion of the general welfare, as the welfare of the present generation is inextricably bound up with the welfare of generations to come. Right reason must be the guide of energy and enterprise if we are to succeed in this work. We cannot proceed blindly, nor follow precedents which left disaster in their wake, without falling into serious errors. We must study the nature of benefits, and the people must learn that the proper management of natural resources, including man himself, involves moral no less than material considerations.

The accumulation of wealth by such lumbering operations as lead to the destruction of forests does not promote general interests; such wealth in the hands of its producers, or their successors, may not properly be termed a benefit for the reason that its production results in the loss of a great natural resource, of untold value to man, which its expenditure, however wisely directed, can not replace.

We must look to the future as well as to the present if the distinction between right and wrong is to be clearly defined in all the relations of life, and if we are to give a good account of our stewardship. Duty demands a careful weighing of the consequences of our acts, however generous may be the directing impulse.

If we put one in a position to amass a fortune at the expense of health and morals, we become the authors of injuries instead of benefits, which will effect not only the person we endeavor to favor, but his descendants as well. On the other hand, if we put one in a position where he will succeed in promoting health and morals, although earning but a bare subsistence, we confer benefits upon him, upon the community in which he lives and upon all who are to come after him.

There is another thing to be considered: The accumulation of wealth, or efforts to increase incomes, or to promote temporary pleasures or sports, which result in the waste or destruction of natural resources, show a state of ignorance which, if permitted to continue, will ultimately leave us destitute of nearly every-

thing that is necessary to the health, comfort and happiness of man. Education must go beyond the mere training of the intellect. There must be higher objects of desire than those which are just before the mind.

The country is facing grave problems, the solution of which must come from a clear understanding of conditions, and immediate action. The work of man in dealing with the forests and soils, which were given for use and not for abuse, may aptly be compared to the work of smaller forms of life, such as the insects which destroy our crops. Devastation is apparent on every hand, in denuded hills and galled and gullied fields.

For the reasons given, and for many other good reasons, the National Conservation Exposition was held at Knoxville in 1913. It was an exposition of nationwide importance, and timely. It was not a celebration, like other large expositions. It looked forward, pointing the way to better conditions. It was in line with the advanced thought of the day. It stood second to no enterprise of recent years as an agency for the promotion of the best interests of mankind, natural and ethical.

The necessity of conserving natural resources may not be brought clearly and indubitably to the mind through the medium of exhibits which are designed to teach economy and sane methods of development, but such exhibits are of great educational value and will ultimately lead to beneficent results.

Man is slow to learn. Even the most terrible disasters which are caused by floods fail to teach the people directly effected the importance of the principles which advocates of forest conservation would have them know and apply. Causes and effects are apparent to many, but the importance of removing the causes and of preventing further spread of these sources of ills is not readily grasped by the public mind.

There may be health and happiness in the well-appointed homes of the rich, but the people so blessed are not immune to the effects of disease and vice that find a nidus in hovels and slums. This truth may be dimly comprehended by most people, but how few there are who see clearly the dangers with which they are threatened and the urgent need of having the work of correction begin at points from which the dangers arise. The health exhibits of the exposition were intended to impress this fact upon the minds of all visitors—the prosperous, enlightened and healthy as well as the poor, ignorant and diseased.

The promotion of the general welfare is a work coeval with civilization, and its conclusion will be either in the sounding of the knell of progress or in the heralding of the dawn of the millennium. It has had many interruptions, as noted in the history of man in all his ages, most of them being directly traceable to misguided reason and energy. But with all, there has been advancement, and the world-wide movement toward the better is accelerated by every discovery of science, by every

useful invention, by the introduction of every process of manufacture that prevents loss of time, labor or material; by the adoption of better methods of instruction in schools and colleges; by improvements in the manner of preparing the soil and fertilizing, cultivating, harvesting and marketing of crops; by the eradication of disease and disease inducing agencies—by everything that the advancing illumination of the mind recognizes, accepts and applies for the common good.

So, exhibits that are made to teach right living, the proper use of all natural wealth and the protection of the sources of this wealth, will aid in the promotion of the general welfare. All the good effects may not be seen for a long time—in fact, the good that is to come from such displays may never be generally recognized even as an indirect result of these efforts to disseminate knowledge—but this is of little moment if benefits are thus conferred upon the present and future generations; or if we are made better guardians of all that we hold in trust for those who are to come after us.

In compiling this history of the First Exposition of Conservation and its Builders, an earnest effort was made to prepare a just record of all that has been accomplished by national leaders of conservation and by their co-workers—the people of Knoxville. It is important history; not alone for the reason that it embraces an interesting review of the conservation movement in the United States, and facts relating to legislation by the national and state governments as results of this movement, but for the further reason that it shows the turning point in exposition building—from the old idea of celebrating events and human achievements to the modern idea of forecasting prospective development and pointing the way to permanent progress in the attainment of the highest objects of life.

THE EDITOR.

Knoxville, Tenn., February 23, 1914.

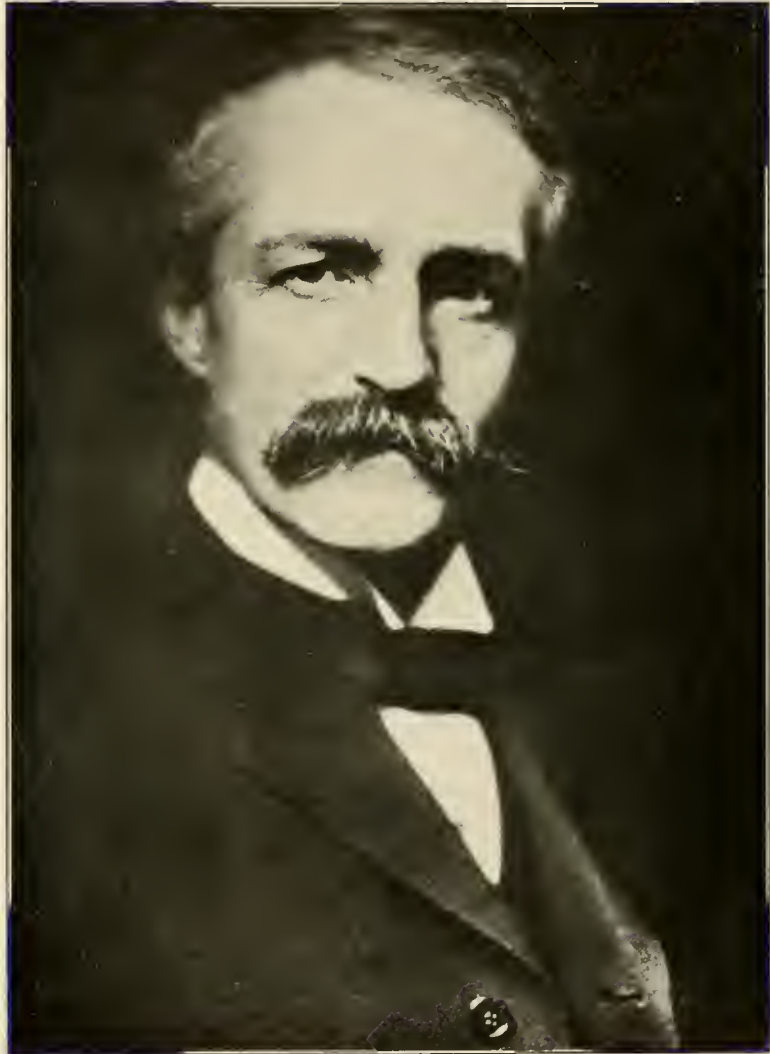
INTRODUCTION

BY GIFFORD PINCHOT.

Unquestionably the best exhibition I have seen of the needs, possibilities and accomplishments of the movement for the conservation of our natural resources, and the only exhibition I know of which was devoted primarily to this movement, was to be found at the Conservation Exposition of Knoxville. The material resources of forests and waters, those in which the Southern Appalachians are richest, were especially well covered, while the resource of health generally and of childhood in particular were presented with exceptional force and effectiveness. By means of these exhibits people were taught who could not have been reached in any other way; men and women were interested whose attention could not be attracted by writings or lectures; farmers who had persisted in antiquated methods of soil cultivation for a generation were prompted to apply the practices which the departments of agriculture of our federal and state governments and our colleges had proven to be worth while; mothers and fathers, too busy to pursue knowledge concerning the physical well-being of their children, had the knowledge brought to their doors. The principles of the conservation movement had been fully discussed in the press and from the lecture platform, but never before, in one time and place, had conservation been so concretely and tangibly presented.

Of perhaps an importance equal to that of the direct lessons taught by the exhibits was the interest and inspiration concerning the wealth of our land and its perpetuation which was awakened in the great region about Knoxville and in fact throughout all of the Southeast States by the very nature of the exposition and by the thought that so great an enterprise in the South was to be devoted to the advancement of these ideas. This Exposition would have been a worthy undertaking for any city, and that so small a city as Knoxville should venture to stage the enterprise and then carry it through must in itself have been inspiring to all the people of the Southland.

The National Conservation Exposition was a worthy monument to the industry, perseverance in the face of many obstacles, keen intelligence and tireless zeal of those who built it. The good which it must have accomplished has brought honor to them, to their city, to the Appalachian region, and in fact to the nation, for every part of our country was touched by it. There was need that the work be done. It was an undertaking which many who should have known declared was too great for so small a city. And yet Knoxville accomplished the task, accomplished



GIFFORD PINCHOT

PRESIDENT NATIONAL CONSERVATION ASSOCIATION, CHAIRMAN ADVISORY BOARD
NATIONAL CONSERVATION EXPOSITION

it successfully, and placed a new mile stone in the road of progress toward conservation.

More than that, this Exposition has opened a new road toward that goal. The teaching of conservation through expositions had been only a lane before. Exhibits on conservation had been made by a few branches of the federal government as parts of expositions directed primarily toward other ends. The institution of an exposition devoted primarily to this subject has made this way of teaching a public highway of knowledge. All praise is due to the city and the people who have done this new and good work.

The National Advisory Board of the Exposition, of which I had the honor to be chairman, was privileged to help in some small measure toward the plans for the exhibits of conservation. This board was formed at the suggestion of some of the leading workers of Knoxville, who constituted the promotion board of the Exposition. The purpose of the Advisory Board was to encourage the establishment of an exposition of conservation, to outline a policy for such an exposition with regard to conservation exhibits, and to advise on questions concerning the conservation of natural resources which were submitted. The actual work performed by this board was small, because the making of plans for others to execute and the giving of advice for others to act upon was incomparably smaller than the work of execution. But had the Advisory Board been called upon to undertake much greater tasks, its efforts would have been amply repaid by the results which the real workers, the officers and directors and their associates, accomplished.

I should not speak of the Advisory Board without taking the opportunity to mention the work of the late Dr. W. J. McGee, who was one of its earliest members and one of its most ardent and earnest workers up to a few weeks before his death, on September 5, 1912, almost a year before the opening of the Exposition. His loss was keenly felt on the board, as in the whole conservation movement, of which his was one of the guiding intellects. His hand was not as often seen in the work as were those of others, but it was his sound judgment, keen foresight, and timely and untiring labor which gave the movement much of its brilliance and stability. The same disposition to give the best that was in him for the public weal, which characterized all his work, appeared again in his work for the Exposition. He was always ready to expend himself in behalf of the Exposition and did more than any other member to formulate plans for the exhibits devoted to conservation.

I desire to voice the gratification of the Advisory Board at the action of the Board of Promotion in choosing Knoxville as the location of this Exposition, an action of which we formally approved at the time. The beauty and commercial importance of the region of Knoxville, the initiative, energy and hospitality of its

people, who combine the vigor of the North with the warm hearted generosity of the South, the large population within easy traveling distance of the city, Knoxville's preparedness to stage the Exposition and its experience with former expositions which proved so valuable a part of the preparation, the charm of Chilhowee Park as an exposition site, and Knoxville's location in the midst of a region so rich in both developed and undeveloped natural wealth, all combined to make the city an ideal place for the purpose. It was fitting also that the South should hold this exposition. The resources of the North had already to a much greater extent been wasted, the West was in the throes of destructive exploitation, the South was just in the awakening of its development, its opportunities had largely been passed over, and it was in great part virgin. North and West had suffered more from waste, the South was just ripe for the application of the lessons which the costly experiences of other sections taught so graphically.

The National Conservation Exposition was a school in which some of the most elemental and important lessons of conservation were taught. I believe that the South, and in fact the entire nation, has profited by this lesson.

GROWTH OF THE EXPOSITION IDEA

BY W J MCGEE*

During the later half of the nineteenth century America's industrial advancement outran all precedent or parallel. The abounding natural resources in timber, coal, iron, and other materials were made known by State surveys and other means, and were exploited lavishly; manufacturing, railway building, and other industries were pushed energetically; foundations were laid for vast fortunes; millionaires and multi-millionaires came up; and through growing trade and larger wages than were paid in other countries money abounded and per capita wealth rose above all earlier or contemporary standards. During the latter half of this era of expansion the exposition idea (borrowed from Europe) took root, and from the Centennial Exposition of 1876 to the Universal Exposition of 1904 flourished exuberantly. The great series of national and international expositions beginning in Philadelphia and ending in St. Louis were designed to display and did display effectively the greatness of the natural wealth of the country, and the marvelous industrial growth brought about through utilization of this natural wealth. Taken together, the expositions rang out an anthem of national inheritance and national achievement, sounded a pean of national glory, such as the world had not heard before. Each was a record of conquest over nature wrought by human genius, each a mile-mark of further progress, each a summation of material enrichment of its date.

During the first decade of the twentieth century a new realization of the value and importance of the natural resources took shape. Through scientific surveys by States and the Federal Government, designed primarily to make the resources known and guide their exploitation, the quantities of standing timber, of iron ore and coal in the ground, and of other natural materials, were measured; and the quantities were found not unlimited according to the common boast in the heyday of early exploitation, but of such amounts as to meet current demands for only a certain number of years, easily reckoned and understood in terms of the written history of mankind—e. g., at the current increasing rate of use computed in 1908 the standing timber of the country would last a generation, the

*Dr. McGee, Soil Water Expert of the U. S. Department of Agriculture, and one of the national leaders of conservation, did not live to see the new exposition idea put into effect as he had helped to plan, and which he so clearly set forth in this announcement. His passing was deeply lamented by all of his associates in the Department, where he did so much effective work, and on the Advisory Board of the exposition, of which he was an enthusiastic and active member.

high-grade iron ore a century, and the good coal from one to three centuries, according to the varying allowances made by different computers. In short, it became clear that the standard resources on which our great and growing industries rest are foredoomed to exhaustion within a small fraction of the period already covered by the Christian era, unless means be adopted to prevent waste and otherwise conserve the natural stores for the benefit of posterity. As understanding of the limitation of the natural resources spread, moral sense was awakened; the feeling of the natural right of the rising generation (and of generations still to come) to a fair share of the resources took form; and the natural wealth of this magnificently endowed country came to be viewed as involving moral no less than material considerations. Numberless manifestations of the new view have appeared—in legal enactments, the creation of State commissions, the improvement of educational curricula, etc.; but no more striking indication of the modern view has appeared than the idea of a national exposition designed to illustrate the conservation and development of the natural resources with a view to the permanent enrichment of the country and people. The change thus wrought in the exposition idea is fundamental; the old exposition looked backward, the new looks forward; the old exposition was solely material, the new is essentially moral; the old was a proud boast of achievement, the new a signpost to progress and an assurance of perpetuity. The expositions of the past were as songs of achievement at the end of a good day's work, the new may well be as a living and tangible promise of a still more glorious tomorrow foreordained by the wise action of today.

THE CONSERVATION MOVEMENT IN THE UNITED STATES

The conservation movement in this country was not the result of a sudden awakening to the dangers of wastefulness, although taking form and arousing nation-wide interest through the call for the first Conservation Conference at Washington and the creation of the National Conservation Commission in 1908. Years before that time there were editors and public men who directed attention to the evils of such methods as are followed in what is termed the development of natural resources, and particularly to those which were even then apparent in the denudation of forests. They did not have the grasp of the situation we have today; neither did they have the machinery to put into operation the ideas on conservation that had been evolved, but the fact that they perceived the danger and urged a remedy shows that they were alive to the situation. As far back as 1887 the *Atlanta Constitution* had the following to say on the preservation of our forests:

“In this democratic country, where every citizen claims the right to use the land as he pleases, digging down for hidden treasure, and stripping it of the timber, it is difficult to see how our forests are to be preserved.

“The paternal governments of Europe do not allow such small matters to perturb them. They simply go ahead and require the landowners to leave a certain proportion of the timber uncut, besides requiring them to plant trees. We cannot very well compel citizens to do these things. We must persuade them, or offer them sufficient inducements. James Byers of the National Forestry Bureau, in a recent speech, suggested that the better policy would be to exempt from taxation all lands set out in forests. Doubtless this would do much toward preventing the wholesale destruction of our forests. In some of the European forests all that is done is to preserve the undergrowth to such an extent as will always leave a young tree to take the place of the larger tree cut away for timber.

“If the exemption plan will do any good it should be given a trial. At least one-fourth of our territory must always remain in forests, or we must make up our minds to see our land gradually turn into a desert. If a state government system will do any good, then the sooner we put it into operation the better.”*

*As indicated in this article, the timber resources of the country were the first to receive attention from the pioneers of conservation and from the National government. The evils of deforestation, resulting from careless lumbering, waste and forest fires were too apparent to be overlooked, while the exploitation and abuse of other resources were considered only after careful investigations had disclosed true conditions.

The work began in a practical way by the establishment of National Forests. In 1891 Congress authorized the President to establish “forest reserves,” and President Harrison created the first one—the Yellowstone—that same year. In 1907 there were about 145,000,000 acres of national forests in the United States and about 5,000,000 in Alaska and Porto Rico.

So it was from time to time, and perhaps with greater frequency and force than we now realize, the warnings of advocates of sane development and wise use of forest and other natural resources were heard throughout the land. The public conscience became awakened. Seeing the increased value and noting the destructive consumption and waste of the natural resources, people began to realize that the permanent welfare of the country as well as the prosperity of their offspring were at stake.

A sense of duty thus aroused found expression in the call by President Roosevelt upon the governors of the States to meet him in conference, and in the declaration of this conference at its sessions in the White House in May, 1908. The action of the conference led to the appointment of the National Conservation Commission, with authority to collect information and co-operate with similar commissions appointed by the States in the great work of conserving the natural resources of the country. In transmitting a report of this Commission, in a special message to Congress, the President said:

“This first inventory of natural resources is undoubtedly but the beginning of a series which will be indispensable in dealing with what we have. * * * We cannot defer action until complete accuracy in the estimates can be reached, because before that time many of our resources will be practically gone. It is not necessary that this inventory should be exact in every detail. It is essential that it should correctly describe the general situation; and that the present inventory does. As it stands it is an irrefutable proof that the conservation of our resources is the fundamental question before this nation, and that our first and greatest task is to set our house in order and begin to live within our means.

“The first of all considerations is the permanent welfare of our people; and true moral welfare, the highest form of welfare, can not permanently exist save on a firm and lasting foundation of material well-being. In this respect our situation is far from satisfactory. After every possible allowance has been made, and when every hopeful indication has been given its full weight, the facts still give reason for grave concern. It would be unworthy of our history and our intelligence, and disastrous to our future, to shut our eyes to these facts or attempt to laugh them out of court. The people should and will rightly demand that the great fundamental questions shall be given attention by their representatives. I do not advise hasty or ill-considered action on disputed points, but I do urge, where the facts are known, where the public interest is clear, that neither indifference and inertia, nor adverse private interests, shall be allowed to stand in the way of the public good.

“The great basic facts are already well known. We know that our population is now adding about one-fifth to its numbers in ten years, and that by the middle of the present century perhaps one hundred and fifty million Americans, and by its end very many millions more, must be fed and clothed from the products of our soil. With the steady growth in population and the still more rapid increase in consump-

tion, our people will hereafter make greater and not less demands per capita upon all the natural resources for their livelihood, comfort, and convenience. It is high time to realize that our responsibility to the coming millions is like that of parents to their children, and that in wasting our resources we are wronging our descendants.

"We know that our rivers can and should be made to serve our people effectively in transportation, but that the vast expenditures for our waterways have not resulted in maintaining, much less in promoting, inland navigation. Therefore, let us take immediate steps to ascertain the reasons and to prepare and adopt a comprehensive plan for inland-waterway navigation that will result in giving the people the benefits for which they have paid but which they have not yet received. We know now that our forests are fast disappearing, that less than one-fifth of them are being conserved, and that no good purpose can be met by failing to provide the relatively small sums needed for the protection, use, and improvement of all forests still owned by the Government, and to enact laws to check the wasteful destruction of the forests in private hands. There are differences of opinion as to many public questions; but the American people stand nearly as a unit for waterway development and for forest protection.

"We know now that our mineral resources once exhausted are gone forever, and that the needless waste of them costs us hundreds of human lives and nearly \$300,000,000 a year. Therefore, let us undertake without delay the investigations necessary, through state action or otherwise, to put an end to this huge loss and waste, and conserve both our mineral resources and the lives of the men who take them from the earth.

"I desire to make grateful acknowledgment to the men, both in and out of the government service, who have prepared the first inventory of our natural resources. They have made it possible for this nation to take a great step forward. Their work is helping us to see that the greatest questions before us are not partisan questions, but questions upon which men of all shades of opinion may be united for the common good. Among such questions, on the material side, the conservation of natural resources stands first. It is the bottom round of the ladder on our upward progress toward a condition in which the nation as a whole, and its citizens as individuals, will set national efficiency and the public welfare before personal profit.

"The policy of conservation is perhaps the most typical example of the general policies which this Government has made peculiarly its own during the opening years of the present century. The function of our Government is to insure to all its citizens, now and hereafter, their rights to life, liberty, and the pursuit of happiness. If we of this generation destroy the resources from which our children would otherwise derive their livelihood, we reduce the capacity of our land to support a population, and so either degrade the standard of living or deprive the coming generations of their right to life on this continent. If we allow great industrial organizations to exercise unregulated control of the means of production and the necessities of life, we deprive the Americans of to-day and of the future of

industrial liberty, a right no less precious and vital than political freedom. Industrial liberty was a fruit of political liberty, and in turn has become one of its chief supports, and exactly as we stand for political democracy so we must stand for industrial democracy.

"The rights to life and liberty are fundamental, and like other fundamental necessities, when once acquired, they are little dwelt upon. The right to the pursuit of happiness is the right whose presence or absence is most likely to be felt in daily life. In whatever it has accomplished, or failed to accomplish, the administration which is just drawing to a close has at least seen clearly the fundamental need of freedom of opportunity for every citizen. We have realized that the right of every man to live his own life, provide for his family, and endeavor, according to his abilities, to secure for himself and for them a fair share of the good things of existence, should be subject to one limitation and to no other. The freedom of the individual should be limited only by the present and future rights, interests, and needs of the other individuals who make up the community. We should do all in our power to develop and protect individual liberty, individual initiative, but subject always to the need of preserving and promoting the general good. When necessary, the private right must yield, under due process of law and with proper compensation, to the welfare of the commonwealth. The man who serves the community greatly should be greatly rewarded by the community; as there is great inequality of service, so there must be great inequality of reward; but no man and no set of men should be allowed to play the game of competition with loaded dice.

"All this is simply good common sense. The underlying principle of conservation has been described as the application of common sense to common problems for the common good."

This and subsequent reports of the Commission comprise several volumes. In the first, above referred to, are found the principal facts and figures which are incorporated in this review.

The following statements taken from this report, showing what forests do, clearly demonstrated the importance of conserving and extending forest growth:

"Our industries which subsist wholly or mainly upon wood pay the wages of more than 1,500,000 men and women.

"Forests not only grow timber, but they hold the soil and they conserve the streams. They abate the wind and give protection from excessive heat or cold. Woodlands make for the fiber, health, and happiness of each citizen and of the nation.

"The fish which live in forest waters furnish each year \$21,000,000 worth of food, and not less than half as much is furnished by the game which could not exist without the forest.

"The industries which use wood wholly or mainly in manufacture represent an investment of over \$2,250,000,000 and yield each year a product worth nearly \$3,000,000,000.

"Forests conserve streams by regulating their flow. Our knowledge of the effect of forests upon the quantity of water carried by streams is not yet complete. Our knowledge of the effect of forests upon the regularity of stream flow has an adequate basis of observation and record.

"We do not possess complete scientific proof that forests increase rain, but known laws governing rainfall and the known physical effects of forests lead straight to that conclusion. A part of the falling rain or snow is checked by the tree tops and returned to the air by evaporation. But their evaporation is wholly or nearly compensated for by the smaller evaporation from the soil under forest cover than from the soil in the open. The forest soil gives up water to the air more slowly than either brush land, meadow land, or cultivated fields.

"Both observation and record show fully that forests powerfully affect the manner in which water reaches streams and passes down them. The forest floor is a blanket, and like a blanket it will hold more water than will the harder and relatively less porous soil of the open. A saturated forest soil will hold more than half its dry weight in water, or over 6 inches of water for every foot of soil. This, as well as the breaking up of forest soil by the roots of trees and undergrowth, makes it more effective than any other cover for the intake of water into that vast underground reservoir from which all streams and springs are fed.

"When the forest is cleared from a mountain watershed the blanket formed by the decaying leaves, branches, and fallen trees is burned up, dried by the sun, or carried off by wind and water. This is inevitably followed by increase in the frequency and duration of floods. This fact is known to every man who has had an opportunity to observe it. To those who have not had this opportunity the story is told by actual record of stream flow upon the following rivers for a period during which the mountain forests on their watersheds were rapidly denuded. These are such as the Ohio, Monongahela, Allegheny, Cumberland, Alabama, Savannah, Wateree, Congaree, and Muskingum.

"That surface conditions affect stream flow is shown by the record of streams whose naturally treeless watersheds by cultivation have been made more retentive of water. The principal watershed of the Red River lies in the prairie country of western Texas and Oklahoma. With slightly decreased rainfall this stream shows during the last sixteen years a marked decrease in the frequency and duration of floods and of low water. During this period much of its watershed has been cultivated, groves have been planted, and fires checked, resulting in a larger capacity for the absorption and storage of water.

"That forests hold soil and that hillsides denuded of forest do not hold their soil is to be seen in any mountain region in the United States. One small stream has been found by actual measurement to deposit silt in one year equal to 1½ tons per acre of its watershed. For the whole United States the loss of soil each year is from one to two thousand million tons. At the lowest estimate the total quantity of silt carried by our streams would cover 1 foot deep a surface of more than 900 square miles. The larger part of it is deposited in the lower courses of our streams and in our harbors, a menace to navigation and to present developed water powers, and a handicap to their development.

"The National Forests in the Rocky Mountain and Pacific coast States afford summer ranges to over 12 per cent of the cattle and 21 per cent of the sheep in the States in which they lie. If this live stock were not fed in the forests during the summer months it would be without natural forage during the winter. For the East, the number of forest-fed live stock can not be given. But notably in the southern pine belt and in the southern mountains, live-stock owners, especially small holders, turn out their sheep, cattle, and hogs in the forests for the larger part of each year.

"That the existence of nearly all kinds of wild game depends directly upon the conservation of the forest is well known. The deer killed in six States alone in the northeast represents each year a food value of over \$1,000,000. The raw furs exported yearly from the United States are worth \$7,000,000 to \$8,000,000, and raw furs worth in the aggregate still more are kept for manufacture here. Most of these furs are taken from forest animals. Relatively few kinds of fresh-water fish, and mainly those of inferior food value, will endure in streams fed from denuded watersheds."

Attention was called to what was wasted, and plans offered for preventing further waste and for making most of our greatest resources perpetual sources of wealth.

It was shown that since 1870 forest fires had each year destroyed an average of fifty lives and \$50,000,000 worth of timber. Not less than 50,000,000 acres of forest were burned over yearly. That young growth destroyed by fire was worth far more than the merchantable timber burned. One-fourth of the standing timber was left or otherwise lost in logging. The boxing of longleaf pine for turpentine had destroyed one-fifth of the forests worked. The loss in the mill was from one-third to two-thirds of the timber sawed. The loss in the mill product through seasoning and fitting for use was from one-seventh to one-fourth. Great damage was done by insects to forests and forest products. An average of only 320 feet of lumber was used for each 1,000 feet which stood in the forest.

Under the caption "What Should Be Done?" the following statements appear:

"We should stop forest fires. By careful logging we should both reduce waste and leave cut-over lands productive. We should make the timber logged go further by preservative treatment and by avoiding needless loss in the woods, the mill, the factory, and in use. We should plant up those lands now treeless which will be most useful under forest. We should so adjust taxation that cut-over lands can be held for a second crop. We should recognize that it costs to grow timber as well as to log and saw it.

"We should continue and perfect, by State and nation, the preservation by use of forests already publicly owned; and we should extend it to other mountain forests more valuable for the permanent benefit of the many than for the temporary profit of a few.

“For each million acres of forest in public ownership over 4,000,000 are privately owned. The conservation of public forests is the smaller task before the nation and the States. The larger task is to induce private forest owners, which means 3,000,000 men, to take care of what they have, and to teach wood users, which means every one, how not to waste.

“If these things are done, they will conserve our streams as well as our forests. If they are not done, the usefulness of our streams will decrease no less than the usefulness of our forests.”

Of special interest were the facts presented concerning the duty of the private owner. The main object of the Expositions held at Knoxville was to teach farmers and timber-land owners the necessity for general co-operation if we are to preserve the forests, streams and soils of the country. The report showed that four-fifths of our standing timber in 1907 was in private hands, and continued:

“The conservation of our forests and of the timber used depends mainly upon individual forest owners and users. If American citizens will protect their forests from fire, will provide by conservative logging for a good second crop, and will take every reasonable precaution against the waste of timber in the woods, in the mill, in the factory, and in use, their forests will eventually supply more than their need, continuously. If these things, each one of which will pay now and in the future as well, are not done, this nation will ultimately be dependent upon public forests. These, if cut absolutely clean, would furnish only enough lumber to meet our national need for ten years. At the end of that time they would be exhausted. If we are to be saved from great suffering for lack of timber, the forests of private owners must supply the timber.”

The prevention of forest fires, conservative turpentineing and logging, reforestation, economy in mills, the manufacture of by-products, the preservative treatment of timber, better fire laws, state forests and the duty of teaching forest owners and users everywhere how to conserve their forests, were subjects treated at length and in a most forceful manner.

The report from the Section of Lands was no less important, viewed from the standpoint of conservation.

From 30,000 replies to inquiries addressed to farmers in all the counties of the United States, it was shown 16,597 square miles of farm land, or 0.6 per cent. of the total area of the country had been abandoned, and that 6,076 square miles, or 0.2 per cent. of our territory were, after abandonment, devastated by soil erosion. It was stated in the report that in districts liable to extensive soil erosion, the abandonment of fields is disastrous; in some cases the old-field erosion not only removes the soil proper, but carries away the subsoil and even the surficial deposits, exposing bare rocks or intractable formations over which soils naturally redevelop with extreme slowness, and can not be extended artificially except at large cost.

The fact that over 6,076 square miles, or 3,888,640 acres, of our abandoned fields have been destroyed in this way, says the report, is appalling. Not only would the area form nearly 100,000 farms capable of sustaining a population exceeding that of any one of our 12 least populous States, but each gully starts others in such manner as continually to extend the devastation. The importance of remedying the evil without delay was clearly set forth. It was shown that communities and States should be awakened to the sacrifice of public interest through old-field erosion. First in connection with abandoned fields, and progressively in cultivated fields, soil wash, it was asserted, should be considered a public nuisance, and the holder of the land on which it is permitted to occur should be held liable for resulting damages to neighboring lands and streams.

Attention was called to the wastes due to noxious insects and mammals; to the losses of live stock by disease, to the rapid extermination of wild game and fur-bearing animals; to the fact that conflicting laws or absence of laws in the different states seriously retarded the production and propagation of fish and the restocking of streams and lakes; to the possibilities of dry farming and the benefits to be derived from the reclamation of swamp and overflow lands. All of these subjects have since claimed wide attention and their discussion has resulted in legislation that will add much to the wealth of the nation and increase the benefits to be derived from natural resources by the present and future generations.

The report of the Secretary of the Section of Minerals, contained a complete statement of the mineral resources of the country, and showed the value of the annual products of the mines of the United States, and the known supplies of coal, petroleum, natural gas, high grade iron ores, phosphate rock, etc., and gave the following as a rational basis for the conservation of these resources:

“In considering the conservation of resources it should be held in mind that:

“(1) The present generation has the power and the right to use efficiently so much of these resources as it needs.

“(2) The nation's needs will not be curtailed; these needs will increase with the extent and diversity of its industries, and more rapidly than its population.

“(3) The men of this generation will not mine, extract, or use these resources in such manner as to entail continuous financial loss to themselves in order that something be left for the future. There will be no mineral industry without profits.

“One of the essential steps is to adopt fundamental principles which give conservation as applied to mineral resources a rational basis. Some of the more important of these principles are as follow:

“(1) The resources which have required ages for their accumulation, to the intrinsic value or quantity of which human agency has not contributed, which when once exhausted are not reproduced, and for which there are no known substitutes, must serve as a basis for the future no less than for the present welfare of the

nation. In the highest sense, therefore, they should be regarded as property held in trust for the use of the race rather than for a single generation, and for the use of the nation rather than for the benefit of the few individuals who may hold them by right of discovery or by purchase.

“(2) Measured in terms of the needs of a great and rapidly growing country, the mineral resources are limited in quantity.

“(3) Measured in terms of the life of the nation, at the present increasing rate of consumption and waste we will, while the country is yet in its infancy, exhaust the resources necessary as the essential basis for the welfare of all succeeding generations. To shirk this responsibility on the claim that succeeding generations will probably discover other now unknown resources for their use is unjust and irrational.

“(4) The right of the present generation to use efficiently of these resources what it actually needs carries with it a sacred obligation not to waste this precious heritage.

“(5) The right to profit in the mining and utilization of our mineral resources does not carry with it the right to destroy the birth-right of generations yet unborn, in order that we of to-day may obtain more easily and more cheaply the products we need for present use.

“(6) It is therefore reasonable to expect that the users of mineral products will pay for them such higher prices as will make profitable their mining and preparation without serious waste.

“(7) It is also reasonable to expect that the resulting increase in the first cost of the crude material will insure their more efficient use, and that this in turn will both help to keep down the ultimate cost of finished products and to conserve the resources.

“(8) The very abundance and cheapness of our resources have developed an American habit of waste which is the greatest menace to our future welfare. This waste of the past and present entails on us a still greater obligation to strive for the highest possible efficiency in the future mining and use of these resources.”

It was shown in the report that the co-operation of the States in this movement is essential as covering investigations of local problems and the enforcement of such legislation as might prove necessary in securing the fullest co-operation of the individual, who is naturally apt to consider first of all the question of immediate financial return on his investments.

National efficiency was not lost sight of in the deliberations of the conference. It was clearly recognized and as clearly shown that the greatest of our national assets is the health and vigor of the American people and that our efficiency must depend on national vitality even more than on the resources of the minerals, lands, forests and waters.

The addresses by many of the delegates to the conference showed that they had given much thought to the subject of conservation, and that they realized the

important truths that are taught by object lessons to be found on every hand, but which, owing to their common occurrence, are too often overlooked. James S. Whipple, Commissioner of the State of New York made one of the strongest talks on the conservation of forests, and pointed out facts that should be impressed upon the minds of the whole people.

He said, among other things:

"You can not have a country worth living in without forests, and the proof of it is the history of the whole world. You cannot have your water running in even flow from the uplands without forests.

"You are talking about conserving forests. New York City is spending \$150,000,000 to build a reservoir at Kingston to get water for the 4,000,000 people in the city of New York. If New York City does not protect the trees upon those historic hills, the Catskills, that reservoir will not do all that is expected of it, and they will have to go somewhere else for part of their water supply. Why? Because when you destroy God's reservoir under the trees man can never build one as good. It takes that natural reservoir to keep and hold the water, and you can only maintain that on the hillsides by keeping the trees there. Therefore their money will be spent in vain unless the trees are kept there.

"Some one in the report of this commission has said that there is as much water as there ever has been, and that we could not create water. Those men that drew the original report of this national commission are mistaken. You let a spring dry up on a mountain side because you have taken the trees away. That water is gone. It has disappeared from thousands of our springs today. But you reforest that hillside and you will reproduce the water. Those springs dry out because the forests are gone, but you reforest the hillsides and the water will come back.

"If water is not absolutely necessary to good farm lands, tell me why it is that the arid lands of the West do not produce without it. Tell me why it is when you pour a little water on the arid lands of the West, where stump cactus grew, and that only, you can produce 50 bushels of wheat to the acre. Tell me why it is that the far-famed, beautiful valley of the Euphrates, which we have heard so much about in song and story, once as beautiful as a dream because of its forests and streams, is to-day a howling waste. Simply because the forest trees were cut away and the waters dried up. We must have water. We must have the forests in order to have the water.

"We have got to have forests because of the healthfulness of a country. Do you not know that the forest trees are constantly pouring off into the air great quantities of oxygen; that they take up the things that are poisonous to your life and grow upon it; and that they furnish that which we must have? Do you not know that they have a wonderful effect upon the temperature of the country? Can anyone tell me why it is 25 degrees cooler in July at Lake Placid or Saranac than where I live in the Alleghenies, in the same altitude, 200 miles farther south? Nothing in the world except that splendid great forest that covers that upland in the northern part of the State of New York.

"Let me make it perfectly clear to you by the simplest illustration. If forests are not as valuable to a country as I say, what would be the condition if to-day, through some great force in nature, every tree and shrub should be swept from the face of Pennsylvania or New York State? Would not chaos reign tomorrow? Would not the home of every wild bird and every wild animal be destroyed? Would not every stream be uncovered? Would not the surface of the land be like the roof of this building for the water to fall on it and run immediately to the stream and down to the great sea and be lost forever? Would not the price of agricultural land in those two States depreciate in fifty minutes 50 per cent? If it would not, then the history of China is a lie; then the history of France is false. Three hundred years ago France swept its forests from its hillsides; its land was eroded and washed into its harbors. If it is not so, then France has spent \$200,000,000 since then to reforest those mountain sides for nothing."

Along the same line was the address by Senator Reed Smoot, Chairman of the Section of Forests, who said:

"I have recently visited that great and beautiful forest region which lies within the southern Appalachian Mountains, and I have this to say regarding the proposed purchase of a small portion of it by the Federal Government for the permanent use of the whole people. I believe as firmly as I believe that I am standing here on this platform that unless adequate action is taken, and taken soon, the destruction now going rapidly on in the Appalachian Mountains will either become irretrievable, or retrievable only at an expense so vast in time and money that it would stagger this nation. I do not believe that it is necessary or advisable for the Federal Government to acquire all mountain forests in this region, nor half of them, nor a fourth of them. The purchase of one-twentieth of these mountain forest lands, their protection from fire, and their conservation by use, would solve, and solve satisfactorily, this grave and urgent problem. But this entails, as every other effective national measure for the preservation of the forest entails, for its success, the co-operation of the State concerned, through fire protection, and of the private forest owners concerned, through better handling of forest lands in private ownership.

"These are the incontrovertible conclusions which flow from the knowledge of how we stand along main lines with relation to the forest. Unless we do these things our forests will inevitably fail, and the failure of our forests means the erosion of soil upon the mountains and a falling off in the usefulness of our streams. Action upon each of these conclusions requires no vast expenditures, no upheaval in present economic conditions, but merely the exercise of reasonable foresight and thrift by individual forest owners and users, by all the States, and by the nation. No one of these great agencies can alone solve our forest problem. They must work together, unitedly, vigorously, adequately, and at once. If they act together and now, we need not worry greatly about our future timber supply. If they fail to act, it will mean inevitable and grave timber scarcity in the near future and actual timber famine for those who come after us.

"We can no more disregard in our use of the forest than in our use of the mine, of the stream, and of the farm the fundamental truth that want follows close upon the heels of waste. But we should be thankful as individual forest owners and forest users, thankful as individual States, and thankful as a federation of States that the time for the application of an adequate remedy is not wholly past. Grave injury has been done to our country, which can not be repaired in a year, nor a decade, nor wholly effaced in a century; but the fact gained by our present inventory, above all other facts in importance, is, that if we act at once we still have forest enough left to produce, under right management, at least what timber we need.

"The cause of practical forestry is a just cause. On the one side are established habits of wastefulness and of misuse; on the other side is the doctrine of common sense, of business sagacity, of public duty. Because I believe in the American people, I believe that they will follow the right course and turn away from the wrong in this, as in all other crucial questions upon which depends the permanent welfare of our country."

Speaking of forest problems in his state, Governor N. B. Broward, of Florida, said:

"In the State of Florida, covered as it once was with tall yellow pine, so that a single acre of land would provide to the miller, perhaps, 10,000 feet of lumber, it has been cut off very largely over the whole State, so far as that State is concerned. The turpentine man has come in and is boxing the trees down to such a size that sometimes cutting a box on one side will cause the tree to fall in a moderate wind. Sometimes fire gets in and destroys many more, and this, with turpentine selling for 35 cents a gallon, which is no price at all for the value of turpentine, even not taking into consideration the great value of the trees to the State in which they are and to the owner of the trees.

"We look around the headwaters of our streams and we see the hillsides along the rivulets and branches being denuded of the timber and even the vegetation disappearing in many instances. We can see that the time is near by when that section of the country must suffer from first a drought and then a flood, as there is no foliage to retain the moisture in the land, and therefore it is just as though you would throw a cup of water in a tin basin that will not absorb or retain moisture and then tip it so it will run out; you would have a drought almost as quickly as you would a flood by throwing the water down and letting it run to the sea, unused in many instances, and not retained long enough to be of much use to anyone.

"The fact that these gentlemen have gone out into this country and have made these careful investigations, have estimated the value of our water, if used as power, and the many uses to which both the power and the water can be put on its way to the sea, is not only a great credit to them, but will become a great blessing to the people of this country. If the people will act in concert and take advantage of the situation while they may, great good will result. To preserve the forests is

necessary. Reforestation is necessary. It matters not whether it comes at a large or small cost, we must provide for the years to come; the not far distant years, but years almost in sight. At the present rate of cutting in the State of Florida, the vast timber areas that I see so graphically described by some man in Michigan as existing in Florida will disappear within twenty years."

In like manner were presented the subjects of waterways, lands and minerals, the speakers submitting facts and figures concerning the problems under discussion and suggesting remedies for existing evils and methods for the improvement of conditions.

The holding of this conference was the greatest step forward that has been taken in recent years. Gifford Pinchot was the real power behind the movement, as well as the Chairman of the Conference and one of the hardest and most earnest workers. It was through his efforts that a public opinion and a public interest in this subject was created, a result which probably could not have been brought about through the work of others. And it may be added that the country is indebted to Mr. Pinchot for much of the progress that has since been made in promoting the conservation of natural resources, for he has continued an active, earnest, watchful worker for the cause, keeping alive and increasing the interest in conservation which he so effectively aroused.

The first report of the Conservation Commission was mainly made up from reports of investigations conducted by the various scientific bureaus of Washington. These investigations were made by direction of the President, with reference to the various resources of the country, and especially with reference to their amount, the rate of exploitation, the increase of exploitation, and to give estimates of the probable time they would last, provided the future tendencies continued at the past rate. These reports were deemed sufficient to furnish a basis on which States and citizens could act.

The report of the Committee on Resolutions, which was unanimously adopted by the Conference, reads as follows:

"This joint conservation conference in session assembled in the city of Washington on this 10th day of December, in the year 1908, representing the several States and Territories of the United States through governors of States, State conservation commissions, delegates, and representatives of State and national organizations dealing with natural resources, does hereby resolve and declare:

"Having heard the report of the National Conservation Commission read, and having fully deliberated thereon, we hereby indorse the said report as a wise, just, and patriotic statement of the resources of the nation, of the thoughtless and profligate manner in which some of these resources have been and are being wasted, and of the urgent need for their conservation in the interests of this and future

generations, to the end that the prosperity and perpetuity of the nation may be assured.

"We especially approve of the principle of co-operation among the States and between these and the Federal Government laid down in that report and in the earlier report of the Inland Waterways Commission, and urge both state and federal legislatures to enact such laws as may be necessary to extend and apply such co-operation in all matters pertaining to the use and conservation of our resources.

"We especially commend and urge the adoption of the policy of separate disposal of the surface rights, timber rights, and mineral rights on the remaining public lands of the United States; and we approve the disposal of mineral rights by lease only, and the disposal of timber rights only under conditions insuring proper cutting and logging, with a view to the protection of growing timber and the watersheds and headwaters of streams used for navigation and other interstate purposes.

"We also especially approve and indorse the proposition that all the uses of the waters and all portions of each waterway should be treated as interrelated; and we emphatically urge prompt and effective legislation providing for the immediate and proper development of the waterways of the country for navigation, water supply, and other interstate uses, preferably by direct federal appropriations; otherwise by the issue of bonds.

"Approving those portions of the report pointing out the need for continued investigation and more extended scientific research, we also urge that this policy of gaining more definite and specific knowledge relating to our resources be adopted by the several States no less than by the Federal Government.

"Especially commending the portions of the report dealing with diminished national efficiency due to disease and premature death among our citizens, we urge the adoption of the policy of protecting life and health by States, municipalities, and communities no less than by the Federal Government; and we urge further investigation of all other means whereby the efficiency of individual citizens, and hence of the States and nation, may be increased.

"We favor the maintenance of conservation commissions in every State, to the end that each Commonwealth may be aided and guided in making the best use of those abundant resources with which it has been blessed.

"We also especially urge on the Congress of the United States the high desirability of maintaining a national commission on the conservation of the resources of the country, empowered to co-operate with State commissions, to the end that every sovereign Commonwealth and every section of the country may attain the high degree of prosperity and the sureness of perpetuity naturally arising in the abundant resources, and the vigor, intelligence, and patriotism of our people."

The movement aroused great interest in all the States, and especially in the South and Southwest. The facts from the great accumulation of knowledge compiled by the various sections of the Conference soon began to spread in a way to become

general knowledge. The columns of newspapers and magazines were thrown open to articles on the conservation of natural resources, and it formed the subject of thousands of strong editorials. The National Conservation Association was formed at Washington, and the National Conservation Congress was organized to hold annual meetings in cities to be selected, the delegates to the Congress to be appointed by governors, mayors, and various organizations at interest. The work of the Association and Congress has resulted in a wide diffusion of useful information, in effective legislation for the advancement of conservation by the National and State governments, in active participation by women's clubs, colleges, schools, philanthropic and civic institutions, industrial organizations, mining and lumber companies, and by many individual land owners and farmers. The effects of the movement are cumulative, and it will go on gathering increment—force—preventing evil and edueing good—until the great objects sought by its promoters are achieved in the triumph of right reason and common sense.

At the time the National Conservation Commission was created, the Inland Waterways Commission, appointed on March 14, 1907, was reappointed. Three members were added and the commission was made the section of waters of the National Conservation Commission. The President's letter, reappointing the Inland Waterways Commission, follows:

THE WHITE HOUSE,
Washington, June 5, 1908.

The Inland Waterways Commission was appointed on March 14, 1907. It was appointed to meet the strongly expressed and reasonable demands of the people. Commercial organizations throughout the Mississippi Valley and elsewhere demanded then and still demand such improvement of waterways and development of navigation as will prevent traffic congestion and develop commerce. It is an unpleasant fact that, although the Federal Government has in the last half century spent more than a third of a billion dollars in waterway improvement, and although the demand for transportation has steadily increased, navigation on our rivers has not only not increased, but has actually greatly diminished. The method hitherto pursued has been thoroughly ineffective; money has been spent freely for improving navigation, but river navigation at least has not been improved, and there is a just and reasonable demand on the part of the people for the improvement of navigation in our rivers in some way which will yield practical results. It was for such reasons as these that the commission of which you are chairman was requested to consider and recommend a general plan of waterway improvement giving reasonable promise of effectiveness.

The preliminary report of the Inland Waterways Commission was excellent in every way. It outlines a general plan of waterway improvement which when adopted will give assurance that the improvements will yield practical results in

the way of increased navigation and water transportation. In every essential feature the plan recommended by the commission is new. In the principle of co-ordinating all uses of the waters and treating each waterway system as a unit; in the principle of correlating water traffic with rail and other land traffic; in the principle of expert initiation of projects in accordance with commercial foresight and the needs of a growing country; and in the principle of co-operation between the States and the Federal Government in the administration and use of waterways, etc., the general plan proposed by the commission is new and at the same time sane and simple. The plan deserves unqualified support. I regret that it has not yet been adopted by Congress, but I am confident that ultimately it will be adopted.

Pending further opportunity for action by Congress the work of the commission should be continued, with the view of still further perfecting the general plan by additional investigations and by ascertaining definitely and specifically why the methods hitherto pursued have failed. To this end I ask that the present members of the Waterways Commission continue their most commendable public service. I am asking three others to join them, namely: Senator William B. Allison, of Iowa; Hon. Joseph E. Ransdell, of Louisiana, a member of the Rivers and Harbors Committee of the House of Representatives and president of the National Rivers and Harbors Congress; and Prof. George F. Swain, of the Massachusetts Institute of Technology, a recognized authority on water power. When a Chief of Engineers is appointed to succeed General Alexander Mackenzie, retired, I shall also designate him a member, in lieu of General Mackenzie, whose retirement relieves him of further duty on the commission. The commission will thus be increased from 9 members to 12.

In order to facilitate the work of the commission I shall shortly issue an executive order along the lines suggested by your findings and recommendations, directing the executive departments to give the commission access to their records and all necessary and practicable assistance in securing information for submission to the President and to Congress.

An indirect but useful result of the work of the commission was the recent conference of governors on the conservation of our natural resources, held in the White House May 13-15. I take great pleasure in repeating my public expression of indebtedness and my congratulations to the commission for their signal public service in connection with this great conference; it was an event which is likely to exert a profound and lasting influence on the development and history of our country.

Copies of this letter are being sent to each of the twelve members of the Inland Waterways Commission.

Sincerely yours,

THEODORE ROOSEVELT.

The executive committee of the National Conservation Commission, which was also designated by the President, met in Chicago on June 19, 1908, and elected Thomas R. Shipp secretary of the commission.

The committee authorized the chairman and secretary of the commission to correspond with governors and other state officials and with national organizations concerned with natural resources. It agreed to write the governors, or representatives to be appointed by them, to participate in a meeting with the National Conservation Commission on December 8, 1908. The date for the first general meeting of the commission was fixed for December 1, 1908. It was agreed that the executive committee should issue bulletins of progress from time to time, announcing places and dates of meetings and conveying other information of service to the commission. It was decided that in the collection of information the chairman and secretary of each section should act in behalf of this section and that the data collected should be co-ordinated by the chairman of the commission. By general agreement, the chairman was instructed to invite all necessary expert assistance in the preparation of special statements and reports.

The compilation of data planned by the executive committee was authorized by the following executive order of the President:

EXECUTIVE ORDER.

A national conservation commission to consider and advise the President upon the condition and needs of the natural resources of the country has been appointed by the President. The heads of the executive departments, bureaus, and other government establishments are hereby instructed to secure, compile, and furnish to the said commission all such information and data relevant to its work as the commission may from time to time request, and as may be respectively within the lawful powers of such departments, bureaus, and government establishments to secure, compile, or furnish, and not inconsistent with express provisions of law.

THEODORE ROOSEVELT.

THE WHITE HOUSE, *June 8, 1908.*

Under authority of this executive order, the conservation commission undertook the making of an inventory of the natural resources of the United States, in co-operation with the executive departments of the Government, state officers, and with national organizations. General supervision of the compilation of material was placed in the hands of Mr. Henry Gannett, whom the President assigned to assist the commission in its work.

The work of the commission was greatly aided by the rapid appointment of state conservation commissions.

In addition to the co-operation of state and federal agencies, the national organizations rendered valuable assistance. These organizations named conservation committees to act in co-operation with the national commission.*

*For personnel of the Conservation Commission and Conference see appendix.

THE PROGRESS OF FORESTRY.

The National Forest areas were increased from about 150,000,000 acres in 1907 to 186,000,000 in 1913, in the States of Arizona, Arkansas, California, Colorado, Florida, Idaho, Kansas, Michigan, Minnesota, Nebraska, Montana, Nevada, New Mexico, North Dakota, Oklahoma, Oregon, South Dakota, Utah, Washington and Wyoming, and in Alaska and Porto Rico. In addition are the purchases approved under the Weeks Law, amounting to 857,346 acres. Most of this area is embraced in the Southern Appalachians, in the States of Georgia, North Carolina, Tennessee, South Carolina, Virginia and West Virginia.

Under the heading of "The Result of Conservation," *The Atlanta (Ga.) Journal* says:

"It appears from recent federal reports that forest fires which were so grave a menace a few years ago are rapidly decreasing. Only some thirty thousand acres of the national reserves have been burned over so far this season (1913) and that is a trivial portion of the total area of the one hundred and sixty-three forests now under federal supervision.

"This gratifying result is due largely no doubt to improved and extended safeguards against forest fires; and it is but one evidence of our awakened sense to the need of protecting and conserving natural resources. We hear much less of the conservation movement now than we did a few seasons gone by, not because that movement is less virile but simply because it is accomplishing its purpose in a constructive manner. Like most other reforms, it bestirred a great deal of clamor and attracted a great deal of notice while it was breaking a path through popular indifference and prejudiced opposition. Once well under way, it moved quietly but forcefully forward.

"The tasks of conservation are in no wise complete, nor will they ever be. Indeed, they have but fairly begun. The vital idea from which they spring, like all ideas that count in the betterment of the world, must be continually renewed, readjusted and applied to particular needs.

"The principle on which thousands of acres of forest land are saved from selfish monopolies at one time and from destructive fires at another must be adapted to divers other situations. The prevention of fires in general by means of educating the public in rules of caution and safety is one of the great fields of conservation, as is also the protection of public health. The fact is we are just beginning to appreciate the true meaning of this term and the full scope of the cause behind it."

The rapid progress of forestry in the States is shown in the following statements made in the report of the Forestry Committee of the Fifth National Conservation Congress, held at Washington, D. C., November 18, 19 and 20, 1913:

"The progress of forestry in the various States has been remarkable. A decade ago but few States gave the subject any serious attention at all. Today no less than 25 have active forest departments, the majority of which employ professional State foresters, and 20 have efficient fire protective systems. Five States have attempted to solve the forest taxation problem by enacting legislation which permits forest land to be classified separately and the bulk of the tax placed on the yield—that is, on the timber when cut—while two others have taken steps to provide such legislation. Fourteen have established State forests, with an aggregate area of more than 3,400,000 acres. In 1912, 10 States maintained forest tree nurseries that produced nearly 10,000,000 small trees, about half of which were distributed to private owners at cost. Considerable assistance is given private owners through field demonstrations of the proper methods of managing forests and reforesting cut-over and waste lands. Sixty-three forest experiment stations have been established, practically all in the past few years. These activities are given a powerful stimulus by education in forestry conducted by the State forest department and by regularly established institutions of learning, through popular lectures, publications, correspondence, and technical training, supplemented by actual demonstrations in the field. Unquestionably the most intensive work in forestry in this country today is being done by the States.

"The importance of these activities to the forest movement in the whole country is very great. Establishment of forest departments means the systematic introduction of forest work in the States. Public attention is being focussed upon forestry. Protection against fire is saving the forest and, together with more equitable taxation, is encouraging the private practice of forestry. Distribution of planting stock is aiding in the renewal of the forest. Public forests will furnish the nucleus of a State timber supply, will serve as demonstrations of the practical application of forest methods, and will bring revenue to the States. In practically every State which has adopted a comprehensive forest policy a strong public sentiment for forestry has started and is constantly increasing.

"This rapid progress of forestry is due in large measure to harmonious co-operation between Federal, State, and private agencies. The Federal Government, at the request of many of the States, has studied their problems and helped them to formulate a forest policy. The States and the Government have assisted thousands of private owners by correspondence, lectures, publications, and field examinations. Government, States, and private owners have co-operated in the joint protection of their forest holdings. Federal funds are available for expenditure by the States on projects which are of interstate or national importance, such as the protection of forested watersheds of navigable streams.

"Four-fifths of the nation's timber supply is held by private owners. The private practice of forestry is therefore of first importance, and the States are endeavoring to make it as easy as possible by removing such obstacles as lack of protection and unfair taxation. This, together with the proper management of their own holdings, is the States' chief aim in forestry.

"The direction and control of forest work within the jurisdiction of the different States is, as a rule, placed with boards, commissions, or similar organizations, whose duties are chiefly (1) administrative or (2) investigative. In some States both kinds of organizations have been created.

"The administrative organization has supervision over such lines of work as fire protection; the purchase, care, and management of State forests; reforestation of State and private lands; co-operation with private owners of timberland, and the general education of the citizens of the State in forestry through lectures, publications, and similar means. It is responsible to the Governor or the legislature and has been given various names, such as Department of Forestry, Board of Forestry, or Forest Commission. Such organizations have been established in Alabama, California, Delaware, Indiana, Kentucky, Maryland, Minnesota, New Hampshire, New Jersey, Oregon, Pennsylvania, Washington, and Wisconsin. In other States the work has been placed under the Board of Agriculture, as in Colorado and Vermont; the Agricultural Experiment Station, in Connecticut, Kansas, and Ohio; the Conservation Commission, in Louisiana and New York; the Forest, Fish, and Game Department, in Tennessee and West Virginia; the Geological Survey, in North Carolina; the Public Domain Commission in Michigan; the State School of Forestry, in North Dakota, and the State Land Department, in Idaho, Montana, and South Dakota. In still other States, including Maine, Massachusetts, and Rhode Island, complete control is vested in a forest commissioner or State forester, who is directly responsible to the Governor or the legislature.

"The appointment of a professional forester as State forester is generally authorized. Assistant foresters are also employed, together with whatever technical and clerical force may be necessary.

"The kind of work done by the various States differs according to forest and other natural conditions. In the more mountainous and heavily timbered regions the chief problem is fire protection, while in the prairie States or in heavily cut-over or barren parts of the other States it is reforestation.

"The annual appropriations for forest work range from several hundred dollars to more than \$300,000. Eventually many of the administrative organizations will be practically self-supporting from the revenue of timber sales, water power rights, and other privileges granted on the State forest lands."

There are now approximately 3,600,000 acres of private forest lands under some sort of management; 1,216,000 acres of private lands planted with forest trees; thirty timberland owners' fire protective associations and twenty-eight associations for the advancement of forestry. Courses in forestry are now given by schools and colleges in nearly every State in the Union.

HEALTH AND HUMAN LIFE.

With the consideration of the conservation of natural resources came the thought of conserving human life by means not then employed. The Bureau of

Mines was established by the Federal Government in the hope that the great number of fatalities in mines might be decreased by intelligent investigation, by proper instruction of miners and in many other ways. The result was, that with 70,000 more men employed in coal mines of the United States in 1912 than in 1907, the deaths in coal mines in 1912 were 837 less than in 1907. Throughout the country and at many different mines, experts from the Bureau have been continually at work among the miners, teaching them the way in which to go about their rescue work and how to give first aid to the injured, and many other things which they should know. In case of disaster there is always a force of trained men at hand who know exactly what to do. The Bureau of Mines has done many things that have gone far toward reducing the death rate in the coal mines of the country. No less important is the work of the American Red Cross Society, the Children's Bureau of the U. S. Department of Commerce and Labor and the departments of health and sanitation that have been established by the Federal Government and by the States, accounts of which are given elsewhere in this review. The examples set by the Government and by the States in conserving health and life were followed by municipalities, philanthropic and civic organizations, schools, colleges, insurance companies and industrial corporations. As the years passed the truth became more generally recognized that "public health is our greatest natural resource," and with this knowledge came a realization of neglected duties of States, communities and individuals, and of the imperative demand for wise and effective action. Those whose professional duties were confined to the cure of diseases, were awakened to the great moral duty of removing the causes of such ills, and rapidly formed the vanguard in the war of prevention. If the saving of life and the promotion of public health had been the only results of the conservation movement in this country, its leaders and the whole people would have been well repaid for all the time, thought, money and energy expended in the work.

MIXING AND THE UTILIZATION OF WATER POWER.

A report of the Geological Survey issued in 1907 estimated the amount of coal remaining in the ground to be 3,147,043,000,000 tons, one-third of which was stated to be of poor quality and difficult of mining. The production during that year was more than 480,000,000, and it was estimated that in mining practice at that time one ton of coal was lost for every two tons won. An effort was made to reach an approximate idea of the length of time this coal supply would last, and it was shown that the easily accessible coal might be exhausted about the year 2040, and all coal about the middle of the century. It was predicted, however, that powerful extraneous influences would come to bear on coal production in

favor of lengthening the life of the supply. These influences, as foreseen, are now at work in the development of water power and the economies which have been introduced in mining and handling coal, and in transportation. There has been great progress in the development of water power for heating and lighting, and power for manufacturing and transportation, and yet it may be said that only a beginning has been made in this important industry. There are millions of horse-power going to waste in our streams today, most of which can and will be utilized, replacing coal, and prolong the life of the coal supply by a half or three-quarters of a century. An illustration of the fact that the conservation of one of our natural resources is closely interwoven with the conservation of others is furnished by these statements. The length of the life of our coal supply depends mainly upon the utilization of our streams for heat, light and power—the life of our streams, as effective sources of power, depend upon the conservation of our forests. Again, at the present rate of increase in production, our high-grade iron ores will be exhausted in half a century, and probably before that time a very large use will be made of low-grade ores not now classed as available. These lower-grade ores will require an increased amount of fuel per ton of iron smelted, and draw more heavily upon the ever decreasing coal supply. The substitution of other materials for metal now used for certain purposes, prevention of waste and destruction of manufactured iron, of waste in mining, reworking iron and steel scrap, improved devices for the manufacture of coke and other coal products, improvements in furnaces and engines, for the utilization of the largest practicable fraction of the thermal energy of coal—all are important steps that have been made to solve the problem of conserving two of our great natural resources—of postponing as long as possible the time when their exhaustion will become a matter of history.

FARMING.

Conservation as applied to the farm is one of the most important subjects relating to the development and prosperity of the country, as agriculture forms the basis of all progress in all branches of commerce and industry. The conservation of agricultural resources, means the proper use and protection of soils, the prevention of erosion, increased fertility, the adoption of intensive methods and larger and more remunerative crops. Much encouraging work along these lines has been done in the past decade, as a result of efforts to promote better farming by the Federal and State Departments of Agriculture, State experiment stations, the land departments of railroads, agricultural publications and farmers' organizations. Along with this work has come better roads, better means of transportation, and marked improvement in many phases of rural life.

The following from a report issued by the Department of Agriculture, is a brief mention of some of the lines along which betterment of agricultural industry has been accomplished:

"The Bureau of Plant Industry, whose ramifications extend to every section of the country, is constantly teaching the farmers how to improve their crops by breeding and selection; how to put into operation the best methods of farm practice; and how to prevent diseases in plants. It is constantly securing and distributing new and improved varieties of seeds and plants; studies and disseminates information as to their adaptability to the various sections of the United States, and is continuously carrying on the enormous work which must, in the very nature of things, result in vast improvement in agricultural conditions.

"The Bureau of Soils investigates soils in their relation to crops; their adaptation to crops; their proper utilization and management; and information is disseminated in relation thereto, to which all farmers have access.

"The Office of Experiment Stations represents the department in its relations to the agricultural colleges and experiment stations scattered throughout the length and breadth of the United States. In these experiment stations ocular demonstrations are given of the best methods of cultivation and of the best varieties for the cultivator.

"The Bureau of Entomology obtains and disseminates information in regard to injurious insects affecting field crops, fruits, truck crops, forest, and forest products, etc., and gives instructions as to the best methods for their suppression or the prevention of their ravages.

"The Bureau of Biological Survey investigates the economic relations of birds and mammals which are beneficial to agriculture, and also of those which are destructive.

"The Bureau of Chemistry makes such investigations and analyses as pertain in general to the interests of agriculture, dealing with fertilizers and agricultural products.

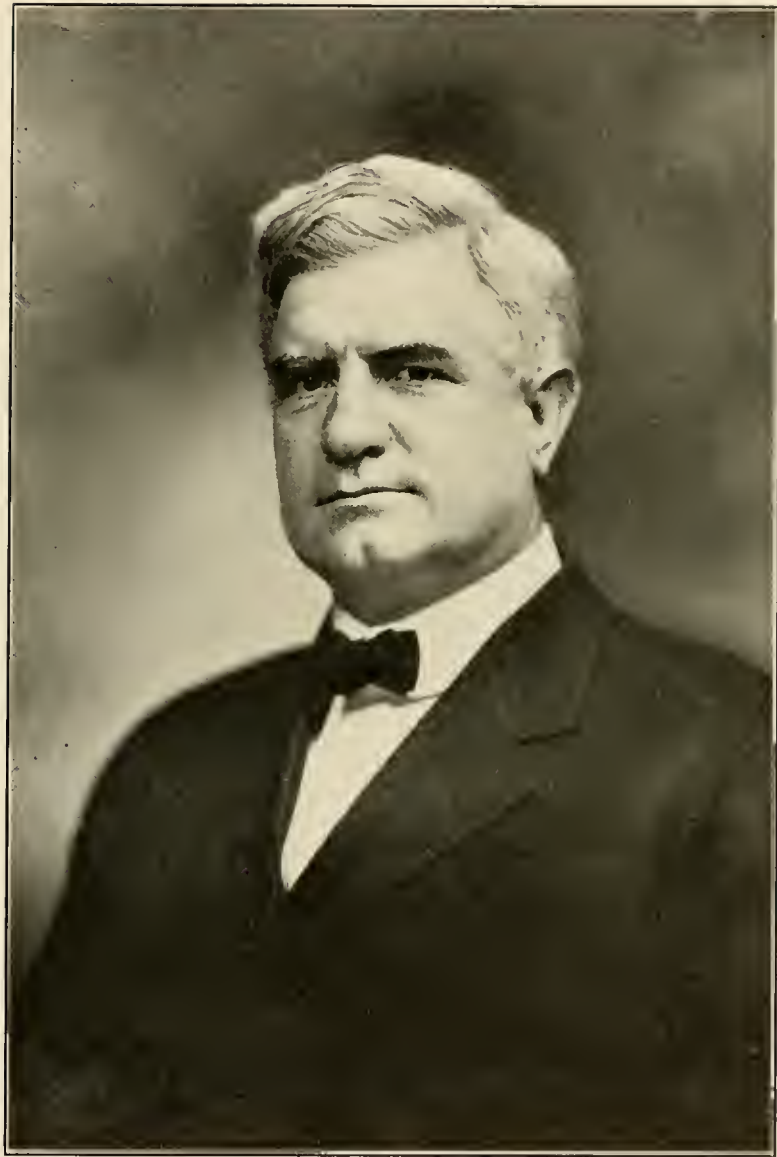
"The Weather Bureau gives timely warning by the display of weather and flood signals, and issues storm warnings for the benefit of agriculture, which information enables farmers to adopt measures for the protection of their growing crops or those already harvested.

"The beneficial effects of the work of these bureaus, and of the Department of Agriculture generally, are clearly shown by the figures covering the last decade, during which their operations have been actively and widely extended.

"The agricultural resources of the country have been, and are constantly being, conserved by the Department of Agriculture; and it is impossible to estimate in terms of dollars and cents the enormous benefit that has accrued to the farmers of the United States through its operations."

While there has been progress in scientific and practical farming, and in the improvement of conditions of farm life, the advancement may be said to have barely begun. That community is fortunate which can number among its land owners one or two "progressive" farmers. A few boys in each State make annual demonstrations of the capabilities of the soil by producing one to two hundred or more bushels of corn to the acre, having followed carefully the instructions given by the Department of Agriculture, by State experiment stations or by experts employed by the railroads, while thousands of farmers in each of these States continue to follow old methods and get from four to eight acres what the boys get from one. Where one farmer adopts such methods as constantly increase the productivity of his fields and preserve his woodland, hundreds allow their lands to become impoverished by shallow plowing, constant clean cultivation and consequent erosion, throw them out as worthless, and clear their woodlots for new ground to undergo the same course of depletion.

The work before the Federal and State departments of agriculture is to educate the masses. It is easy to teach those who wish to learn, but it is exceedingly difficult to force knowledge and a desire for something better upon those who are blinded by prejudice and wedded to old customs. But success has followed every well directed effort to promote better farming, and the work will continue until most of the agricultural lands of the country will be brought to a high state of cultivation, and all conditions of rural life correspondingly improved.



T. A. WRIGHT
PRESIDENT NATIONAL CONSERVATION EXPOSITION

THE KNOXVILLE EXPOSITIONS

Nothing of greater interest can be found in the histories of the expositions which have been held in Knoxville than the inception and slow growth of the movement; the first effort to promote an exposition having been made in the fall of 1900; the second in 1903, and the third and successful effort, resulting in the first Appalachian Exposition, in 1909.

All exposition plans were formed in the Commercial Club of Knoxville, and it was through the efforts of the members of this organization that the plans finally were carried out.

Chilhowee Park was selected as an exposition site in 1899; and a map of the grounds was drawn in 1900, on which was indicated the present Main Building and its location—the Forestry Building—the Woman's Building of 1910-11, and other features familiar to exposition visitors. The map together with plans for financing an exposition and a lease on the grounds for one month in each year, which was given by the Knoxville Railway & Light Company, were submitted at a meeting of the Commercial Club. The plans were approved and an exposition committee appointed. A charter for the East Tennessee Exposition Company, with an authorized capital of \$100,000 was applied for. Stock was subscribed for by a number of the Club members and others, the firm of McTeer, Hood & Co., heading the list with a subscription of \$1,000.00, followed by one from C. C. Howell for the same amount. An exposition company was formed. Its officers were J. Pike Powers, President, Geo. W. Murphy, Vice-president, and W. M. Goodman, Secretary. The Directors were: J. Pike Powers, Geo. W. Murphy, W. M. Goodman, J. Allen Smith, S. D. Coykendall, L. D. Tyson, Edward Henegar, R. M. Rhea, Wm. S. Shields, E. T. Sanford, T. I. Stephenson, O. M. Tate, Peter Blow, E. H. Scharringhaus; S. V. Chandler, E. G. Oates, T. G. Brown, J. H. McWilliams, C. L. Ewing, H. S. Mizner, Jesse Groner, J. T. McTeer, C. M. McClung, and Chas. W. Dabney.

The project failed then, as it did afterwards also in 1903.

Nothing more was done from that time until the close of the Commercial Club's advertising campaign in 1909, in which more than \$17,000 was spent for newspaper advertising and booklets. This money, it may be added, was subscribed by the same individuals and firms that did most to finance the expositions.

In 1909 plans for the first Appalachian Exposition were submitted to the Executive Committee of the Commercial Club, and were adopted with some misgivings.

However, the campaign was soon under way, and it was not long before the success of the undertaking was assured. The map showing grounds and proposed buildings, which was made ten years before, was brought from its place among

other treasures, and copied, with a few changes necessary to carry out new ideas; grading was started, building began, and within eleven months the gates of the 1910 exposition were opened.

This exposition was regarded by the press of the South as a good example of twentieth century initiative and as a great constructive movement and a strong argument for the doctrine of conservation. The *Atlanta Constitution* said:

"Knoxville, Tenn., sets a notable example to the entire South in its Appalachian Exposition enterprise. The story of the inception of this enterprise and its originators and underwriters is detailed elsewhere.

"Its director general states what every informed Southerner knows—that the region of the Southern Appalachians, covering portions of six states, has been paid less attention than any other part of the Union.

"He sets forth what is also common knowledge—that within this territory are agricultural, timber, mining and industrial possibilities of which the average man little dreams, simply waiting the practical magic of men and money to uplift its neglected people and endow the whole South with new sources of wealth.

"A conspicuous and unique feature of the exposition is that it seeks to stress the vital importance of conserving the forests and streams of the great Appalachian principality.* No more imminent topic now faces the people of the Southern States. It is one, too, that projects itself far into the future of every man, woman and child, every business interest, every large and small farmer. For if we do not preserve the forests of these towering chains, we shall invite agricultural bankruptcy from irregularity of rain flow, a penalty inseparable from stripping the hills of the reservoirs and regulators of precipitation."

The object set forth in plans for the East Tennessee Exposition in 1900 was the exploitation of the resources of this section and the advancement of agricultural interests. The plans for the Appalachian Exposition were broadened so as to include the conservation of forest and other natural resources found in the Appalachian region. The Appalachian Exposition of 1911 was held for the same purpose and in many of its principal educational features was an improvement on the first. Both expositions were well managed affairs, and would have been creditable to a much larger city.

In July, 1911, when work on the second Appalachian Exposition was engaging the attention of the people of Knoxville, a meeting was held in the office of the Commercial Club that led to the organization of a board to promote a national exposition of conservation, and to a movement in Washington to establish a national advisory board which would give authoritativeness to the project. Hope was ex-

*Three years later over 800,000 acres in the Appalachians had been acquired by the Government for a National Forest, and other lands in this region approved for purchase, and co-operation in forestry given by states, corporations and individual owners.

pressed at this meeting that the movement would succeed, that it might aid in the advancement of the best interests of the whole people, and also that Knoxville would be selected as the location. There had been some correspondence with prominent men in other cities with reference to the scheme, and letters received showed great interest in the movement and a desire to compete with Knoxville when it came to presenting claims as to logical points for the establishment of such an enterprise.

Knoxville secured the exposition, first by reason of the fact that some of its promoters were on the ground; second, because the selection of a location was finally left with the Knoxville board, subject to the approval of the Advisory Board; third, because this city had an exposition plant already established which would serve as a nucleus for the larger affair, and fourth, because a promotion fund was raised in Knoxville that was satisfactory to the board at Washington.

Knoxville looked for support from the national government, and with good reasons. The exposition was designed to promote the most important work in which bureaus of the government are engaged, and on which the government is spending millions of dollars annually. Its purpose was to teach the people, by example as well as by precept, the importance of conserving the resources of forest, soils and streams, in order that the government might have the co-operation of millions of individual owners of timber lands and farms—co-operation recognized as absolutely necessary to success in conservation work by all of the national leaders of this movement and by the chief of every bureau of the Department of Agriculture. The heads of a number of these bureaus, as well as some of the conservationists who were foremost in the work of the Conservation Conference at Washington in 1908, were members of the Advisory Board of the exposition and the strongest advocates of the plans which its builders had in view.

Knoxville did not receive the aid expected, and deserved; but she did succeed in carrying out the exposition plans, and on a larger scale than was originally contemplated.

The National Conservation Exposition—the first of its kind in the world—the first to look forward instead of backward—was the largest ever held in the South. It will go down in history, because there can be no permanent progress in any line of industry, in the South or elsewhere, except along the lines which it laid out. It was the first practical demonstration ever made to show the need of conservation,—the necessity for making the best use of what we have—for preventing waste—for improving conditions in forests, fields, mines, factories, schools and homes—if our natural resources are to be made perpetual sources of wealth and the highest standards in human efficiency attained. And these lessons were taught in the first practical way—in a way to reach the masses—by the people of one small city of

the South. It was a conclusive as well as a most useful demonstration of their ability and willingness to build well for the future, and will distinguish them as worthy guardians of the great wealth which nature gave them to hold in trust.

A number of fairs and carnivals were held at Knoxville before expositions were thought of, and the following interesting account of the "Forerunners of the National Conservation Exposition," which appeared in the *Knoxville Sentinel* of August 27, 1913, is worthy of preservation:

KNOXVILLE FAIRS, CARNIVALS AND EXPOSITIONS.

"From a little one-county country fair, at which were exhibited the largest ears of corn, tallest corn stalks, fattest hogs and best beef cattle in the county, with slow donkey races and spielers selling soda pop and red lemonade, to a great National Conservation Exposition, is the brief story of fair, carnival and exposition efforts in Knoxville and Knox County. The idea which has evolved itself into the tremendous undertaking of a National Conservation Exposition, was originally conceived by W. M. Goodman, following the fall carnivals here, which were evolutions of the county fair.

"The first fall fair in Knox County was held on the Rutledge pike, immediately east of what is now known as the 'Brick Store.' This property was held by the state for fair purposes exclusively, and it is still often referred to as the old fair grounds. Signs of the festivities of by gone days are still evident.

"In the early eighties, the scene of fair activities was shifted and these attractions were staged at what was known as Flanders' race track, northwest of the city. Racing meets featured the events.

"In 1885 the first elaborate fair undertaking as a means of trade exploitation, was held in Knoxville. This was a successor to the old time county fair, and was more pretentious and attractive.

"This proved a great success, and afforded a topic of conversation for about ten or twelve years, the undertaking then being abandoned until the fall of 1896, when a more elaborate carnival was put on in Knoxville under the auspices of the merchants. This time it was known as the Merchants' and Manufacturers' Free Street Fair and Trades Carnival. These carnivals were repeated in 1897, 1899, 1900, 1902, and in 1908.

"In amplification of the continued enlargement of the fair and carnival idea the Appalachian Exposition was held in the fall of 1910 and 1911. These were the greatest events ever held in Knoxville. They were the outgrowth of the fair and carnival idea, and brought to Knoxville thousands of people from all parts of the United States. Men prominent in affairs of the nation and the world were here during the expositions, and delivered addresses.

"The thought of a fall carnival originated with J. B. Pound, who in 1896 was the publisher of the *Knoxville Sentinel* and *The Knoxville Tribune*. The Chamber of Commerce approved of the suggestion, and an executive committee was

named to develop the plan. It was composed of C. R. McCormick, J. B. Pound, D. B. Bean, W. M. Epps, B. R. Strong, J. E. Willard, C. C. Howell and H. V. Maxwell. H. P. Waugh, Jr., was the secretary of the committee. October 21, 22 and 23 were the dates chosen for the carnival.

"A legendary feature of these carnivals was the visit of the 'Prophet of the Great Smokies' to his chosen city.

"The prophet, impersonated by Lloyd Branson, was received at the Tennessee River bridge. After foretelling what would come to the city the next year, he led a trades display parade through the streets of the city. Following this, a flag, the insignia of Knoxville, was presented to the city and raised over the city hall.

"So successful was the carnival undertaking of 1896 that it was repeated in 1897. October 12, 13, 14, and 15 were the dates chosen. The committee was constituted as follows: C. R. McCormick, J. B. Pound, D. B. Bean, B. R. Strong, P. E. Blow, W. M. Epps, C. C. Howell, J. E. Willard and Horace Van Deventer.

"The members of the woman's board were Mrs. Samuel McKinney, Mrs. Chas. E. McTeer, Mrs. J. E. Chapman, Mrs. H. W. Hall, Mrs. J. E. Lutz, Mrs. C. J. McClung, Mrs. F. S. McClung and Miss Mary Temple.

"The prophet's arrival and its accompanying trades display was the first day's event. Col. W. A. Henderson was the prophet. The second was governor's day, the distinguished guest being Gov. Robert L. Taylor, with his staff. A military pageant was reviewed by the governor. A reception to the governor in the afternoon was followed by a confetti fete at night. A live stock parade opened the third day. This was followed by a parade of veterans of the war of the sixties, and a blue and gray reunion. The historical centennial ball was held at night. A rifle tournament marked the last day. The afternoon was the time for the children's parade and the flower carnival. A grand spectacular pageant concluded the carnival festivities at night.

"A 'military carnival' was given in the fall of 1898. It was so designated on account of the presence in the city of 12,000 volunteer soldiers, mobilized here as forces ready for the Spanish-American war. The dates were October 19, 20 and 21. It was in charge of H. W. Hall, R. W. Austin, R. H. Hart, J. W. Borches, John L. Meek, W. H. Kephart and R. K. Gibson.

"The woman's board was composed of Mrs. William Kennedy, Miss Pauline Woodruff, who is now Mrs. S. G. Shields, Mrs. J. H. McWilliams, Mrs. J. W. Slocum, Mrs. Florence K. Payne, Mrs. T. M. Michaels and Miss Mary Temple.

"The prophet, this time impersonated by W. B. Lockett, arrived on the first day. The accustomed trades display pageant was followed by the exhibition buildings being thrown open. A pyrotechnic display of allegorical subjects was given at night.

"The second day was military day, when 12,000 soldiers under command of Gen. W. J. McKee marched through the streets.

"The success of three years induced business men to foster another carnival in 1899. October 11, 12 and 13 were the dates chosen. This time four months were occupied in preparations. The committee was composed of J. C. Sterchi, R. F. Gaut,

C. H. Harvey, W. C. Sanders, J. A. Hensley, R. H. Hart, J. W. Borches and R. W. Austin.

"In the woman's board were Mrs. W. L. McCreary, Mrs. J. M. Creamer, Mrs. Wiley L. Morgan, Mrs. Al A. Yeager, Mrs. R. P. Gettys, Mrs. J. H. McWilliams, Mrs. M. L. Patterson, Mrs. R. R. Sutherland and Mrs. Lou A. Warner.

"The continuous successes inspired the fifth carnival on October 10, 11 and 12, 1900. The committee in charge was composed of J. Cal Sterchi, James A. Hensley, H. W. Hall, R. H. Hart, and George W. Murphy.

"The prophet, represented by Col. L. D. Tyson, again visited the city, and delivered the prophecy.

"Two years passed before the sixth carnival, none being given in 1901. In 1902, George W. Murphy, James S. Lipscomb, A. J. Albers, T. G. Brown, M. S. McClellan and J. E. Briscoe developed a very interesting program. The Elks' Midway was the chief attraction of the week. Band concerts and a base ball game were given the first day. The flower parade came on the second day and a military display and competitive drill and sham battle featured the afternoon. At night a great pyrotechnic display was offered. The third and last day's program included numerous amusements and a circus performance.

"Six years passed without a local carnival occasion. In 1908 the Knoxville Carnival and Musical Festival was projected by business men and was carried through successfully, attracting thousands of people here from all parts of East Tennessee. The dates were October 13, 14 and 15. The men in charge as the executive committee were Col. Cary F. Spence, D. C. Chapman, J. L. Deaver, Jesse Miller, M. F. Flemmiken, E. W. Neal, W. J. Savage and James A. Hensley.

"The program for the first day included a civic, military and industrial parade, a congress of women's clubs and band concerts. A decorated automobile parade, carnival card party and band concerts came on the second day. A flower parade, races and riding tournament, children's vaudeville program, doll parade, baby show, grand display of fireworks and coronation ball were features of the third and final day.

"This carnival partook of the semblance of an exposition, as had others, and it was apparent that the time was near at hand for a much greater undertaking than the fall carnival idea. A result of this was the crystalization of the Appalachian Exposition, developing from the suggestion and preliminary plans as laid before the Commercial Club by W. M. Goodman, who was secretary and director-general of the Appalachian Exposition and who is also director-general of the National Conservation Exposition.

"The first Appalachian Exposition was given in the fall of 1910, on the exposition grounds in Chillhowee Park. A company was organized to push to a successful conclusion the exposition undertaking. Its officers were:

President—W. J. Oliver.

Assistant to President—Sandford H. Cohen.

First Vice-President—George E. Helm.

Second Vice-President—W. J. Savage.

Third Vice-President—Jesse Thomas.

Fourth Vice-President—Cary F. Spence.
 Secretary and Director-General—W. M. Goodman.
 Treasurer—O. M. Tate.
 Assistant Treasurer—J. W. Crudgington.
 Auditor—W. R. Emert.

“The Board of Directors was composed of W. J. Oliver, W. M. Goodman, W. J. Savage, Cary F. Spence, John P. Kern, G. F. Milton, J. G. Sterchi, D. C. Chapman, A. T. Dosser, C. B. Atkin, E. H. Scharringhaus, George E. Helm, O. M. Tate, Jesse Thomas, C. H. Harvey, D. M. Chambliss, A. F. Sanford, J. L. Deaver, R. S. Hazen, M. D. Arnold and B. A. Morton.

“These were assisted in their work by a large number of committees chosen from the leading business men of Knoxville.

Officers of the women’s department of the exposition were:

President—Mrs. Herbert W. Hall.
 First Vice-President—Mrs. Edward T. Sanford.
 Second Vice-President—Miss Kate White.
 Third Vice-President—Mrs. R. P. Gettys.
 Secretary—Miss Pattie Boyd.

“Other members were: Mesdames H. N. Saxton, Jr., Joseph W. Sneed, Walter Van Gilder, J. D. Varnell, W. M. Goodman, E. Hepburn Saunders, John E. Hood, A. T. Dosser, Samuel McKinney, L. Crozier French, Henry W. Curtis, Alexander McMillan, Hamlet Misner, W. P. Chamberlain, George F. Mellen, John S. Boyd, R. P. Oppenheimer, M. D. Arnold, Edward Henegar, T. S. Webb, Jr., John S. Brown, J. C. Craft, W. R. Turner, S. H. George, Horace Van Deventer, George E. Helm, A. F. Sanford, Wiley L. Morgan, C. S. Simms, W. J. Oliver, J. Allen Smith, Asa Hazen, Eben Alexander, Albert G. Kern, Seymour A. Mynders, Walter A. Mynderse, L. B. Audigier, W. S. Shields, J. B. Jones, Frank Preston, S. G. Heiskell, James Stephenson, David L. Ross, C. B. Atkin, S. G. Shields, Robert H. Simmonds, David E. Tate, William Kennedy, J. P. Gaut, J. Y. Johnston, George W. Denney, L. D. Tyson, A. L. Wilhite, Edward P. Moses, Horace L. Pike, A. L. Yeager, W. A. Lowry, Edward Maynard, John Bell Brownlow, John K. Gillespie, Daisy Woodruff Meek, Misses Mary B. Temple and Sue A. Johnston.

“The dates of the first Appalachian Exposition were September 12 to October 12, 1910. During that month thousands of persons from all parts of the South as well as from more distant states, visited the exposition. It was housed in six buildings. They were the Administration building, in which were machinery, manufacturing and educational exhibits; Woman’s building, in which domestic arts, literary work, etc., were displayed; Knox County building, which contained exhibits from the farms; Forestry and Minerals building; Negro building and Live Stock building. There were various smaller buildings scattered throughout the grounds.

“Features of the first exposition were the aeroplane and Zeppelin airship flights, the first ever witnessed in East Tennessee. Many men of national prominence were visitors at the exposition. Col. Theodore Roosevelt was the most prominent. He delivered an address to many thousands of people in the stadium in front of the live

stock building. He was tendered a banquet the night he was here. Gov. Patterson, his staff, and many others prominent in national and state life were in attendance.

"So successful was the first exposition, that the company put up another exposition in the fall of 1911. Col. L. D. Tyson was chosen as president of the company, succeeding W. J. Oliver. That year the exposition was even more successful than during the preceding fall. Officers were:

President—Col. L. D. Tyson.
 Assistant to President—Sandford H. Cohen.
 Secretary and Treasurer—Col. Cary F. Spence.
 Assistant Secretary and Treasurer—W. F. Allen.
 First Vice-President—M. D. Arnold.
 Second Vice-President—J. L. Deaver.
 Third Vice-President—J. G. Sterchi.
 Fourth Vice-President—D. M. Chambliss.

"Executive Committee—W. J. Savage, J. L. Deaver, Col. Cary F. Spence, C. H. Harvey, D. C. Chapman, W. L. Murphy, C. W. Henderson and J. E. Briscoe.

"Directors—M. D. Arnold, L. B. Audigier, J. H. Anderson, J. E. Briscoe, J. W. Brownlee, W. G. Brownlow, D. M. Chambliss, D. C. Chapman, Charlton Karnes, N. B. Kuhlman, G. F. Milton, Wiley L. Morgan, Prof. H. A. Morgan, M. M. Newcomer, C. A. Nickerson, S. R. Rambo, T. B. Cox, J. G. Crumbliss, Prof. C. S. Cornell, J. L. Deaver, B. R. England, M. F. Flemmiken, C. H. Harvey, L. A. Hayes, C. H. Henderson, A. G. Hope, J. A. Jones, Dr. T. ap R. Jones, Dr. M. Jacob, J. P. Roddy, D. A. Rosenthal, J. G. Sterchi, W. J. Savage, A. F. Sanford, Col. C. F. Spence, A. H. Steere, F. B. Stuart, D. E. Tate, Col. L. D. Tyson, A. L. Willhite, T. A. Wright. W. M. Goodman, honorary member.

"These were assisted by several committees chosen from the leading business and professional men of Knoxville.

Members of the woman's board of 1911 were:

President—Mrs. A. Percy Lockett.
 First Vice-President—Mrs. R. K. Gibson.
 Second Vice-President—Mrs. Hugh Sanford.
 Third Vice-President—Mrs. Samuel McKinney.
 Secretary—Mrs. R. B. Parker.

"Other members: Mesdames J. H. Anderson, L. B. Audigier, Eben Alexander, Brown Ayres, M. B. Arnstein, Edwin Akers, M. D. Arnold, George W. Baxter, J. T. Brownlee, David F. Baker, W. G. Brownlow, J. F. Craft, James Coykendall, Tully R. Cornick, William T. Claiborne, Chas. T. Cates, Jr., David E. Cleage, Ben S. Boyd, George W. Denney, J. E. Dossier, F. L. Fisher, J. P. Gaut, John K. Gillespie, A. Greenwood, H. C. Gridley, J. A. Hensley, H. H. Ingersoll, J. B. Jones Heber D. Ketcham, William A. Knabe, William A. Lowry, Edward Lockett J. E. Lutz, George F. Mellen, Wiley L. Morgan, S. D. Mitchell, Edward P. Moses, Hamlet Mizner, Frank Mead, Sam Mooney, G. F. Milton, T. P. Miller, Matthew McClung, George McCulley, Chas. McClung, Jr., R. W. McCargo, W. S. Nash, W. J. Oliver, Julius Raht, W. C. Ross, C. S. Simms, Robert H. Simmonds, Joseph W.

Sneed, Cary F. Spence, Will D. Wright, J. G. Johnson, S. R. Rambo, W. H. Storrs, R. R. Snyder, L. D. Tyson, W. R. Turner, J. D. Varnell, Horace Van Deventer, Walter Van Gilder, T. S. Webb, Jr., A. L. Wilhite, A. A. Yeager, B. F. Young, C. J. McKimsey, James Henderson, Misses Nellie Dick, Catherine Carson, Frances Gardner, Mary B. Temple, Amanda Gibson, and Sanna Webb.

"The second exposition was held in the same buildings as was the first. The attendance was equally as large or larger, though the exposition was continued only three weeks, from September 11 to October 1.

"Among the prominent persons who delivered addresses at this exposition were Speaker Champ Clark, Col. William Jennings Bryan, Senator Luke Lea, Governor Harmon of Ohio and Governor Ben W. Hooper of Tennessee.

"So successful was this second exposition undertaking that Knoxvilleians believed it should be more than an Appalachian Exposition, and that it should be national in name and scope. Therefore, working toward this end, the plan of giving an exposition in the fall of 1912 was foregone, and efforts were blended in the building of the great National Conservation Exposition."

The keynote of the first Appalachian Exposition, that which differentiated it from all other Southern displays and made it rank next to the Cotton States and International Exposition in Atlanta, was its demonstrative nature.

In a practical way, through the use of object lessons, it indicated the imminent value of conserving the resources of this great mountain empire and of developing them where the task of exploitation had been but feebly exerted. Knoxville had been made to feel a sense of responsibility for this favored region—the Southern Appalachian country. The city, the strategic center of this territory, was in a better position than any other municipality to extend such aid as was needed to bring the resources and advantages of this region to the attention of investors and at the same time to teach the importance of promoting development along sane and safe lines. Thus it came about that Knoxville took hold of the exposition project in a way that made it notable from every point of view. The Appalachian Exposition, as held in 1910 and 1911, was far ahead of similar enterprises by reason of its educational features. The commercial and industrial exhibits were excellent, and the agricultural displays and live stock shows were equal in every respect to those of the largest state fairs. The new and higher features were in the building devoted to forestry and minerals exhibits, and in the exhibits of the Woman's Building and the Art and Education departments.

In the forestry and minerals sections the great natural wealth of the Southern Appalachians was shown, together with exhibits from the United States Forest Service and the Geological Survey which were designed to teach the importance of properly conserving this wealth. Aside from their educational value the forest and minerals displays were of great interest and importance as indicating the

variety and extent of these resources in the Eastern division of Tennessee, Eastern Kentucky and Western North Carolina. President Taft, upon viewing these exhibits, said: "I do not see why all of the people of this section are not millionaires." The same impression was probably made on the minds of thousands of exposition visitors. The exposition was held in the center of the largest hardwood area in the United States, where samples of the choicest timber could easily be procured from nearly virgin forests; it was in a section of the South abounding in mineral wealth—where great and growing marble quarrying and manufacturing industries had barely scratched the surface in the development of the extensive veins that crop out in nearly every hill and valley in this vicinity—where the great Tennessee-Kentucky coal fields furnish employment for thousands of miners and will be developed to an extent that will demand the labor of as many more—where iron, copper and zinc mining are large and well established industries marking the initial steps in the progress of development—where nearly every mineral found in this country is known to exist in paying quantities. It was a wonderful showing that was made in the forestry and minerals building—latent resources of the Southern Appalachians, the development of which would produce greater wealth than any similar area of the country could be made to yield. But with this showing came a realization of the dangers attending such exploitation. Development intended solely to enrich the companies or individuals engaged in the work leads to waste and exhaustion. The great timber lands of the mountain districts should be made to yield returns of value to mill men and to wood users everywhere, but they should be so guarded as to insure reproduction, and serve as permanent reservoirs and sources of streams of the Southeast, and not cut over in a careless and wasteful manner, to be followed by disastrous forest fires, as is too often the case where great timber tracts are "developed" by ordinary methods of lumbering. The mineral resources, while great in extent and variety, cannot be replanted or grown as those of the forests, and waste in mining and handling such products is less excusable and the practice fraught with greater evils. These facts had been carefully considered by the promoters of the exposition, and the result was that for the first time in the history of such enterprises, a warning of the dangers ahead was sounded with the invitation to investors to follow the way to success through industrial development to which the exhibits so clearly pointed. The Appalachian Exposition, therefore, was the first to teach conservation, although this important feature did not receive the attention of the management that was given to commercial exhibits and amusements, the latter being the only known standards by which the excellence of such affairs could be judged, or the interest of the people aroused. It was, however, the turning point from the old to the new idea in exposition building.

A Proclamation by the Governor

State of Tennessee Executive Chamber

¶ Whereas, there is to be established at Knoxville, Tennessee, in September and October of nineteen hundred and thirteen, a national exposition to be known as The National Conservation Exposition, the purpose of which is to promote the preservation and best development of all of the natural resources of our country;

¶ Therefore, I, Ben M. Hooper, Governor of the State of Tennessee, do hereby, in the name of the government and people of the State of Tennessee, announce the establishment of this Exposition to the people of the United States, and invite all of the States to take part in this event, which holds forth so much of promise for the enlightenment and permanent advancement of the people of the South and the Nation, by providing exhibits of their resources and of means for their development and perpetuation and by sending their people to visit the exposition.

¶ In Testimony Whereof, I have hereunto set my hand and caused the great seal of the State of Tennessee to be affixed.

Done at the City of Nashville, this
the 20th day of August, 1912.



Ben M. Hooper
Governor

By the Governor

William W. Goodloe
Secretary of State



NIGHT VIEW OF LIBERAL ARTS BUILDING

THE NATIONAL CONSERVATION EXPOSITION

The National Conservation Exposition movement, inaugurated in 1911 by a few business men and educators at Knoxville and leaders of conservation work at Washington, was not so much the result of a dream, as many have stated, or the discovery of a way to bridge the chasm between dreams and realities, as of a clear understanding of conditions then existing—and which still exist—that made a strong appeal to an enlightened sense of duty.

The conservation of the natural resources of our country was recognized as essential to a true and permanent development. The South had entered upon a period of great industrial awakening. Its rich resources, latent so long, were being opened wide to exploitation. Its forests were known to produce the world's finest

wood products, its mines were attracting hosts of Northern capitalists, its farms and plantations were increasing in acreage and value, the development of its water power was receiving an unprecedented impetus, the Southern people in a new zeal for the possibilities of their land, were urging its children to remain and strangers to come and develop it. And there was danger that the development might not be a conservative one, that the exploitation might be so extravagant as to leave an impoverished country behind. Thinking people were beginning to realize that a true, healthy development stands for permanency; that it does not exploit to exhaustion; that it encourages production but discourages waste; that it constitutes the highest and wisest use of the riches which nature has given. Such is conservation.

With the purpose of encouraging the application of these principles throughout the land, and particularly in the South, it was proposed to institute a National Conservation Exposition, as a great educational enterprise, in one of the leading cities of the South.

With this object in view the following outline of the plans and purposes was submitted at a meeting held in Knoxville, Friday, July 21st, 1911, and at a meeting of the Advisory Board of the exposition held at Washington on January 5th, 1912. At both meetings this general outline was approved, but at the meeting of the Advisory Board a committee was appointed to revise plans before approving them in detail.

The first steps were the organization of the National Advisory Board and of a Promotion Board of the National Conservation Exposition.

The place of meeting of the Advisory Board was the offices of the National Conservation Association at Washington, D. C.

In promoting the exposition it was proposed to seek National and State aid and help from the land and industrial departments of the railroads of the country, as well as from cities and commercial organizations of the South. As the object of the exposition was to promote the interests of the whole people, and as it was in line with all progressive work of the National and State departments of agriculture, of colleges, commercial bodies and the railroads, it was thought reasonable to assume that the project would receive adequate support. The enterprise was regarded as one that would be helpful to those who were promoting irrigation and dry farming in the West, as well as to those who were interested in the reclamation of swamp lands in the far South; that it would be recognized by Southern business organizations as a great agency for the uplift and unfoldment of the whole Southeastern country, and, consequently, as an aid to the special work of each city and section; that it would promote the conservation of forests, soils and waterways, and the rapid and permanent development of all sources of wealth.

In addition to general industrial features of expositions the National Conservation Exposition was planned to include such forestry exhibits as would be of value to owners of timber lands, wood users and farmers. As Rural Life Improvement merits a very high place in any movement for the country's development, its workers were to be invited to co-operate in making the exposition helpful. Good Roads are essential factors in the permanent upbuilding of any country, and their importance was to be emphasized. It was planned to have, besides other structures, an agricultural building containing exhibits which would keep to the front the idea of conservation as applied to the farm. In this building it was proposed to combine agricultural and modern land show features and to add features possessed by neither. It was proposed to provide in this building an assembly room for conventions, such as the National Conservation Association meetings, and for lectures.

The mineral resources of the country and particularly of the Southeast, and Child Welfare and Public Health exhibits, were to be added.

The plans which were finally adopted by the Advisory Board were carried through by the exposition.

The following is taken from the minutes of meetings of the stockholders of the Appalachian Exposition, held in Knoxville, January 10th and 23rd, 1912, as giving an interesting and correct account of the first steps that were made to locate the enterprise in this city.

At the meeting on January 10th, the following paper was submitted by E. H. Scharringhaus, Chairman of the Promotion Board:

To the Stockholders of the Appalachian Exposition Company.

Gentlemen:—

A meeting of the Promotion Board of the National Conservation Exposition, composed of E. H. Scharringhaus, chairman, W. M. Goodman, secretary, R. S. Hazen, G. L. Price, H. M. Johnston, Wm. S. Shields, C. H. Harvey, Dr. Chas. H. Gordon and Dr. Brown Ayres, was held this afternoon at the office of the Commercial Club, and after hearing a report of the meeting at Washington, a committee of three, composed of E. H. Scharringhaus, H. M. Johnston and W. M. Goodman, was appointed to prepare a statement of plans and requirements of the National Advisory Board.

The following paper was then prepared by the committee and approved by the Promotion Board:

"Plans for a National Conservation Exposition, which will have for its object the exploitation, sane development and wise use of the natural resources of the United States, to be held for two months in the fall of 1913, and annually thereafter, if practicable, being in every sense a national educational show, embracing the best

features of all large expositions, but designed to illustrate the principles of conservation in all departments and making the South its special field on account of the vast resources and wonderful possibilities of this region, have been adopted by an Advisory Board formed at Washington, D. C., and constituted as follows:

"Gifford Pinchot, President National Conservation Association, chairman; Don Carlos Ellis, Chief of Education, U. S. Forest Service, secretary; Senator Duncan U. Fletcher of Florida, President Southern Commercial Congress; P. P. Claxton, U. S. Commissioner of Education; W. J. McGee, Soil Water Expert, U. S. Department of Agriculture; Bradford Knapp, in charge of Farmers' Co-operative Demonstrative Work; Logan W. Page, Director U. S. Office of Public Roads, and Dr. J. A. Holmes, Director of Bureau of Mines.

"W. M. Goodman, being present at this meeting and acting under instructions of the Promotion Board of Knoxville, presented an agreement by the Promotion Board to carry out such instructions as the Advisory Board might agree upon.

"Acting on this agreement, the National Advisory Board passed resolutions directing the Promotion Board of Knoxville to select a location for the National Conservation Exposition and will approve of Knoxville as the location if the following requirements are met:

"That the stockholders of the Appalachian Exposition Company use their present exposition plant as the foundation upon which this exposition of National scope can be built.

"That Knoxville will provide financial support for the project to the satisfaction of the Promotion Board and within a time deemed reasonable by the said Promotion Board.

"That the Promotion Board shall choose the Board of Directors, subject to the approval of the Advisory Board.

"Acting in accordance with its agreement to carry out instructions, and being desirous of locating the National Conservation Exposition in Knoxville and thereby concentrating in this city and section all forces which are now at work for the advancement of the South and the Nation, the Promotion Board whose names are hereto attached, will agree to turn this great enterprise over to Knoxville on the following conditions:

"First, that the stockholders of the Appalachian Exposition Company accept the plan for holding a National Exposition in 1913 instead of the smaller expositions held heretofore, the financing of additional buildings to come from outside sources.

"Second, that no attempt be made to hold an Appalachian Exposition in 1912, as the financing and work of a smaller exposition would make it impossible to carry out the plans of the National affair.

"Third, that an agreement be reached to raise money necessary as a promotion fund.

"Fourth, that the Promotion Board be made the nominating board to select directors and officers of the exposition, which the stockholders will agree to vote for and elect.

Respectfully submitted,

E. H. SCHARRINGHAUS, *Chairman.*"



THE LAND BUILDING

Following the Board's proposition, with verbal explanations, the matter was discussed by a number of stockholders.

O. M. Tate offered a resolution which, with slight amendments, was adopted to read as follows:

RESOLUTION ADOPTED.

Resolved, First, That we, the stockholders of the Appalachian Exposition Company, present in person or by proxy, at the annual meeting of said stockholders held January 10, 1912, heartily approve of the plans for a National Conservation Exposition, as presented by the Advisory Board of the said National Conservation Exposition at Washington, through the Promotion Board at Knoxville.

Resolved, Second, That the Promotion Board of the National Conservation Exposition be and is hereby appointed a nominating committee to elect directors for the National Conservation Exposition.

Resolved, Third, That we agree to raise money and finance the National Conservation Exposition for 1913.

Resolved, Fourth, That no exposition be held at Knoxville in 1912, the reason for this resolution being that an effort to finance another Appalachian Exposition would interfere with the work of the National Conservation Exposition, and make it impossible to hold the same a year later, provided the Knoxville Railway & Light Company with which the Appalachian Exposition has contracted a lease which calls for ten successive annual expositions at Chilhowee Park, may be abrogated for the year 1912, so as to allow the execution of the National Conservation Exposition project.

Resolved, Fifth, That the by-laws be so amended as to provide for nine or more members to constitute the board of directors.

Resolved, Sixth, That the Promotion Board of the National Conservation Exposition be and is hereby appointed a committee on ways and means to present plans to the stockholders of the Appalachian Exposition Company, at a meeting to be called by the president at such time and place as may be deemed wise.

Resolved, Seventh, That when this meeting adjourn, it adjourn until January 23, 1912."

The sentiment expressed at the meeting was that the National Conservation Exposition would be of great benefit to Knoxville, particularly in giving it wide advertising, and increasing population and capital.

The following report was submitted by the Promotion Board at the meeting held on January 23rd:

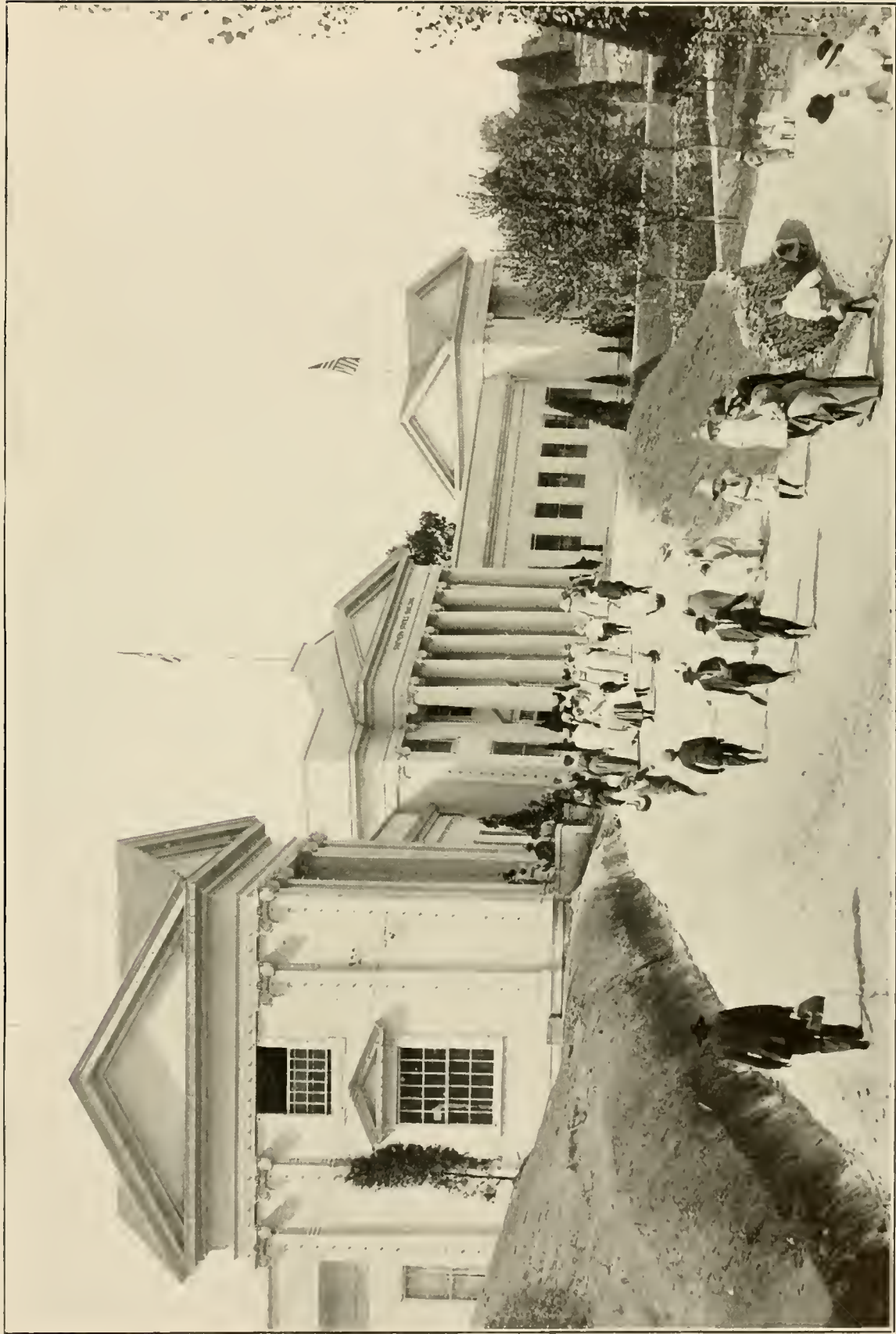
To the Stockholders of the Appalachian Exposition Company.

Gentlemen:—

As the first step in carrying out plans for holding at Knoxville in the fall of 1913 the first National Conservation Exposition, as submitted by the Promotion Board, this board, acting under direction of the Appalachian Exposition Company as the Committee on Ways and Means, would offer the following as a resolution to be adopted at this meeting:

Resolved, That we, the stockholders of the Appalachian Exposition Company, represented in person or by proxy at the adjourned meeting of stockholders held January 23, 1912, instruct the Board of Directors elected at this meeting to apply for a charter with an authorized capital of One Million Dollars for the National Conservation Exposition Company, it being the purpose of the stockholders of the said Appalachian Exposition Company, in which all interested are agreed, to exchange their certificates of stock in the said Appalachian Exposition Company for an equal number of shares of par value in the National Conservation Exposition Company and to offer for sale additional stock in said company.

Your committee on ways and means will present the above resolution at the conclusion of this report and ask for its adoption.



SOUTHERN STATES BUILDING, NATIONAL CONSERVATION EXPOSITION

Photo by Thompson

PLANS FOR FINANCING ENTERPRISE.

To procure an adequate promotion fund, the sale of stock in the proposed National Conservation Exposition Company.

For the construction of buildings, as described in outline of plans and purposes which have been submitted, National and State aid, and help from the land and industrial departments of the railroads and commercial organizations of the South will be sought. As the object of the exposition is to promote the interests of the whole people, and as it is in line with all progressive work of the National and State departments of agriculture, of colleges, commercial bodies and the railroads of the country, it is reasonable to assume that the project will receive adequate co-operation and support; provided the following general plan for work is carried out:

First—To establish at Washington the office of Secretary of the Exposition, securing for this position a man who is in touch with all forces that are now behind the movement, and who can line up other forces to promote the enterprise; the object being to utilize to the fullest extent the power of authoritativeness already given to the exposition and to work to the best advantage in obtaining the co-operation of the Southern States and municipalities. There would be a local secretary with office at Knoxville. This plan has been considered by members of the National Advisory Board, and will be approved by them.

Second—That steps be taken to organize State exposition boards, one in each Southern State, to co-operate with promoters of the proposed Southern States Building and exhibits. The plan for this work is for the secretary of the exposition at Washington to take up with the governors, commissioners of agriculture, State geologists and prominent business men of the fifteen Southern States the matter of organizing State exposition boards, designating some leader as State vice-president of the National Conservation Exposition, to be chairman of the board in his State. It is proposed that other letters be sent by other forces at work in Washington to the same parties, urging action along this line, and that the Board of Directors at Knoxville issue similar invitations. Immediately following this, it is proposed to send a representative of the exposition to see these people in the various States and organize the State boards, arranging at the time of organization for bills to be introduced in the legislatures asking for appropriations for Southern States Building and State exhibits. As soon as the Woman's Board of the exposition is formed, it will be required to take steps for organizing State woman's boards, to work in conjunction with other State boards for the Southern States Building, a portion of this building to be set aside for exhibits to be made by the women of the South. Every power that can be brought to bear is to be concentrated on this special feature,



COAL BUILDING

and especially such forces as can influence the business organizations of cities and towns. The cities of the South will be asked to make appropriations as well as the States, and some inducement will be offered business associations to act in this matter. As a special incentive for the Southern States to act will be the recognition of the South by the National Advisory Board of the exposition as the logical field for exposition work, and added to this will be the bill to be introduced in Congress asking the Federal government to make an appropriation. The moral effect of this will be good, whether a government appropriation is allowed or not. At this time it seems reasonable to assume that we will get the money from the government for a building and exhibit. The heads of various bureaus of the United States Department of Agriculture are behind this movement, two United States Senators are on the Advisory Board, and our Congressman will push the bill with all his power.

The Congress could make this appropriation as an aid to the various departments of the Agricultural Department, and it will be presented to Congress in this way.

Third—It will be one of the special duties of the directors of the exposition, and the Advisory Board will co-operate, to take up the question of support with various good roads associations, corn clubs, farmers' institutes, county and state fairs, Federation of Women's Clubs, National and State waterways and forestry associations, schools, etc., each committee appointed for this work to be headed by the member of the Advisory Board at Washington who is engaged in promoting through his department the special branch of conservation and development for which the committee is formed.

Fourth—It is the idea of the promoters that all matter to be sent out will come from the office of the secretary in Washington and from the manager's office at Knoxville, all Knoxville news to be passed upon by the manager before going to press. The general plan for publicity provides that contracts for advertising be placed with papers and magazines of the North and East, and in some important cities of the South, with agreement from these papers and magazines to feature the exposition in their reading pages. The use of the Associated Press from Washington, the names of prominent National leaders connected with the enterprise, the nation-wide importance of conserving our natural resources and providing for their sane development and wise use, will open the pages of most widely read journals of the country to illustrated stories of the great educational exposition forming at Knoxville—at the gateway of the nation's new forest reserves. It is deemed the part of wisdom by the Promotion Board that in order to secure the most effective publicity for Knoxville, the exposition and the South, all advertising and news sent out must be strictly in the interest of the exposition, and that the names of officials and others be kept out of such matter where it is possible to do so, except where names of persons of national prominence can be used to lend authoritativeness to the enterprise. One of the plans for publicity will be for the railroads to send out booklets describing the exposition and giving low rates, these to be placed in all hotels and depots along their lines throughout the United States. Another is that an effort be made to obtain permission from Congress for a special issue of one and two cent Conservation Exposition stamps, or for the use of a special design bearing the name and location of the exposition in the cancellation of all stamps at all post-offices, thus making every letter that passes through the mails an exposition advertisement.

The question has been asked, "What will be the outcome of this movement if, after using the promotion fund, we find that we have failed in our efforts to secure funds from the government, the Southern States and the railroads to construct the

buildings we have planned for the big exposition?" and we feel that the committee on ways and means should answer this question.

In the first place, the plan for financing the exposition from outside sources, so far as additional buildings are concerned, is considered a good one by the members of the Advisory Board, who have agreed to lend their names to the enterprise and to use their influence in promoting it. We will know just what to expect from these sources in ample time to change our plans, and before a third of the promotion fund has been expended.

In the next place, the very fact of having such men behind the movement as the gentlemen who constitute the Advisory Board at Washington, lends such weight as will be felt by all who are asked to give their co-operation and support. They form a power which will command attention in Congress and in the legislatures and commercial bodies of the Southern States. They represent the varied interests for which the railroads are working to build up business along their lines.

Again, the exposition is designed to supply what all the States and cities of the South are clamoring for—something that will draw population and capital southward by giving to the world authentic information concerning the Southeastern country—and the men at the head of the enterprise guarantee this very thing.

Now, as to our chances. We must take some. No exposition has ever been held in this country where the city holding it did not take chances in interesting outsiders in the work of carrying out their plans, and there is not a case on record where an exposition of national scope and importance failed in its efforts to secure such help.

We do not propose to pull off an exposition for Knoxville. We propose that Knoxville shall take a stand at the head of the Southern Cities to establish a great educational enterprise *in* the South and *for* the South and the nation.

The very fact of taking this stand, and of assuming the attendant risks, will make our strongest appeal for aid.

The *Atlanta Constitution* has said editorially: "If Knoxville gets the exposition the *Constitution* is sure that Atlanta will give Knoxville every support in materializing a plan rich in practical possibilities." That will be the attitude of the Southern press, and, we believe, of the Southern people. The exposition is a national affair. The South has the location—the people of the United States will be invited to come here and see the South at the exposition—the enterprise of the South will be judged by the way the exposition is built and the showing made—the credit of the South will be at stake as well as the credit of Knoxville and Tennessee. The chances for carrying out the plans submitted seem good.

However, if present plans fail, though we do not look for failure, there are other ways for promoting the enterprise, which have been carefully considered and

which can be carried out under the direction of the Promotion Board, though, perhaps, on a somewhat smaller scale. If the people of Knoxville will act at once in guaranteeing an adequate promotion fund, the Promotion Board will feel perfectly safe in announcing to the world that the greatest exposition of the age—if not the largest—will be held here in 1913.

W. M. GOODMAN, *Secretary.*

E. H. SCHARRINGHAUS, *Chairman.*

The above report was adopted and made a part of the minutes of the meeting, the resolution offered therein being amended to the extent of authorizing the directors to take the necessary steps to change the name of the Appalachian Exposition Company to the National Conservation Exposition Company, and to increase the capital stock to one million dollars.

The following report was then submitted and carried unanimously, the directors named therein being duly elected:

“The Promotion Board of the National Conservation Exposition, acting under agreement with the National Advisory Board of the Exposition and according to resolution adopted by the Appalachian Exposition Company stockholders at a meeting held January 10th, 1912, hereby nominate the following gentlemen to serve as the Board of Directors of the National Conservation Exposition, same to hold the office to which they are elected till the first annual meeting following the exposition to be held in the fall of 1913.

“The number constituting the Board, and the names of the gentlemen selected, have been submitted to and approved by the National Advisory Board at Washington.

W. B. TOWNSEND, President Little River Lumber Co.

W. S. SHIELDS, President City National Bank.

J. ALLEN SMITH, President J. Allen Smith & Co.

H. M. JOHNSTON, President Union Bank.

EDWARD HENEGAR, Secretary-Treasurer Arnold, Henegar & Doyle Co.

GEO. W. CALLAHAN, President Callahan Construction Co.

W. J. SAVAGE, President W. J. Savage Co.

W. M. GOODMAN, Secretary-Treasurer, Commercial Club.

DR. CHAS. H. GORDON, Associate State Geologist, Tennessee.

S. V. CARTER, Cashier East Tennessee National Bank.

W. R. JOHNSON, Cigar Manufacturer.

“In view of the fact that a Promotion Fund must be raised in order that the National Conservation Exposition may be located at Knoxville, the above named gentlemen have agreed to serve as Directors only upon condition that the stockholders of the Appalachian Exposition Company and the citizens of Knoxville raise this Promotion Fund on or before February 22, 1912.

Respectfully submitted,
THE PROMOTION BOARD,
E. H. SCHARRINGHAUS, *Chairman.*”

Following the stockholders' meeting a mass meeting was held at the Market Hall, at which addresses were made by W. S. Shields, President of the City National Bank, and other prominent citizens, and by D. C. Ellis, of the U. S. Forest Service, outlining the purposes of the exposition and urging the people of Knoxville to avail themselves of the opportunity offered by the enterprise. Subscriptions to a promotion fund for the exposition, amounting to something over \$28,000.00, were made at this meeting. An active campaign was started at once, and within a few days a meeting of soliciting teams was held at which it was announced that \$100,000.00, the amount of the promotion fund required by the Promotion Board, had been subscribed.

Immediately after this meeting a telegram was sent to the Advisory Board at Washington stating that Knoxville had complied with all requirements, and Associated Press dispatches on the day following brought the information that the exposition had been awarded to this city.

A meeting of the Advisory Board was held on February 28th. The minutes are inserted here as having an important bearing on the promotion of the enterprise:

"The meeting of the Advisory Board of the National Conservation Exposition was called to order by Mr. Pinchot, its Chairman, at 10:30 a. m., in the offices of the National Conservation Association, Colorado Building, Washington, D. C., the following members being present: Mr. McGee, Mr. Page, Mr. Ellis. Dr. J. A. Holmes and Messrs. Goodman, Shields and Johnston from Knoxville were also in attendance. The minutes of the preceding meeting were read and adopted. The Secretary conveyed the regrets of Mr. Fletcher, Mr. Knapp and Mr. Claxton for not being in attendance, Mr. Fletcher and Mr. Knapp being detained on important business and Mr. Claxton being out of the city.

"Mr. McGee reported for the committee which had been named at the previous meeting for defining the duties of the Advisory Board. The Secretary was instructed to send a copy of the report to each member of the Board. The Chairman then explained to the visitors the relation of the Advisory Board to the Exposition project, and a discussion of general plans and purposes followed.

"The Secretary then stated to the Board that proper steps would be taken to have the National Conservation Association co-operate with the Exposition and to have the association endorse the Exposition at the next meeting of the Executive Board. Also that appropriate steps would be taken to secure the co-operation of the Southern Commercial Congress with the Washington office of the Exposition and, further, that the Chief Forester of the United States, Mr. Graves, promised to use his efforts in instituting a Section of Forestry, of which he will be in charge, at the meeting of the Southern Commercial Congress in April, in promoting the interests of the Exposition.

"It was moved and seconded that a Committee of Three be appointed by the chairman to confer with the Tennessee delegation in Congress and others in fram-

ing a bill for a Government appropriation, to be introduced in Congress by Mr. Austin. The motion was passed. The Chairman reserved the appointment of the committee until later.

“The following resolutions were then adopted:

“*Whereas*, the Advisory Board of the National Conservation Exposition has been notified by the Secretary of the Promotion Board of said Exposition that the stockholders of the Appalachian Exposition Company, of Knoxville, Tenn., having invited the said National Conservation Exposition to locate in their city, having raised one hundred thousand dollars for promoting said Exposition, having converted itself into the National Conservation Exposition Company and taken steps toward securing a one million dollar charter, having selected a Board of Directors for said Company, satisfactory to said Promotion and Advisory Boards, and having turned over the Appalachian Exposition plant, with all appurtenances and rights attached thereto to the said Board of Directors for the purposes of the said National Conservation Exposition, the said Promotion Board has with the approval of the Advisory Board, selected Knoxville as the site of the said National Conservation Exposition. Therefore, be it:

“*Resolved*, That this, the Advisory Board of the National Conservation Exposition, hereby signifies its approval and gratification at the selection of Knoxville for the location of the National Conservation Exposition: and be it further

“*Resolved*, That this, the Advisory Board, hereby extends to the National Conservation Exposition Company and the people of Knoxville, Tenn., the assurance that it will assist to the utmost of its capacity toward making the Exposition a complete success as an educational enterprise for the development and conservation of the great natural resources of the Southern States and of the Nation.

“It was moved and seconded that the Chairman appoint a committee, with himself as Chairman, to draw up plans for the conservation features of the Exposition. The motion was passed. The Chair appointed Mr. Pinchot, Chairman; Mr. Ellis, Secretary; Mr. McGee, Mr. Holmes.

“There being no further business, the Board adjourned.

DON CARLOS ELLIS,
Secretary.”

On Saturday, March 12th, a meeting of the Promotion Board and the Directors of the Exposition was held at the office of the City National Bank, at which a report was made by the committee that was sent to Washington. W. S. Shields submitted the report of the Washington conference, with the above signed minutes of the Advisory Board. The committee was enthusiastic over the outlook, and this enthusiasm was soon manifested by all the gentlemen present at the meeting. It was clearly brought out in a number of talks that were made that Knoxville had secured a more important affair in this exposition than the people contemplated. Still greater enthusiasm was aroused by the following letters:

Washington, D. C., Feb. 28, 1912.

“Mr. W. M. Goodman, Raleigh Hotel,
Washington, D. C.

“My Dear Mr. Goodman:

“The meeting of the Advisory Board today brought out such assurances that the National Conservation Exposition will be not only a success, but a great and striking success, that I want to send you my heartiest congratulations. I feel like thanking you both for the work you have done yourself and for the public spirited and energetic stand taken by the citizens of Knoxville. The action of the Appalachian Exposition authorities in turning over the plant of that exposition to the Conservation Exposition will give it an admirable start, which it could get in no other way, while the raising of \$100,000 in four days for a promotion fund shows how generously the people of Knoxville are ready to do their part. I am confident that the exposition will not only be a credit to Knoxville, but will represent a real service to the nation.

Sincerely yours,

GIFFORD PINCHOT.”

“Southern Commercial Congress, Washington, D. C., Feb. 29, 1912.

“Mr. William M. Goodman, Secretary, Commercial Club,
Knoxville, Tenn.

“My Dear Mr. Goodman:

“Allow me to express my personal pleasure at the certainty of a National Conservation Exposition taking shape in Knoxville by 1913, and occupying the exceedingly advantageous grounds which have hitherto been used for the Appalachian Exposition.

“The word ‘conservation’ five years ago was hardly understood. It had been used by a few who saw the sure disaster confronting the United States unless the nation as a whole learnt to use rather than abuse its natural resources. I remember distinctly the stir of interest that was felt in my own state of Alabama when Theodore Roosevelt, aroused by the pleas of Gifford Pinchot and others, called the first White House conference. I remember also that when the Southern Commercial Congress was first spoken of, it was the report of the National Conservation Commission upon which we predicated our first great meeting in Washington; for we realized that a statistical statement of the resources of the nation was not sufficient. We realized that the South should be on hand to interpret its resources. Consequently the whole work of the Southern Commercial Congress is in natural sympathy with the plans that you are working out for a permanent annual demonstration of resources, their right use, and the sentiment that should come into existence prompting our people to extend the effective life of the nation through a proper sense of the danger of exhaustion.

“I cannot refrain from expressing a further idea in relation to your important move. It is that the South, being possessed at the outset of our history and even now with a greater variety of natural resources in combination than any other third

of the United States, it is altogether appropriate that the South, through your activities, should be stirred up to its national responsibility. I see nothing but good in the National Conservation Exposition; for the weakness hitherto in the South has been that our people have not known what the South possessed, and, therefore, have not yet been sufficiently affirmative in dealing with national problems related to the use of resources.

"With best wishes for the success of the enterprise, and with the assurance that wherever I can be of use you can count on me, I am,

Yours very truly,

G. GROSVENOR DAWE,
Managing Director."

A meeting of the Board of Directors of the National Conservation Exposition was held on March 16th, 1912, and the following officers elected: Wm. S. Shields, President; J. Allen Smith, Vice-President; Don Carlos Ellis, Second Vice-President; H. M. Johnston, Third Vice-President; Geo. W. Callahan, Fourth Vice-President; W. M. Goodman, Director-General.

Plans for organization and development work were submitted to and approved by the Board. The plans embraced organization, administration, committees, and bureaus, the establishment of offices at Washington and Knoxville, and work to be carried on from these offices; buildings and exhibits; landscape work and amusement features.

Active work followed along lines of promotion and building. It was not easy sailing at any period between that time and the opening of the exposition. There were many disappointments, and many obstacles were encountered which it was extremely difficult to overcome. Changes were made in some of the original plans for work, exhibits and buildings, although the principal features outlined in the beginning were brought out on a larger scale than was contemplated.

Among the first steps that were taken was an effort to secure participation by the National Government. A bill was introduced in the House of Representatives by Congressman Richard W. Austin, of Tennessee, on March 26th, 1912, and was referred to the Committee on Industrial Arts and Expositions and ordered printed. This bill was as follows:

A BILL,

To provide for participation by the Government of the United States in the National Conservation Exposition, to be held at Knoxville, Tennessee, in the fall of nineteen hundred and thirteen.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That the Government of the United States participate in the National Conservation Exposition, to be held at Knoxville, Tennes-

see, during the fall of nineteen hundred and thirteen. That there shall be exhibited at said exposition from the executive departments of the United States such articles and materials as will illustrate the administrative functions of the Government and their educational value in connection with the development and wise use of the natural resources of the United States, especially the advancement of scientific agriculture and the increase of productivity of the soil through improved cultivation and crop selection and the prevention of avoidable wastes; the reclamation of wet and dry lands by drainage and irrigation, respectively; the more economical development and utilization of mineral wealth; the judicious use of and prevention of needless destruction in woodlands for maintaining timber supply and protecting headwaters of streams; the use and improvement of inland waterways; the preservation of fish and game; the preservation and protection of life in connection with industrial operations; and the economic investigations and operations of the Government with reference to mines and mining, geology, topographic and other surveys, public roads, experiment stations, rural life improvement, and public health and sanitation. That these subjects shall be presented in exhibits and in illustrated lectures by representatives of the Government. To secure a complete and harmonious arrangement of such Government exhibit a United States Government board of managers is hereby authorized to be appointed to be charged with the selection, purchase, preparation, transportation, arrangement, safe-keeping, exhibition, and return of such articles and materials as the heads of the several departments, respectively, decide shall be embraced in the Government exhibit herein authorized. The President of the United States may also designate additional articles of peculiar interest for exhibition in connection with the said Government exhibit. Said Government board of managers shall be composed of three persons now in the employ of the Government and shall be appointed by the President, one of whom shall be designated by the President as chairman of the said board and one as secretary and disbursing officer. The members of said Government board, with other officers and employees of the Government who may be detailed to assist them, including officers of the Army and Navy, shall receive no compensation in addition to their regular salaries, but they shall be allowed their actual and necessary traveling expenses, together with a per diem in lieu of subsistence, to be fixed by the Secretary of the Treasury, while necessarily absent from their homes engaged upon the business of the board. Officers of the Army and Navy shall receive said allowance in lieu of the subsistence and mileage now allowed by law; and the Secretary of War and the Secretary of the Navy may, in their discretion, detail retired Army or Navy officers for such duty. Any provision of law which may prohibit the detail of persons in the employ of the United States to any other service than that which they customarily perform shall not apply to persons detailed for duty in connection with said National Conservation Exposition. Employees of the board not otherwise employed by the Government shall be entitled to such compensation as the board may determine, and such employees may be selected and appointed by said board. The disbursing officer shall give bond in such sum as the Secretary of the Treasury may determine for the faithful performance of his duties, said bond to be

approved by said Secretary. The Secretary of the Treasury shall advance to said officer from time to time, under such regulations as he may prescribe, a sum of money from the appropriation for the Government exhibit herein authorized, not exceeding at any one time three-fourths of the penalty of his bond, to enable him to pay the expenses of said exhibit as authorized by the United States Government board herein created. The Secretary of the Treasury is hereby authorized and directed to place on exhibition, in connection with the exhibit of his department, upon such grounds as shall be allotted for this purpose, one of the life-saving stations authorized to be constructed on the Atlantic coast of the United States by existing law, and to cause the same to be fully equipped with all apparatus, furniture, and appliances now in use in life-saving stations in the United States: *Provided*, That the cost of said exhibit herein authorized, including the selection, purchase, preparation, transportation, arrangement, safe-keeping, exhibition, and return of the articles and materials so exhibited, and the expenses and per diems of the officials and employees of the Government connected with the exhibit or assigned to deliver lectures, shall not exceed the sum of two hundred thousand dollars, which sum, or so much thereof as may be necessary, is hereby appropriated out of any money in the Treasury not otherwise appropriated.

SEC. 2. That in aid of the said National Conservation Exposition, the sum of two hundred thousand dollars is hereby appropriated, out of any money in the Treasury not otherwise appropriated, which sum shall be paid to the National Conservation Exposition Company upon satisfactory evidence being furnished the Secretary of the Treasury that the said company has raised a like sum on account of said exposition, in addition to any amount secured prior to February first, nineteen hundred and twelve, and exclusive of all appropriations from State legislatures. Said two hundred thousand dollars shall be paid by the Secretary of the Treasury upon vouchers and satisfactory evidence that it has been expended for the purposes of the exposition other than salaries.

SEC. 3. That all articles that shall be imported from foreign countries for the sole purpose of exhibition at the National Conservation Exposition, to be held in Knoxville, Tennessee, in the year nineteen hundred and thirteen, upon which there shall be a tariff or customs duty shall be admitted free of the payment of duty, customs fees, or charges, under such regulations as the Secretary of the Treasury shall prescribe; but it shall be lawful at any time during the exposition to sell for delivery at the close thereof any goods or property imported for and actually on exhibition in the exposition buildings or on the grounds, subject to such regulations for the security of the revenue and for the collection of import duties as the Secretary of the Treasury may prescribe: *Provided*, That all such articles when sold or withdrawn for consumption or use in the United States shall be subject to the duty, if any, imposed upon such articles by the revenue laws in force at the date of withdrawal; and on such articles which shall have suffered diminution or deterioration from incidental handling and necessary exposure the duty, if paid, shall be assessed according to the appraised value at the time of with-

drawal for consumption or use, and the penalties prescribed by law shall be enforced against any person guilty of any illegal sale, use, or withdrawal.

SEC. 4. That medals with appropriate devices, emblems, and inscriptions commemorative of said National Conservation Exposition, and of the awards to be made to the exhibitors thereat, shall be prepared for the National Conservation Exposition Company by the Secretary of the Treasury at some mint of the United States, subject to the provisions of the fifty-second section of the coinage Act of eighteen hundred and ninety-three, upon the payment by the National Conservation Exposition of a sum equal to the cost thereof; and authority may be given by the Secretary of the Treasury to the holder of a medal properly awarded to him to have duplicates thereof made at any of the mints of the United States from gold, silver or bronze, upon the payment by him for the same of a sum equal to the cost thereof.

SEC. 5. That the United States shall not be liable on account of said exposition for any expenses incident to or growing out of the same, except for the purpose of paying the expense incident to the selection, preparation, purchase, installation, transportation, care, custody, and safe return of the exhibits made by the Government, and for the employment of proper persons as officers and assistants by the Government board created by this Act, and for other expenses to be approved by the chairman of the Government board, or, in the event of his absence or disability, by such officer as the board may designate, and the Secretary of the Treasury, upon itemized accounts and vouchers: *Provided*, That no liability against the Government shall be incurred and no expenditures of money appropriated by this Act shall be made until provision shall be made by the National Conservation Exposition Company to the satisfaction of the Government board of managers herein established for a suitable building for the Government exhibits and lectures herein authorized.

SEC. 6. That the United States shall not in any manner or under any circumstances be liable for any of the acts, doings, or representations of said National Conservation Exposition Company (a corporation), its officers, agents, servants, or employees, or any of them, or for service, salaries, labor, or wages of said officers, agents, servants, or employees, or any of them, or for any subscriptions to the capital stock, or for any stock certificates, bonds, mortgages, or obligations of any kind issued by said corporation, or for any debts, liabilities, or expenses of any kind or nature whatever attending such exposition corporation, or accruing by reason of the same.

SEC. 7. That nothing in this Act shall be construed so as to create any liability upon the part of the United States, directly or indirectly, for any debt or obligation incurred or for any claim for aid or pecuniary assistance from Congress or the Treasury of the United States in support or liquidation of any debts or obligations created by said United States Government board in excess of appropriations herein made.

SEC. 8. That the United States shall not in any manner or under any circumstances make any loan, directly or indirectly, to the National Conservation Exposition

Company, or for the benefit of said exposition, or for any of the purposes thereof, and shall not appropriate for any purpose whatsoever in connection with said exposition any sum of money other than that provided in this Act.

A hearing before the Committee on Industrial Arts and Expositions, at which statements were made by President Shields and Mr. Ellis concerning the plans and purposes of the exposition, and the ability of its managers to carry out these plans with the help of Congress, led to the adoption of a resolution by the Committee urging that the appropriation be allowed. It was at this meeting that an invitation to the committee to visit Knoxville was accepted. Members of the committee, with other members of Congress, arrived at Knoxville Monday afternoon, July 22, 1912, and were entertained at a dinner given by President Shields at the Cumberland Club. Arrangements had been made for lighting the grounds and buildings of the Appalachian Exposition, and the first view obtained by the distinguished visitors of the site selected for the National Conservation Exposition was that of an exposition already completed, with beautiful grounds and large structures illuminated by thousands of incandescent lights. Another visit was made to the grounds on the day following, when the sites for new buildings were pointed out and blue prints of architects' drawings were shown. The committee was afterward entertained at the home of Mr. Geo. W. Callahan, and at Elkmont, in the Smoky Mountains, where large tracts of land had been selected by the Government for the new forest reserve, Mr. W. B. Townsend furnishing a special train for the committee, members of the exposition boards and other citizens of Knoxville. All of the members of the Congressional Committee expressed themselves as being pleased with the exposition site, with Knoxville as the location of the enterprise and with its plans and purposes, and intimated that a favorable report would be made, urging participation by the Federal Government. This was done soon after their return to Washington.

The first action on the matter of a Federal appropriation was taken in the Senate. Through the influence of Senator Luke Lea of Tennessee and other friends of the exposition, an appropriation of two hundred thousand dollars for a Government exhibit was made a part of the general deficiency bill and passed with that measure. The appropriation was lost in the House, owing to opposition, which had developed in discussions of other exposition measures. Another bill was prepared, as a result of a hearing before the Senate Committee on Expositions, at which the officers and a number of the directors of the National Conservation Exposition appeared. The bill, approved by the Senate Committee, and by many members of

the House of Representatives, will probably pass at the present session. It is to reimburse the Exposition Company for the money expended by the exposition for Government exhibits, for which an appropriation was asked in the original bill.

ENDORSEMENT OF THE NATIONAL CONSERVATION EXPOSITION IN SENATE REPORT.

No better evidence of the way in which the Committee on Industrial Arts and Expositions of the United States Senate regarded the National Conservation Exposition project can be had than was furnished by the report which that Committee made to the Senate. The report recommended the passage of the bill appropriating \$50,000.00 for the Exposition, and was understood to reflect the general sentiment of the members of the Senate regardless of party affiliations, and also the sentiment of a majority of the members of the lower house of Congress.

The report was a magnificent endorsement of the exposition project, and put the Senate of the United States in the position of standing squarely behind the exposition in approving of its aims and of the lessons it was designed to teach. It was made only after a most thorough investigation of the conservation exposition plans, purposes and scope. The report took the ground that the Government of the United States was duty bound to assist the project to the extent of \$50,000.00 for expenses of collecting, transporting, installing and caring for the extensive government exhibits. It also took the ground that the exposition would be one of national importance.

The report said in one place: "The exposition offers the government an exceptional opportunity of demonstrating in a particularly effective way the results of many of its important investigations and of reaching many people who are in need of such instruction and could not be reached through other channels."

Of the Knoxville men behind the exposition project the report stated:—

"The business management of the exposition is being handled by a local board of directors at Knoxville, composed of leading business men of high character and ability, and they have associated with them in the management of the exposition members of the faculty of the University of Tennessee, and other educational institutions of the South, state geologists, state foresters and other state officials."

The report of the committee was unanimous. It was signed by the following senators: Ashurst, of Arizona; Overman, North Carolina; Pittman, Nevada; Martine, New Jersey; Bryan, Florida; Shields, Tennessee; Myers, Montana; Root, New York; Stephenson, Wisconsin; Oliver, Pennsylvania; Gronna, North Dakota; Works, California, and Catron, New Mexico. The personnel of this committee is of high calibre.

Among the statements made in the report, it was said that:—

“This committee, having conducted a hearing of the officers of the National Conservation Exposition and others, is of the opinion that the exposition should have the approval of the United States, as it will furnish an exceptionally good opportunity for laying before the people of all the states and particularly the Southern states, in a visible and tangible manner, the results of its educational investigations along many important lines.

“The movement for the National Conservation Exposition was organized in Washington, D. C., in February of last year, for the purpose of holding at some suitable place in the South a national exposition designed to teach through appropriate exhibits the necessity for and the best method of conserving the resources of the country. A national advisory board was created with authority to select a location, outline the subjects to be embraced, and formulate plans for the exposition. The members of the board are known throughout the nation for their learning, ability, and thoroughness in the special lines to which they have devoted themselves.

“Knoxville, in the heart of the Southern Appalachian mountains, was selected as the site of the exposition. This was a splendid location for the purposes intended to be accomplished. It is contiguous to parts of the states of Virginia, Kentucky, North Carolina, Georgia, and Alabama; similar in many respects to eastern Tennessee; a region which contains almost boundless natural resources, comparatively undisturbed; and a field where instruction through concrete example of proper methods for the preservation of forests, soils, waters, minerals and human resources will be of great value not only to those states, but to the whole country.

“The National Conservation Exposition Company, after being organized and capitalized, procured the grounds and buildings of the company which had held two expositions and has added several new buildings to those already erected. The grounds contain over 100 acres and ten exposition buildings, either completed or in process of erection. These represent an expenditure of more than \$1,000,000.

“The purposes of the exposition are to promote the introduction of modern scientific methods of agriculture; the improvement of forest conditions for the preservation of timber supply, the regulation of stream flow for power and navigation, the diminution of floods and droughts, and the protection of domestic water supply; the improvement of the farms; the development of navigable waterways; the drainage of swamp areas; more economical methods of production and utilization of mineral wealth; the protection of wild animal and bird life, and the increasing of human efficiency through such agencies as the reduction of disease and disease-inducing agencies, the abolition of child labor, the elimination of impure food and drugs; educational development, the introduction of domestic economy and vocational training in schools, rural life improvement, and good roads. In brief, the exposition will be designed to promote such a development of our nat-

ural resources as will make them permanent sources of wealth.

"The character of the exposition is to be entirely educational. It is not to be local either to Tennessee or the Appalachian region.

"It is national in scope, but to have special reference to the sixteen Southern states. States outside the South, however, such as New York, for example, which is to send a large forestry exhibit, will participate. The exposition was indorsed by the National Conservation Congress at its meeting in Indianapolis last year, at which thirty-eight states were represented, also by the National Conservation Association, the Southern Commercial Congress, the Southern Newspaper Publishers' Association, and other Southern and national public bodies.

"Knoxville is well situated for the purposes of such an exposition. It lies immediately within the region in which the national government is establishing national forests, it is in the transition zone between north and south, the state in which it lies is touched by nine other states, and it is in the direct line of travel between the North and the South, and is therefore readily accessible to the entire East.

"The object of the bill now pending is to appropriate \$50,000 to be used by such departments of the government as the department of agriculture, including the forest service, the bureau of education, the geological survey, and the bureau of mines of the interior departments and the children's bureau of the department of labor, and the various state experiment stations, in preparing and exhibiting at this exposition the exhibits appropriate to the purposes of the exposition. The government is not asked to appropriate for a building or to defray any of the expenses of the exposition. The exposition agrees to house the government exhibits in suitable buildings already prepared by the exposition company.

"The exposition needs the approval of the government which this appropriation will give, as well as the government exhibits themselves. No exposition devoted to conservation can be completed without a display of the work which the government has done along this line. On the other hand, the exposition offers the government an exceptional opportunity of demonstrating in a particularly effective way the results of many of its important investigations and of reaching many people who are in need of such instruction and could not be reached through other channels. It is for the foregoing reasons that the committee recommended the bill for passage."

A bill appropriating \$25,000.00 for the exposition was passed by the State legislature, but payment was opposed by the Comptroller on the grounds that the act was unconstitutional, and his position was sustained by the courts.

Appropriations were made by a number of the County Courts of East Tennessee for the erection of the East Tennessee Building at the exposition, thereby providing abundant room for extensive agricultural exhibits. Outside of the money appropriated by the counties—more than two-thirds of the amount being

contributed by the Knox County Court—the exposition was financed by subscriptions that were made by Knoxville people.

Soon after the visit to Knoxville by the Sub-Committee of the Committee on Industrial Arts and Expositions, Mr. Wm. S. Shields resigned as President of the National Conservation Exposition. His resignation was due to the fact that he found it necessary to be out of the city much of the time when exposition work would demand close attention. He remained on the Board of Directors, and aided in carrying forward the great work which had begun during his administration.

Mr. T. A. Wright was elected President of the Exposition to succeed Mr. Shields, and the Board could not have chosen a more worthy successor, or a more earnest and efficient executive. The resignations of the first and fourth vice-presidents, Mr. Smith and Mr. Callahan, had been tendered, owing to their inability to give sufficient time to exposition work. New members were added to the Board of Directors, and J. Wylie Brownlee and C. H. Harvey were elected to succeed the vice-presidents resigned. The officers and directors, as the list then stood, and as it remained until after the close of the exposition, were as follow:

OFFICERS

T. A. WRIGHT, President.
 J. WYLIE BROWNLEE, Vice-President.
 DON CARLOS ELLIS, 2nd Vice-President.
 HU M. JOHNSTON, 3rd Vice-President.
 C. H. HARVEY, 4th Vice-President.
 S. V. CARTER, Treasurer.
 W. M. GOODMAN, Director-General.

BOARD OF DIRECTORS

T. A. WRIGHT, Atty., V.-President Mechanics Bank & Trust Co., Knoxville.
 J. WYLIE BROWNLEE, President Knoxville Board of Trade.
 C. H. HARVEY, President Knoxville Railway & Light Co.
 HU M. JOHNSTON, President Union National Bank, Knoxville.
 S. V. CARTER, Cashier East Tennessee National Bank, Knoxville.
 W. B. TOWNSEND, Pres. Little River Lumber Co., Townsend, Tenn.
 W. R. JOHNSON, Mayor Park City.
 W. J. SAVAGE, President W. J. Savage Company, Knoxville.
 EDWARD HENEGAR, Sec.-Treas. Arnold-Henegar-Doyle Co., Knoxville.
 C. H. GORDON, Associate State Geologist, Tennessee.
 G. L. PRICE, President Daniel Briscoe Co., Knoxville.
 R. S. HAZEN, President Hazen & Lotspeich Co., Knoxville.

B. A. MORTON, President H. T. Hackney Co., Knoxville.

WM. S. SHIELDS, President City National Bank, Knoxville.

W. M. GOODMAN, Secretary and Director-General, Knoxville.

JUDGE JOHN W. DRUMMOND, Knoxville, Tenn.

W. P. TARVER, Mascot, Tenn.

W. A. KNABE, Knoxville, Tenn.

New names were also added to the National Advisory Board, this board in the early part of 1913 and until the close of the exposition being constituted as follows:

GIFFORD PINCHOT, President National Conservation Association, Chairman.

DON CARLOS ELLIS, In Charge of Educational Co-operation U. S. Forest Service, Secretary.

PHILANDER P. CLAXTON, U. S. Commissioner of Education.

MISS JULIA C. LATHROP, Chief of the Children's Bureau, U. S. Department of Labor.

DR. HARVEY W. WILEY, Director of the Bureau of Foods, Sanitation and Health, of Good Housekeeping Magazine.

SENATOR DUNCAN U. FLETCHER, of Florida, President Southern Commercial Congress.

LOGAN W. PAGE, Director of U. S. Office of Public Roads.

MRS. MARY H. ABEL, Editor Journal of Home Economics.

BRADFORD KNAPP, In Charge Farmers' Co-operative Demonstration Work, U. S. Department of Agriculture.

JOS. A. HOLMES, Director U. S. Bureau of Mines.

SENATOR JOSEPH E. RANDELL, of Louisiana, President National Rivers and Harbors Congress.

SENATOR LUKE LEA, of Tennessee.

CHARLES S. BARRETT, President Farmers' Educational and Co-operative Union.

JOHN H. WALLACE, JR., of Alabama, Commissioner of Fish and Game.

CHARLES LATHROP PACK, President National Conservation Congress.

State Boards of the National Conservation Exposition and exposition departments were formed, and the following chairmen appointed:

STATE BOARDS

ALABAMA—Hon. John H. Wallace, Jr., Commissioner, Department of Game and Fish, Montgomery, Chairman.

FLORIDA—Hon. W. H. Milton, President Milton Land & Investment Company, Marianna, Chairman.

GEORGIA—Col. Robert Lowry, Atlanta, Chairman.

KENTUCKY—Hon. James B. McCreary, Governor, Frankfort, Chairman.

MARYLAND—Dr. William Bullock Clark, State Geologist, Baltimore, Chairman.

MISSISSIPPI—Hon. Earl Brewer, Governor, Jackson, Chairman.

MISSOURI—Capt. J. B. White, Kansas City, Chairman.

NORTH CAROLINA—Mr. Clarence Poe, President and Editor *The Progressive Farmer*, Raleigh, Chairman.

OKLAHOMA—Mr. David N. Taylor, President Oklahoma Conservation Congress, Oklahoma City, Chairman.

SOUTH CAROLINA—Hon. Ellison D. Smith, U. S. Senate, Washington, D. C., Chairman.

TEXAS—Hon. O. B. Colquitt, Governor, Austin, Chairman.

VIRGINIA—Dr. Edwin A. Alderman, President University of Virginia, Charlottesville, Chairman.

DEPARTMENTS

DEPARTMENT OF MINERALS—C. H. Gordon, Associate State Geologist, Tennessee, Chairman.

DEPARTMENT OF WATERS—J. A. Switzer, Professor of Hydraulic Engineering, University of Tennessee, Chairman.

DEPARTMENT OF EDUCATION—E. E. Rall, Professor of Higher Education, University of Tennessee, Chairman.

CHILD WELFARE DEPARTMENT—Miss Julia C. Lathrop, Chief of the Children's Bureau, U. S. Department of Labor, Chairman.

DEPARTMENT OF HEALTH—Dr. Tap R. Jones, Knoxville, Tenn., Chairman. Dr. Harvey W. Wiley, Director of the Bureau of Foods, Sanitation and Health of *Good Housekeeping Magazine*, Associate.

ROADS DEPARTMENT—Cyrus Kehr, Knoxville, Tenn., Chairman.

WOMAN'S DEPARTMENT—Mrs. Horace Van Deventer, Knoxville, Tenn., President.

DEPARTMENT OF MUSIC—Prof. C. S. Cornell, Knoxville, Tenn., Chairman.

ART DEPARTMENT—Miss Catherine Wiley, Instructor of Art, University of Tennessee, Knoxville, Chairman.

FORESTS—Don Carlos Ellis, In Charge of Educational Co-operation, U. S. Forest Service, Washington, D. C., Chairman.

AGRICULTURE AND LIVE STOCK—H. A. Morgan, Professor of Agriculture, University of Tennessee, Chairman. John A. Jones, Knoxville, Tennessee, Superintendent.

GIRLS' CANNING DEPARTMENT—Miss Virginia P. Moore, Nashville, Tenn., Chairman.

NEGRO DEPARTMENT—Hu A. Fagg, Knoxville, Tenn., Chairman.

Participation by the Southern Commercial Congress and the National Conservation Congress was sought, and strong influence was brought to bear on these associations to induce them to hold their meetings for 1913 at the exposition. In this the management failed, but through these efforts they secured endorsements of their work and much effective publicity.

The resolutions adopted by the Southern Commercial Congress, in session at Nashville, April 8th, 9th and 10th, 1912, were as follow:

Whereas, an exposition to be known as the National Conservation Exposition, is to be held in the City of Knoxville, Tennessee, in the fall of 1913, to promote the conservation and highest development of all the natural resources of the country and particularly of the South; and,

Whereas, it is planned by the management of said exposition that an All Southern building shall be erected at the exposition, to contain exhibits from all Southern States which do not erect separate buildings; therefore, be it

Resolved, That we, the delegates of the 4th Annual Convention of the Southern Commercial Congress, do hereby heartily endorse the said National Conservation Exposition as a project directed toward the upbuilding of the entire South, and urge that the governments and people of all the Southern States participate in said exposition and co-operate in making it a complete success."

The following statement made at the National Conservation Congress at Indianapolis is not only of interest as a clear and forceful presentation of the claims of Knoxville as the logical point for a meeting of the Congress in 1913, but as outlining many of the exposition features that were later developed as planned, and other features which the management failed to add to its list of attractions on account of the time and expense involved in working out more important plans which were subsequently adopted:

Statement Made by Don Carlos Ellis at the 4th National Conservation Congress.

INDIANAPOLIS, INDIANA, OCTOBER 1st TO 4th, 1912.

Around the lakes in Chilhowee Park, three miles from the center of the city of Knoxville, with several ranges of the Smoky Mountains seen lifting up their timbered crests in the distance, there is to be held in September and October of next

year the National Conservation Exposition. The various departments of Conservation, not only forests, minerals, waterways, and soils, but animal life and human efficiency are to be set forth in a new way. Hitherto, conservation propaganda has been largely confined to the written and spoken word, and at this Exposition, in addition to this method, the concrete, tangible, visible results accomplished through Conservation in the past and possibilities which may be accomplished by Conservation in the future will be displayed. Separate buildings, where practicable, are to be devoted to each of these distinct branches of Conservation in which the conservation features of the Exposition's work has been divided. A Forestry Building, situated appropriately upon a knoll within a grove of oaks and hickories, has already been provided; an Agricultural Building is now in course of construction. An interesting and novel feature of this building will probably be an immense relief map of the entire Southeastern United States, showing details of elevation, the relation of the mountains to stream flow, the location of cities, the nature of resources in various parts. Such important facts as the close relation between the Southern Appalachian Mountains, as far north as Maryland, to the annual overflow of the Mississippi, can upon this map most graphically be shown. A bird's eye view of this map will be obtained from a gallery running around the entire building, and upon this gallery it is planned that the various agricultural experiment stations of the 16 Southern States will exhibit the results of their investigations.

In this conservation movement, I believe that no single factor has contributed more than the work of the women's clubs, and I am in a position to know whereof I speak. It was to be expected, therefore, that they should hasten to the support of this new branch of the work. In advancing through the House Committee of the National Congress the bill providing for a government exhibit, the women's clubs helped most generously. It was thought fitting that one of the buildings should be devoted to woman's work, and that in this building there should be housed exhibits pertaining to her share of achievement in Conservation and the exhibits pertaining to child welfare and the care of the home. But I have been convinced within the past few days that in formulating this plan a big error crept in. It was in my talk of a few days ago with the head of the new Children's Bureau, in Washington, Miss Julia C. Lathrop, that I learned that children had fathers as well as mothers, that the responsibility for the welfare and happiness of the home and its inhabitants rested upon men and women together, that it was a mistake to segregate effort by sex lines, and to lay upon the willing shoulders of womankind the whole responsibility for the well-being of our children and our homes. It was then that I conceived the idea of replacing the Woman's Building by a larger structure devoted to our vital resources and to place within it all exhibits devoted to human welfare. It was originally planned that the Woman's Building should be erected by the women of the South through the instrumentality of their clubs. This is one responsibility of which I hope the women of the country will not want to be relieved, but instead it is my fond hope, which I now express for the first time, that they will widen out our original intention to include the erection of this building devoted to humanity and that it may stand as a monument to their efforts. One of the works which I

hope to do for this exposition will be to assist in securing the erection of this building, and I want the ladies who are in attendance upon this Congress to give me generous assistance in the work. It has been the intention of the directors of the exposition to distribute the exhibits in health, child welfare, education, and human efficiency in general through the various buildings already proposed. It seems as fitting that a separate building be devoted to this department as to such resources as forests and soils.

Among the other buildings already completed are the Knox County Building, the Negro Building, the Live Stock Building, and Machinery Hall. The Agricultural Building now being erected is to contain as an annex an auditorium for lectures and assemblies and congresses of various sorts. An All-Southern Building to be devoted to the commerce and industry of the Southern States, and an East Tennessee Building have already been provided for. Still others are in prospect. The indoor agricultural exhibits are to be supplemented by a model farm operated by the agricultural experiment station conducted in connection with the University of Tennessee. The most modern, scientific methods of agriculture will here be set forth.

Prospects are bright for exhaustive exhibits from the various branches of the National Government devoted to the preservation and development of our natural wealth. A bill introduced into the National Congress last session providing for a quarter of a million dollars to pay for a government building and exhibit was received most favorably, and the House Committee to which it was referred, after sending a delegation of its members to Knoxville to investigate conditions, has given assurances of a favorable report and strong backing on the floor of the House. This is another work in which the assistance of the delegates to this Congress is needed. It affords another wide field of activity for the advancement of the education of the people of the country and particularly of the South in matters concerning which adequate knowledge is of such great importance to the continued prosperity of our land.

I have not time to dilate upon many of the plans and proposed features and attractions of this Exposition, and I must content myself with generalizing for the present. The entire project is to be conducted on the highest possible educational plane. Even the amusements are to combine entertainment with culture and education. The branch of music is to be devoted to the development of local talent; that of art to the pictures of Southern painters, and it is proposed that the drama will take the form of a mammoth pageant of the mountain people, showing the influence of their development upon western civilization and the relation of the use and the conservation of the mountain resources upon their civilization and the civilization about them. The Russell Sage Foundation and the successful director of pageants who has worked in co-operation with the Foundation in staging other and smaller pageants are to unite in this, which they propose to make the climax of their successes. The pageant is to present in concrete form, with unity of people and place, an example of the influence of Conservation upon the welfare of man which will

apply to every kind of natural wealth and every nature of people throughout the broad land.

The National Conservation Exposition is the result of an evolution which has been progressing for several years and, just as the evolution which many of our prominent scientists hold to have been going on in the development of the world began with the nebula, so the Exposition itself has materialized from the dream of its present general manager. Most conservationists have been called dreamers up to the time when their dreams began to take on distinctive form, and his dream began to take on form about ten years after he had dreamed it, and as a result of his dream there was held three years ago at Knoxville the first Appalachian Exposition, devoted to the development of resources of the Southern Appalachian Region. He had meant that this should be a conservation exposition, but he was ahead of his time, and the exposition, while thoroughly successful as a local affair, developed into a commercial and industrial project. It was followed the next year by an equally successful exposition of the same character. It had been supported entirely by the people of Eastern Tennessee; almost entirely by the people of Knoxville. It had shown the great natural wealth and the many possibilities of that mountain country. But it had accomplished more than that. It had prepared Knoxville for this greater undertaking. It had established the city's ability to handle an exposition of greater magnitude and it had established upon the exposition grounds a plant and buildings the estimated value of which ranges from one-half million to one million dollars, and which have served as a valuable nucleus around which the Conservation Exposition is being built. The old exposition was local, the new is national; the old had as its special field the mountain regions of Tennessee, North Carolina and Georgia, the new has as its special field the entire South; the old was designed, as most expositions of the past have been designed, to promote commerce and industry and to celebrate past achievements, the new looks to the future welfare of the land. In the words of the dreamer to whom I have referred, who has accomplished such material results, and who is evidently a poet as well as a dreamer, "the expositions of the past were as songs of the harvest; the National Conservation Exposition will be the driving of teams afield in the springtime of progress." It was because of Knoxville's preparedness to stage the Conservation Exposition, because it had on hand the excellent exposition plant which it was willing to hand over to the cause of Conservation in addition to new capital for the promotion of the Conservation Exposition, because of the willingness of the most successful business men in the city to direct the business affairs of the Exposition, because of its location in the South, being in a position sufficiently central to make it easily accessible to the entire East, because of its location in a region where the National Government is doing more conservation work along the lines of agriculture and forestry than in any other section of the country, because it lies in the very center of the richest hardwood region of the United States where the Government is now engaged in buying lands for National Forest purposes, because the South needed the Exposition to assist in the wonderful awakening through which she is progressing—it was for these reasons that Knoxville was chosen. I have said that

the business affairs of the Exposition were to be directed by the most successful business men of the city. I am not a citizen of Knoxville or of Tennessee, but I know enough of its people to know that this is so. And the conservation features are being planned by men and women equally prominent in that field of work. An Advisory Board was formed for this purpose, consisting of many of the most prominent workers in the various fields of Conservation. Gifford Pinchot is at its head; mineral conservation is represented by Dr. J. A. Holmes, the Director of the U. S. Bureau of Mines; agricultural resources by Charles S. Barrett, president of the Farmers' Educational and Co-operative Union, and Bradford Knapp of Boys' Corn Club fame; water resources by Representative Joseph E. Ransdell of Louisiana, president of the National Rivers and Harbors Congress. The late Dr. W. J. McGee was an earnest worker in this field up to a very short time before his death. The work of education is represented by U. S. Commissioner of Education, Dr. P. P. Claxton; health by Dr. Wiley; child welfare by Miss Julia C. Lathrop, Chief of the Children's Bureau of the Department of Commerce and Labor; good roads by the Director of the U. S. Office of Public Roads, Logan W. Page; home economics by Mrs. Mary H. Abel, Editor of the Journal of Home Economics; Southern development in general by Senators Luke Lea of Tennessee and Duncan U. Fletcher of Florida, President of the Southern Commercial Congress.

This Exposition is receiving the warm support of the Southern Commercial Congress and the National Conservation Association, and both of these bodies have adopted resolutions endorsing it. The endorsement of this Congress is also desired and I have here resolutions which I desire to propose for the purpose. I shall read them to you at the conclusion of my talk, which is very near. One of the clauses of these resolutions recommends the consideration by the executive board of this Congress of accepting the invitations of the city of Knoxville and of the officers and directors of the Exposition to hold at the Exposition next fall the 5th session of this Congress. I have the honor and the privilege of presenting these invitations to you. It seems most fitting that these two affairs which are working so hard for Conservation, the Congress and the Exposition, should unite in Knoxville next year. The National Conservation Congress belongs to the whole Nation and the whole Nation is proud of it. For four years, however, it has held its sessions in the North. It seems fitting that the South should now enjoy the privilege of entertaining it, and no Southern city will be better prepared to do this in 1913 than the city which is at that same time to stage the Exposition. In 1913 the Panama Canal is to open, and the South having lost the privilege of holding the Panama-Pacific Exposition in one of its cities is to celebrate the opening of the canal during the year of its opening in other ways. The tide of passenger traffic next year is to be directed, with the help of the Southern railroads, through the South to the Gulf, and one of the highways of travel lies through Knoxville. For two years the Southern railroads gave special rates to the Appalachian Exposition. The Southern railroads are also giving special rates this year to this Congress, and may be depended upon to give better ones to Knoxville next year. The attendance of the Exposition is expected to be very large. The Exposition will be given wide adver-

tisement in every part of the country. The Congress can enjoy these advantages and can in turn be of great advantage to the Exposition in helping it to focus interest in Conservation during that period upon a single city. The interests of the Exposition and the Congress are identical. They are the interests of the people of the whole United States in perpetuating their sources of supply of the essentials of prosperity.

A letter from the National Advisory Board of the Exposition, signed by the Chairman, Mr. Pinchot, was then read by Mr. Ellis. It urged the selection of Knoxville as the next place of meeting, the time of the meeting to be during the Exposition period. This matter was referred to the Executive Committee. The resolution adopted was as follows:

Whereas, it is the sense of the fourth National Conservation Congress, assembled at Indianapolis, Ind., October 1 to 4, 1912, that the National Conservation Exposition to be held at Knoxville, Tenn. in September and October, 1913, will be a strong factor in the advancement of conservation and wise use of the resources of this nation, and particularly of the Southern States;

Whereas, it is, further, the sense of the Congress that education in the care of natural resources is particularly needed in the Southern States, where the resources are of great value and their development is in a period of great awakening, but their conservation at a low ebb; therefore be it

Resolved, That the National Conservation Congress hereby signifies its gratification that the National Conservation Exposition is to take place and its earnest hope that all persons and institutions interested in the conservation of any of our natural resources will give the exposition their cordial support and co-operation."

It was a surprise, as well as a disappointment to many, that Knoxville was not selected as the place of meeting for 1913. The suggestion that a meeting of the National Conservation Congress be held at the National Conservation Exposition was first made by the Executive Secretary of the Congress, and it was approved by officers of the National Conservation Association. An opportunity was offered here for the Conservation Congress to hold the largest session in its history, and through the co-operation of the Exposition to do effective work for the South and the Nation that would not be possible of accomplishment at any other time or place.

The work of organization was completed in the early part of 1912, the following report of the Committee on Organization being adopted:

"To the Board of Directors, National Conservation Exposition:

"Gentlemen:—Your committee appointed to consider and report a plan of organization and rules for the government of the exposition board, beg to submit the following report:

"1. The Executive Organization.

"According to the charter of the National Conservation Exposition, the full responsibility and control of the exposition rests in the hands of the board of directors who were elected by the stockholders of the exposition company. Associated with this body is one called the national advisory board which, while co-operating with the board of directors, assumes no responsibility for the direct management of the exposition. It is therefore in a sense subsidiary to the board of directors and derives its authority by delegation from that board. So also in the promotion of the work of the exposition, the aid of various bodies or committees will be invoked upon whom will rest only the responsibility of carrying out the plans and instructions of the central board. In order, therefore, that responsibilities shall be properly placed and that all reins of authority shall emanate from the board of directors, it is the opinion of your committee that there should be a full and complete organization of the board such that for every line of work there shall be representatives on the board to direct and control it. This organization we have designated the executive organization. It consists of the board of directors, its officers and executive committees, together with its agents and employes as follows:

"1. Officers of the Board of Directors:

"President, first vice-president, second vice-president, third vice-president, fourth vice-president, treasurer, general manager and secretary, general counsel.

"2. Executive Committees:

"The executive committees shall consist of three members, each to be appointed by the president from the directorate. When superintendents or other special officers are needed to carry out the work in charge of any of these committees such officers shall be nominated by the committee concerned in conjunction with the general manager and elected by the board of directors. The following committees are recommended and others may be added as circumstances may require:

"a. Finance; b. Buildings and grounds; c. Transportation; d. Public comfort; e. Publicity; f. Exhibits; g. Amusements; h. Conventions; i. Purchasing committee.

"3. Office and Field Assistants.

"Office Assistants—Bookkeepers, stenographers, other office help as needed, including gate attendants and other help when the exposition is in operation.

"Field Assistants—Superintendents for various departments, publicity agents, etc.

"II. Subsidiary Organizations.

"1. The National Advisory Board:

"The offices of the advisory board are located in Washington, D. C. The advisory board names its own officers except its secretary, who is elected by the board of directors. The function of the advisory board is to co-operate with and assist in promoting the work of the exposition, but neither the board nor its officers shall make contracts calling for expenditures on the part of the exposition except on the written authority of the board of directors.

"2. State Exposition Boards.

"These should be appointed in every Southern state, the preliminary steps being now taken in this matter by the secretary of the advisory board. To secure such co-operation an exposition commissioner should be appointed. The Southern Commercial congress has under consideration, so your committee is advised, the proposition to undertake the erection of the Southern States building. If this is done the secretary of the congress will act as the exposition commissioner. Your committee would recommend that this plan be endorsed pending decision by the executive board of the congress. If this arrangement fails then we recommend that a competent man be secured to undertake the organization of state exposition boards.

"3. General Committees.

"The various lines of work involved in carrying out the plans of the exposition shall be performed by standing committees, each of which shall be under the direct supervision of the general manager, through whom all reports to the board shall be made except as the board may otherwise direct.

"The following committees are suggested, others to be named as occasion may require:—

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| "a. Lands. | "i. Woman's Department. |
| "b. Forests. | "j. Child Welfare. |
| "c. Minerals. | "k. Country Life. |
| "d. Waters. | "l. Art. |
| "e. Education. | "m. Music and Entertainment. |
| "f. Health. | "n. Negro Department. |
| "g. Public Health. | "B—Rules of the Board. |
| "h. Commerce and Manufactures. | "I. As to Expenditures. |

"1. No contract or obligation binding on the exposition shall be entered into by any one connected with it until definite authority for such action is given by the board of directors. Persons failing to observe this rule shall be held personally responsible for the obligation.

"2. So far as possible all contracts for buildings, materials or supplies shall be made on the basis of competitive bids, said bids being opened and contracts awarded by the board of directors except when for satisfactory reasons this duty is delegated to a committee.

"3. In the case of expenditures that cannot be entered for competitive bids, orders for the same must emanate from the purchasing committee specially designated by the board, and no order shall be regarded as valid, or binding on the board, that does not bear the signature of the chairman. To facilitate the work of the various committees and to keep a correct record of the expenditures, the purchasing committee shall prepare suitable blanks for requests for requisitions and for orders by means of which a proper check can be kept on all expenditures.

"4. The finance committee shall act as the auditing committee. No account shall be paid until it has been approved by the president of the board and the chairman of the finance committee.

Respectfully submitted,

C. H. GORDON,
W. M. GOODMAN,
W. J. SAVAGE,

Committee on Organization.

The Standing Committees appointed by the Board were as follow:

Finance—W. R. Johnson, W. S. Shields, C. H. Harvey, S. V. Carter, H. M. Johnston, B. A. Morton.

Buildings and Grounds—W. J. Savage, W. R. Johnson, W. M. Goodman, J. W. Brownlee, R. S. Hazen, C. H. Harvey.

Transportation—W. B. Townsend, W. R. Johnson, Edward Henegar, J. W. Brownlee, G. M. Ellis, D. S. Chandler, Al Cooper, W. T. Rogers.

Exhibits—C. H. Gordon, W. M. Goodman, R. S. Hazen, W. J. Savage, C. H. Harvey, W. B. Townsend, G. L. Price.

Public Comfort—G. L. Price, S. V. Carter, W. R. Johnson, Edward Henegar, R. W. Farr, C. B. Atkin, Victor Seilaz.

Publicity—Edward Henegar, James B. Young, C. H. Gordon, G. L. Price, W. L. Morgan, Joe Baker, J. B. Criswell.

Amusements—H. M. Johnston, W. S. Shields, W. A. Knabe, R. S. Hazen, Joe Borches, C. H. Harvey, J. W. Brownlee.

Conventions—W. R. Johnson, W. B. Townsend, C. H. Harvey, J. W. Brownlee, Carey F. Spence, Joe Borches, Jesse L. Henson, John M. Thornburg, Horace Van Deventer.

Purchasing—W. J. Savage, J. W. Brownlee, Edward Henegar, G. L. Price.

Reception—W. S. Shields, H. M. Johnston, R. S. Hazen, W. M. Goodman, Carey F. Spence, Powell Smith, Will Ross, A. F. Sanford, Will D. Wright, M. D. Arnold, D. C. Chapman, Frank Haynes, Horace Van Deventer, E. T. Sanford, W. W. Woodruff, Dick Gibson.

Entertainment—H. M. Johnston, Carey F. Spence, D. C. Chapman.

Program—H. T. Lucas, D. C. Chapman, Carey F. Spence.

Admissions—R. S. Hazen, W. S. Shields, G. L. Price, W. J. Savage, H. T. Lucas.

The following departments and committees of the National Conservation Exposition were then organized:

Woman's Department—Mrs. Horace Van Deventer, President; Mrs. C. D. Boyd, 1st Vice-president; Mrs. W. S. Shields, 2nd Vice-president; Mrs. J. Y.

Johnston, 3rd Vice-president; Mrs. G. W. Denney, 4th Vice-president; Mrs. W. W. Woodruff, 5th Vice-president; Miss Louise A. Neilson, Secretary.

Executive Committee—Mrs. Horace Van Deventer, Mrs. C. D. Boyd, Mrs. W. S. Shields, Mrs. J. Y. Johnston, Mrs. G. W. Denney, Mrs. W. W. Woodruff, Miss Louise A. Neilson, Mrs. M. B. Arnstein, Mrs. J. H. Anderson, Mrs. W. A. Boies, Mrs. Joseph E. Borches, Mrs. B. D. Brabson, Mrs. Tully R. Cornick, Miss Amanda Gibson, Mrs. W. M. Goodman, Mrs. Clyde Gothard, Mrs. Cuyler Kimball, Mrs. Wm. A. Knabe, Mrs. Rudolph Knaffl, Mrs. Richard McCargo, Mrs. J. B. Coykendall, Mrs. Robert Foust, Mrs. Hugh Van Deventer, Mrs. J. R. McDowell, Mrs. Samuel McKinney, Mrs. George Mellen, Mrs. T. P. Miller, Mrs. S. V. Minsky, Mrs. John Oberne, Miss Lucy Rhea, Mrs. William Ross, Mrs. E. T. Sanford, Mrs. Herbert Sanford, Mrs. E. H. Saunders, Mrs. W. H. Storrs, Miss Mary B. Temple, Mrs. Lewis Tillman, Mrs. Fay Van Deventer, Mrs. W. A. Van Gilder, Miss Kate White, Mrs. T. A. Wright, Mrs. W. D. Wright.

Active Members of Woman's Board—Miss Bessie Allison, Mrs. Howard Anderson, Mrs. James Anderson, Mrs. Brown Ayres, Mrs. W. W. Baird, Mrs. Cecil Baker, Mrs. C. S. Baldwin, Mrs. G. W. Baxter, Mrs. W. E. Bickley, Mrs. A. S. Birdsong, Mrs. William Ely Boies, Mrs. Ben. S. Boyd, Mrs. D. C. Boykin, Mrs. Phil Briscoe, Jr., Mrs. T. G. Brown, Mrs. J. Wylie Brownlee, Mrs. William Brownlee, Mrs. W. G. Brownlow, Mrs. Charles A. Burks, Miss Carrie Callaway, Miss Catherine Carson, Mrs. Fred Chamberlain, Mrs. D. C. Chapman, Mrs. R. R. Choate, Mrs. William T. Claiborne, Mrs. David Cleage, Mrs. Charles Cornell, Mrs. Howard Cornick, Mrs. James H. Cowan, Mrs. George Crane, Mrs. J. G. Crumbliss, Mrs. R. L. Cunningham, Mrs. A. H. Dailey, Mrs. Washington Danenbower, Mrs. William Delpauch, Mrs. J. L. Deaver, Mrs. A. T. Dossier, Miss Sophie Ducloux, Miss Leah Fletcher, Mrs. Henry Fonde, Mrs. H. P. Foster, Jr., Mrs. Robert Foust, Mrs. Ambrose Gaines, Mrs. Frank Gaut, Mrs. George Gaut, Mrs. S. H. George, Mrs. C. D. Gibson, Mrs. John K. Gillespie, Mrs. C. H. Gordon, Mrs. Herbert Hall, Mrs. L. S. Hall, Miss Sophie Harrill, Mrs. J. B. Harrison, Mrs. Asa Hazen, Mrs. R. S. Hazen, Mrs. George Helm, Mrs. James Henderson, Mrs. Edward Hengar, Mrs. James A. Hensley, Mrs. Douglas Howell, Mrs. Henry Hudson, Mrs. Andrew Jackson, Mrs. W. R. Johnson, Mrs. T. ap R. Jones, Mrs. Jennie Keeling, Mrs. J. B. Keesling, Mrs. William Kennedy, Mrs. R. N. Kesterson, Miss Louise Krutch, Mrs. J. D. Varnell, Mrs. C. M. Kyle, Mrs. H. B. Lindsay, Mrs. Roy Lotspeich, Mrs. Wm. A. Lowry, Mrs. J. E. Lutz, Miss Sara Lynn, Mrs. A. M. Lyons, Mrs. David Macgowan, Mrs. Robert Mason, Mrs. James Maynard, Jr., Mrs. David Meriwether, Mrs. Frank Milligan, Mrs. Stokeley Mitchell, Mrs. R. E. L. Mountcastle, Miss Catherine Mulligan, Mrs. Inge Murphy, Miss Margaret McCalla, Mrs. H. H. McCampbell, Mrs. C. J. McClung, Mrs. Porter D. McCon-

ney, Mrs. A. H. Nave, Mrs. Edward Ogden, Mrs. W. J. Oliver, Mrs. Chas. A. Perkins, Mrs. George W. Peters, Mrs. William Price, Miss Elizabeth Quist, Mrs. Robert Rhea, Mrs. Walter S. Roberts, Miss Aline Rosenthal, Miss Ida Ross, Mrs. John M. Ross, Mrs. William Rule, Mrs. Alfred Sanford, Mrs. Hugh Sanford, Mrs. Herbert Sanford, Mrs. Richard Sansom, Mrs. Thomas Sedgwick, Mrs. Sam Shields, Mrs. H. M. Simmonds, Mrs. Robert Simmonds, Mrs. W. B. Sullins, Mrs. Jacob Thomas, Mrs. Lytton Thomas, Miss Laura Thornburgh, Miss Louise Turner, Mrs. L. D. Tyson, Mrs. Hugh Van Deventer, Mrs. J. F. Voorhees, Mrs. C. E. Waite, Mrs. T. S. Webb, Sr., Mrs. A. P. White, Mrs. D. H. Williams, Mrs. Charles W. Wright, Mrs. A. A. Yeager, Mrs. James Young.

Committee on Awards—Mrs. Thomas P. Miller, Chairman, Mrs. William A. Boies, Vice-Chairman, Mrs. Wylie Brownlee, Mrs. W. A. Lowry, Mrs. W. T. Kennedy.

Exterior Decoration and Grounds Committee—Mrs. Fayette F. Van Deventer, Chairman, Mrs. E. Clyde Gothard, Vice-Chairman, Mrs. W. T. Claiborne, Mrs. Fred W. Chamberlain, Mrs. Edward Ogden, Mrs. R. H. Simmonds.

Interior Decoration and Space—Mrs. Joseph E. Borches, Chairman, Mrs. E. H. Saunders, Vice-Chairman, Mrs. Henry Hudson, Mrs. George Gaut.

Home Economics—Mrs. Richard McCargo, Chairman, Mrs. Lewis Tillman, Vice-Chairman.

Sub-committees—Living Room—Mrs. R. E. L. Mountcastle, Chairman, Mrs. Brown Ayres, Mrs. T. S. Webb, Sr.

Dining Room—Mrs. W. E. Bickley, Chairman, Mrs. Jas. Henderson, Mrs. Charles M. Kyle.

Bed Room—Mrs. James H. Cowan, Chairman, Mrs. Howard Cornick, Mrs. George Helm, Mrs. C. S. Baldwin.

Sewing Room—Mrs. W. S. Roberts, Chairman, Mrs. W. B. Sullins, Mrs. H. M. Simmonds, Mrs. J. G. Crumbliss.

Pantry—Mrs. George W. Peters, Chairman, Mrs. Stokely Mitchell, Mrs. A. P. White, Mrs. T. G. Brown, Mrs. Will Brownlee.

Kitchen—Mrs. C. H. Gordon, Chairman, Mrs. J. B. Keesling, Mrs. George Crane, Miss Katherine Carson.

Laundry—Mrs. Lewis Tillman, Chairman, Mrs. A. T. Dossier, Miss Louise Turner.

Labor Saving Devices—Mrs. Henry Fonde, Chairman, Mrs. R. R. Choate, Mrs. Arthur M. Lyons, Mrs. A. H. Dailey.

Demonstrations and Charts—Miss Katherine Mulligan, University of Tennessee, Miss Louise Turner, University of Tennessee.

Flowers and Decorations—Mrs. S. H. George, Chairman, Mrs. H. B. Lindsay.

Prepared Foods—Mrs. James Anderson, Chairman, Mrs. R. L. Cunningham, Mrs. R. S. Hazen.

Arts and Crafts—Mrs. J. R. McDowell, Chairman, Mrs. W. A. Van Gilder, Vice-Chairman, Miss Mabel Smith, Secretary.

Sub-committees—Metal Work, Leather and Bookbinding—Mrs. Charles Burks, Chairman, Mrs. George Gaut, Mrs. W. H. Landon White, Miss Aileen Rosenthal.

Needlecraft—Mrs. Washington Danenhower, Chairman, Mrs. James Young, Mrs. John Gillespie, Mrs. Robert Mason.

Applied Design—Mrs. A. A. Yeager, Chairman.

Wood Work—Mrs. Hugh Sanford, Chairman, Mrs. James Maynard, Jr., Mrs. William Rule.

Weaving—Miss Mabel Smith, Chairman, Miss Laura Thornburgh.

Basketry—Mrs. Lytton Thomas, Chairman, Mrs. J. E. Lutz.

Ceramics and Pottery—Miss Elizabeth Quist, Chairman, Mrs. C. E. Waite, Mrs. E. H. Saunders.

Out-of-Town Chairmen—Mrs. W. O. Reynolds, Chattanooga, Tenn., Miss Sara Gaut, Ward-Belmont College, Nashville, Tenn., Miss S. M. Schroeder, Washington, D. C., Mrs. Walter Howard, Atlanta, Ga.

Associate Committee—Mr. Charles I. Barber, Architect, Mr. Dean Parmelee, Architect, Mr. Albert Van Gilder, Mr. Justin Smith, Craftsman, Mr. Fanz Staub, Mr. Robt. Mason.

Historic and Loan Committee—Mrs. Will D. Wright, Chairman, Mrs. J. H. Anderson, Vice-Chairman, Mrs. D. C. Boykin, Secretary.

Indian Relics—Mrs. A. S. Birdsong, Chairman, Mrs. Jacob Thomas, Mrs. Herbert Hall, Mrs. Roy Lotspeich.

Civil War Confederate Relics—Mrs. W. A. Lowry, Chairman, Mrs. Geo. W. Denney, Mrs. Richard Sansom, Mrs. Thomas Sedgwick.

Colonial Relics—Mrs. Asa Hazen, Chairman, Mrs. William Ely Boies, Mrs. T. S. Webb, Sr., Mrs. C. J. McClung.

Spanish-American Relics—Mrs. Phil Briscoe, Jr., Chairman, Miss Sophie Har-rill, Mrs. Ambrose Gaines.

War of 1812 and Mexican Relics—Mrs. J. F. Voorhees, Chairman, Mrs. Wiley Brownlee, Mrs. Andrew Jackson, Mrs. Ben Boyd.

General Historical Relics—Mrs. J. H. Anderson, Chairman, Mrs. Frank Mil-ligan, Mrs. D. C. Boykin, Mrs. R. E. L. Mountcastle.

Civil War Union Relics—Mrs. Emma Fanz Price, Chairman, Miss Ida Ross, Mrs. John Ross, Mrs. Tap R. Jones.

Collections—Mrs. Douglas Howell, Miss Margaret McCalla, Chairman, Miss Leah Fletcher, Mrs. James A. Hensley.

All-Southern Library Committee—Miss Kate White, Chairman, Mrs. Wm. A. Knabe, Vice-Chairman, Mrs. William F. Moses, Secretary, Mrs. Howard Anderson, Mrs. W. W. Baird, Mrs. David Cleage, Mrs. Charles Cornell, Mrs. William Delpuch, Miss Sophie Ducloux, Mrs. H. P. Foster, Jr., Mrs. W. M. Goodman, Mrs. W. R. Johnson, Mrs. Jennie Keeling, Mrs. R. N. Kesterson, Miss Sara Lynn, Mrs. David McGowan, Mrs. T. P. Miller, Mrs. Inge Murphy, Mrs. A. H. Nave.

World's Progress in Weaving Committee—Mrs. B. D. Brabson, Chairman, Mrs. George Mellen, Vice-Chairman, Mrs. H. H. McCampbell, Secretary, Mrs. J. L. Deaver, Mrs. Edward Henegar, Mrs. Porter D. McConney, Mrs. David Meriweather, Mrs. Charles A. Perkins, Mrs. John M. Ross, Mrs. Chas. W. Wright.

American Red Cross Committee—Miss Lucy Rhea, Chairman, Mrs. Rudolph Knaffl, Vice-Chairman, Mrs. Cecil Baker, Mrs. Robert Foust, Mrs. Frank Gaut, Mrs. C. D. Gibson, Miss Louise Krutch, Mrs. Sam Shields, Mrs. Hugh Van Deventer.

Cafe Committee—Mrs. J. Y. Johnston, Chairman, Mrs. W. S. Shields, Vice-Chairman, Mrs. D. C. Chapman.

Reception and Entertainment Committee—Mrs. E. T. Sanford, Chairman, Mrs. W. H. Storrs, Vice-Chairman, Mrs. J. H. Anderson, Mrs. M. D. Arnold, Mrs. M. B. Arnstein, Mrs. G. W. Baxter, Mrs. U. D. Beeler, Mrs. David Chapman, Mrs. William T. Claiborne, Mrs. H. W. Hall, Mrs. J. B. Harrison, Mrs. H. M. Johnston, Mrs. C. J. McClung, Mrs. W. J. Oliver, Mrs. John Ross, Mrs. Alfred Sanford, Mrs. Hugh Sanford, Mrs. S. G. Shields, Mrs. L. D. Tyson, Mrs. Fayette Van Deventer, Mrs. Hugh Van Deventer, Mrs. W. H. L. White, Mrs. D. H. Williams, Mrs. T. A. Wright.

Young Ladies' Reception Committee—Mrs. John Oberne, Chairman, Mrs. William Ross, Vice-Chairman, Miss Helen Bean, Miss Juliette Boyd, Miss Margaret Briscoe, Miss Rose Briscoe, Miss Jennie Brownlow, Miss L. Campbell, Miss Marion Cunningham, Miss Florence Fonde, Miss Martha Hall, Miss Anne Hazen, Miss Marie Hazen, Miss Rose Hazen, Miss Margaret Henegar, Miss Anne Leach, Miss Edith Lockett, Miss Louise Mountcastle, Miss Ellen McClung, Miss Julia McClung, Miss Margaret McClung, Miss Marguerita McClure, Miss Elizabeth McClellan, Miss Julia McCulley, Miss Annie B. McKinney, Miss Margaret McKinney, Miss Helen McMillan, Miss Jean McNutt, Miss Florence McTeer, Miss Clara Oliver, Miss Evelyn Rose, Miss Anna Magee Sanford, Miss Dorothy Sanford, Miss Maud Sharp, Miss Margaret Simmonds, Miss Amy Staub, Miss Margaret Thomas, Miss Isabel Tyson, Miss Effie Yeager.

Art Department—Miss Catherine A. Wiley, Superintendent, Miss Mabel Smith, Secretary.

Executive Board—Miss Catherine Wiley, Chairman, Miss Mabel Smith, Secretary, Mr. Lloyd Branson, Mrs. J. E. Lutz, Miss Sophie Ducloux, Miss Laura Thornburgh, Mr. Charles Barber, Mrs. J. T. Garrett, Mr. Charles Krutch, Mr. Jas. W. Wallace, Miss Mary Grainger, Miss Dorothy Davidson.

Girls' Canning Club of Southern States—Miss Virginia P. Moore, Chairman, Miss Ella G. Agnew, Virginia, Miss Jane S. McKimmon, North Carolina, Miss Edith Parrott, South Carolina, Miss Agnes E. Harris, Florida, Miss Mary E. Cresswell, Georgia, Miss Susie V. Powell, Mississippi, Miss Elizabeth B. Kelly, Louisiana, Miss Bettie M. Rogers, Texas.

Tennessee Members—Miss Margaret Ambrose, Miss Malissa Byrd, Mrs. Elizabeth Lauderbach, Mrs. R. B. Cook, Mrs. Myra A. N. Tandy, Mrs. Rose Nipher, Miss Jessie E. McCulloch, Mrs. Mabel Hardin, Mrs. Maggie Lansden, Mrs. R. L. Bynum, Miss Ruby Moffatt.

DEPARTMENT OF MINES AND MINERALS.

Executive Committee—C. H. Gordon, Ph. D., Professor of Geology and Mineralogy, University of Tennessee, and Associate State Geologist of Tennessee, Chairman.

Howell J. Davis, President East Tennessee Coal Co., Knoxville, Tenn., Chairman Committee on Fuels.

John M. Ross, President Knoxville Marble Co., Knoxville, Chairman Committee of Structural Materials.

Chas. A. Weller, B. S., M. E., Knoxville, Chairman Committee on Ores.

Royal P. Jarvis, Ph. D., Professor of Mining and Metallurgy, University of Tennessee, Chairman Committee on Mines.

ADVISORY MEMBERS.

U. S. Geological Survey Exhibits—George H. Ashley.

State Exhibits—State Geologists: Alabama, Eugene R. Smith, Florida, E. H. Sellards, Georgia, S. W. McCallie, Illinois, F. W. DeWolf, Kentucky, J. B. Hoening, Maryland, W. B. Clarke, Michigan, R. C. Allen, Mississippi, E. N. Lowe, Missouri, H. E. Buehler, North Carolina, Joseph H. Pratt, Pennsylvania, R. R. Hice, Tennessee, A. H. Purdue, Virginia, T. L. Watson, West Virginia, I. C. White.

Structural Materials—Geo. T. Fenton, Fenton Construction Co., Knoxville, Tenn., H. Oscar Healey, with Victoria Marble Co., Knoxville, Tenn., John P. Kern, Pres. Royal Marble Co., Knoxville, Tenn.

Ores—F. J. Fohs, M. E. Former Assistant State Geologist, Lexington, Ky., R. J. Koch, Contractor Diamond Core Drilling, Knoxville, E. L. Larison, Metallurgical Engineer, with Ducktown, S. C. & J. Co., Isabella, Tenn., W. H. Kember, Industrial Engineer, C. C. & O. R. R., Johnson City, Tenn.

Fuels—E. C. Mahan, President Southern Appalachian Coal Operators' Association, Knoxville, Tenn., Geo. M. Camp, Supt. Coal Creek Mining & Mfg. Co., Knoxville, Tenn., J. E. McCoy, Sec. So. Appalachian Coal Operators' Association, Knoxville, Tenn.

Mines—F. A. Clymer, Supt. Roane Iron Co., Rockwood, Tenn., G. T. Bridgeman, Supt. American Zinc Co., Mascot, Tenn., Geo. E. Sylvester, Chief Mine Inspector, Copper Hill, Tenn., E. F. Buffat, Pres. Tennessee Mine Foremen's Association, Oliver Springs, Tenn., D. T. Blakey, representing Allis Chalmers Co., Knoxville, Tenn.

DEPARTMENT OF EDUCATION.

Committee on Education—General Chairman, E. E. Rall, Professor of Education, University of Tennessee, Advisory Chairman, P. P. Claxton, U. S. Commissioner of Education, Washington, D. C.

SUB-COMMITTEES.

Public Schools—W. E. Miller, Superintendent Knoxville Schools, Chairman, J. W. Brister, Superintendent Public Instruction of Tennessee, Nashville, Tenn., L. B. Evans, Superintendent Schools, Augusta, Ga., M. W. Wilson, Superintendent Schools, Knox County, Tenn., J. R. Lowry, Superintendent Schools, Park City, Tenn., R. J. Tighe, Superintendent Schools, Asheville, N. C.

Agricultural Education—Adams Phillips, Principal Farragut H. S., Chairman, Concord, Tenn., Miss Virginia P. Moore, Organizer School Improvement Associations and Girls' Clubs, A. C. Bishop, Iowa State College, J. J. Sowder, East Tennessee State Normal.

Higher Education—Jasper C. Barnes, Maryville College, Chairman, Bruce R. Payne, President Geo. Peabody College, Nashville, Tenn., S. A. Mynders, President West Tennessee Normal School, Memphis, Tenn., J. C. Boykin, Bureau of Education, Washington, D. C., H. A. Morgan, University of Tennessee Experiment Station.

Home Economics—Miss Catherine A. Mulligan, Dean of Women, University of Tennessee, Chairman, Mrs. Mary H. Abel, Baltimore, Md., Advisory Chairman, Miss Harriet A. Boyer, Sophia Newcomb College, New Orleans, Miss Claudia Frazier, Central High School, Chattanooga, Tenn., Miss Agnes Harris, Tallahassee, Florida.

Industrial Education—C. E. Ferris, University of Tennessee, Chairman, J. W. Curtis, Principal Memphis Vocational School.

AGRICULTURAL DEPARTMENT.

Agricultural Committee—Jno. A. Jones, Chairman, M. Rosenthal, Secretary, Prof. H. A. Morgan, Prof. Chas. Keffer, Prof. J. C. Pridmore, Prof. C. A. Mooers, Prof. S. M. Spangler, W. B. Henderson, J. M. Crawford, H. J. Kinzell, Wm. Jenkins.

General Live Stock and Horse Show Committee—Jno. A. Jones, Chairman, M. Rosenthal, Secretary, D. E. Tate, Prof. H. A. Morgan, J. Wiley Brownlee, Chas. J. Brown, Homer Hamilton, Dr. G. W. Shaw, H. N. Camp, George Camp, J. G. Sterchi, D. F. Brown, J. G. Crumbliss Supt. Night Horse Show, Dr. G. A. Metcalf, Prof. C. A. Wilson, C. A. Nickerson, B. J. Condon, Ed. McLemore, Chas. Brakebill, J. J. Ashe, J. H. Blankenship, Ed. White, Dr. W. D. Morris, Veterinarian—F. G. Giltner, Murfreesboro, Tenn.

Poultry Committee—J. H. Henderson, Chairman, Edw. M. Graham, Chairman Publicity Committee, C. S. Cornell, Chairman Exhibitors' Committee, John F. Jennings, Secretary and General Manager, R. P. Williams, W. J. Baker, C. G. Wayland, T. E. McLean, C. A. Wilson.

The other departments and chairmen were as follow:

Forests—Don Carlos Ellis, Chairman.

Waters—Prof. J. A. Switzer, Chairman.

Child Welfare—Miss Julia C. Lathrop, Chairman.

Health—Dr. T. ap R. Jones, Chairman.

Good Roads—Cyrus Kehr, Chairman.

Music Department—Prof. C. S. Cornell, Director.

Negro Department—Prof. Hu. G. Fagg, Chairman.

The Board of Directors and the Committees of the National Conservation Exposition assumed duties which involved constant attention and hard work during the whole period of preparation, and from the opening to the closing dates.

Every department showed the most pleasing results of intelligently directed efforts. The exposition was the great and striking success which had been predicted by the Chairman of the National Advisory Board, and which the management had determined it should be in spite of disappointments and unexpected difficulties.

The two Appalachian Expositions not only provided a nucleus around which to build an exposition of national scope, but furnished experience in exposition building for most of the workers engaged in promoting the larger affair.

The Appalachian Exposition of 1910, under the able administration of William

J. Oliver, and the Appalachian Exposition of 1911, under the no less able administration of Col. Laurence D. Tyson, were, with one exception, the largest and most successful affairs of the kind ever held in the South. A majority of the members of the Board of Directors of the National Conservation Exposition had served on the Appalachian Exposition Boards and under the leadership of the above-mentioned Presidents. This is true of the active members and committees of the Woman's Department, and of the departments of agriculture and live stock. In the departments of Minerals and Forestry the fields were broadened and the assistance of new workers was secured. Health, Child Welfare, Education, Bird Life and Waters were new features. These departments were ably conducted by local and national leaders in these special fields of conservation.

The Appalachian Exposition plant consisted of the grounds leased from the Knoxville Railway & Light Company and five buildings, the largest being the Administration Building, used by the National Conservation Exposition for exhibits of Machinery and Liberal Arts.

The plans of the National Conservation Exposition called for the erection of six additional large exhibit buildings and a number of smaller structures. The large buildings erected were the Woman's Building, Child Welfare Building, Minerals Building, East Tennessee Building, and the Land Building and Auditorium.

These, with the Machinery and Liberal Arts Building, The Fine Arts Building, Negro Building and Live Stock Building, previously constructed, provided over ten acres of exhibit space, (not counting wall space, nearly all of which was utilized) and every foot was filled before the opening date.

Added to the great work of erecting the new buildings in the short time allowed, was that of grading—the cutting down of large hills, formed in many cases of almost solid rock, for building sites and for the amusement district—and the labor of constructing and improving driveways, and of sodding and otherwise beautifying the exposition grounds. All of this was well done—and completed on time by the committees in charge.

The work of collecting and arranging exhibits was far more difficult and expensive than would have been the case with an exposition devoted exclusively to displays illustrating the progress of commerce and industry.

The principal exhibits of the National Conservation Exposition were educational. They were planned, collected, or built to order, and installed for the purpose of teaching lessons which the American people must learn if the progress of civilization on this continent is to continue and the country's natural wealth and productive power are to be preserved. The following chapters will show how well the work was done.

The National Conservation Exposition opened September 1st, 1913—Labor Day—and the enthusiasm of the people of Knoxville and of thousands of visitors over the completion of the enterprise at the time advertised, and on a scale worthy the name, was a sufficient reward for the efforts of its promoters. National and State aid had been sought, and the Exposition planned with the expectation of receiving such aid. Newspapers and magazines in nearly every city in the land had carried to the people the statements of the exposition officials that the plans would be carried out. Assistance from these sources, which seemed assured, was not given to the exposition, and the management had to face a great disappointment and a most serious difficulty. That disappointment did not lead to retrenchment; that the difficulty of overcoming the obstacle of enormous expenses incident to the continuance of original building plans was not considered insurmountable, and that the directors succeeded in pushing the enterprise to a successful conclusion, shows that the affair could not have been placed in better hands nor located in a city of more enterprising, liberal business people.

The first exposition of conservation was opened with appropriate ceremonies, and under most auspicious circumstances. The signal for the opening was given by President Wilson in a wireless message received at the station on the exposition grounds. Following the receipt of the President's message, Governor Hooper, of Tennessee, and Mayor Heiskell, of Knoxville, welcomed the visitors for the state and the city. President Wright, of the Exposition, responded in a speech outlining the purpose of the undertaking, and the big show had begun.

ADDRESS BY GOV. BEN W. HOOPER, OF TENNESSEE, AT THE OPENING OF THE
NATIONAL CONSERVATION EXPOSITION.

"Several thousand years ago the children of Isreal were given a divinely-inspired description of the land into which they were about to enter. It was said to them:

"The Lord thy God bringeth thee into a good land, a land of brooks of water, of fountains and springs, flowing forth in valleys and hills, a land of wheat and barley, and vines and fig-trees and pomegranates, a land of olive trees and honey, a land wherein thou shalt eat bread without scarceness. Thou shalt not lack anything in it—a land where stones are iron and out of whose hills thou mayest dig copper."

"That passage of scripture could readily be mistaken for a description of the Appalachian region of the South, the promised land of North America. It falls short, however, of a complete enumeration of the blessings and delights of our own mountain country.

"But beautiful and resourceful as was ancient Palestine, it is to-day a land of ruin and waste places, similar to certain other oriental countries.

"Sometimes we wonder if it is possible that the decadence of these great countries where the human family was cradled shall be repeated here in this favored land.

"Will the time ever come when our mountains shall stand bleak and bare, denuded of forests and robbed of soil?

"Will the grand old Smokies lose their gorgeous drapery of autumn and the gentle blue haze of Indian summer, and stand forth with their glistening skeletons of rock exposed to the blazing sun?

"Will the French Broad and Pigeon, the Clinch, Chuckey and Holston no longer go singing toward the sea, amid smiling valleys of wheat and corn, and pleasant green hills where the cattle graze?

"Can it be that a thousand years from now the stranger from a far-off land will visit these scenes in order that the straggling inhabitants may point out to him the desolate places of historic interest where once did dwell a strong, brave and patriotic people?

"Certainly these gloomy forebodings will not be realized in our time, but the first stages of destruction and decay have already taken place before the eyes of the present generation. We have seen the ruthless waste of our timber, the erosion of our uplands, the abandonment of fields and the flooding of the valleys.

"This great exposition, the inauguration of which we witness to-day, affords most striking evidence that our people have profited by the accumulated experience of mankind. For thousands of years the history of the human family has been a record of waste. Because all the sources of food, fuel, clothing and other forms of comfort, luxury and wealth have appeared to be inexhaustible, men have sinned against God and the race by the wanton destruction of the world's resources. It is only within the present generation that men have shown any serious inclination to look down the vista of time and take thought of the happiness and welfare of the billions yet unborn. This new idea springs from the wisdom of statesmanship and the spirit of Christianity. The crude conception of the untutored savage, that man lives for himself alone, has broadened into the splendid conviction that man lives for all contemporary mortals, and for all who may hereafter tread this terrestrial ball. This is the keynote to conservation.

"It must be said, however, that material things should be conserved, not for the sake of themselves, but for the sake and service of man. The true object of conservation is the betterment of mankind. What shall it profit us, therefore, if we adopt elaborate methods for the conservation of trees, rivers and soils, and fail to conserve the bodies, minds, morals and lives of men, women and children? Among all the terrible waste of God's created things, animate and inanimate, there has been no such wild, wanton, wicked destruction as that of human life. Think of the millions of men murdered and maimed in the wars of the world, and then return thanks for the great modern conservation movement of international peace.

"Consider for a moment the hundreds of thousands of men destroyed in America during the last century by industrial accidents. To-day, however, an

enlightened public sentiment is beginning to demand that human lives shall not be unnecessarily sacrificed on the altar of industrial and commercial progress.

"It is likewise appalling to contemplate the multiplied millions of human beings who have died from preventable and curable diseases, the toll of gross ignorance and barbarous neglect. But we are again comforted when we remember that within the memory of those here to-day, the average human life in America has increased from 33 to 44 years.

"Along with these destructive influences has gone the waste of millions of untrained and inefficient human minds. Our section of country has suffered much in this regard, but the morning light of education is breaking over the mountain tops.

"In everything that goes to conserve men, the Appalachian States of the South are responding nobly to the challenge of the highest Christian ideals of social service.

"Within the last few years Tennessee has made great progress along these lines.

"What our state has done toward the adoption of modern principles of prison reform is known to the world. This is the conservation of men.

"Perhaps it can be truthfully said that we lead the South in the enactment and enforcement of strong pure food and drug laws, and we have just placed on the statute books a model vital statistics law. This means the conservation of the public health.

"Our state has recently created a workman's compensation commission and a department of shop and factory inspection, to the end that the lives of those who toil may be conserved.

"We are proposing that the work and working hours of women and children shall be regulated for the conservation of the race.

"Our state is now for the first time, expending one-third of its revenues for public education, and has taken steps to make sure that no child shall be deprived of an education by the neglect of parents or the greed of employers. This is the conservation of the minds of Tennessee's boys and girls, the state's greatest asset.

"The laws of Tennessee have recognized the relation of alcoholism to disease, crime, pauperism and vice, and, as a civilized people, we are trying to conserve the lives and morals, the bodies and souls of our men, women and children against this enemy, which has destroyed more human beings than famine, pestilence and war. If this were only a question of morals, the task would be easy, but it is a question of money, and the task is hard. But the people know what is right, and they will finally have their way. This is the greatest conservation movement ever undertaken by a free people.

"To preserve this country as good as it is, and to keep our people worthy to live in such a land—these are the broad purposes of conservation. Progress without destruction, prosperity without stagnation, wealth without corruption, success

without the loss of our ideals and principles—these constitute the conservation creed of Tennessee.

“Upon behalf of the State of Tennessee I congratulate every man and woman who has patriotically contributed to the success of this great exposition. It is worthy of your efforts, and will stand as a landmark in the annals of the South.”

Among the editorials concerning the exposition which appeared in local papers was the following from the *Knoxville Sentinel*:

“The first, deepest and most lasting impression of the visitor is that the National Conservation Exposition represents immense brain work and an enterprising citizenship. The exposition park so deftly simulates the work of nature that one might be tempted to overlook the art that concealed its own tracks and to believe that the exposition builders had only to locate the buildings and call in architects and constructors.

“The site had exceptional natural advantages and these have been utilized to the greatest advantage. Around the lake are grouped nearly a score of buildings which are reflected in its placid waters. Hurrying multitudes, eager to see their unfolded treasures, give the exposition grounds the atmosphere of a great mart of trade such as used to attract merchants from all nations in the olden days when the camel, the ship of the desert, carried the commerce of the earth.

“Masters of entertainment, including men and animals from distant climes, complete the illusion and give added variety and animation to the scene.

“Night falls softly and the myriad lights flash forth in obedience to a master hand and the exposition grounds are transformed into a veritable fairyland.

“Knoxville’s third and greatest exposition, the National Conservation Exposition, is in the hands of the jury of award, the visitors, and the verdict will be awaited with the utmost confidence. We believe that this will read that this exposition is superior to any ever held in the United States except the World’s Columbian Exposition at Chicago and the Louisiana Purchase Exposition at St. Louis, and that, for its size, it is their equal.

“The keynote of the exposition is conservation and the greatest branch of conservation is the conservation of human life. The first building seen by the visitor is the Child’s Welfare Building at one of the entrances of the grounds. There mothers who would be unable to visit the exposition owing to the demands upon them by their infants are invited to leave their tots in the care of trained, deft and tactful substitute mothers. There they are also shown all that physicians, teachers, psychologists and inventors have thought, planned and made to lighten the cares and burdens of motherhood and to assure to their offspring the best opportunities of growing into perfect manhood and womanhood.

“Conservation of natural resources claims attention pre-eminently in the handsome Mines and Minerals Building where rich under-ground stores of the Appalachian South are displayed in choice and well arranged specimens and in manufactured form.

"Lessons of conservation are taught almost equally in all the other buildings, the Coal Palace, the Live Stock Pavilion, the Land Building, the Southern States Building, the Tennessee Building and others. Conservation, as exemplified in this exposition, is the broadest of subjects. It means the right use of opportunity by the present generation and not abuse at the expense of those which will follow. All the arts, sciences and industries have their places in the scheme of conservation. All that educates, refines and entertains or edifies claims attention.

"The National Conservation Exposition is therefore a world in miniature. It sets forth what men have done and are striving to do to spread prosperity and comfort and happiness among their fellow men. It represents the co-operation of the mind that conceives and the hand that executes. It is the embodiment of the dreams of sages and inventors around the midnight lamp and the skilled training of the men of tool and machine who give shape and durable existence to their conceptions.

"All expositions are designed to be educational and that is stamped upon the National Conservation Exposition, from the Child's Welfare and Mines and Minerals Building to the Poultry Pavilion on the one hand and the Negro Building on the other. This is the jubilee year of Emancipation and the negroes of the Southern states naturally embraced eagerly the opportunity to display to the world what they have accomplished and what they hope to do for themselves and their posterity.

"Equally educational are the exhibits of manufactured products, the work of loom and forge, furniture factory, woodworking establishment, foundry, brick-kiln, wagonshop and automobile manufactory. In every line of endeavor there is displayed the latest product of brain and brawn and all accepted methods and devices for lightening labor and increasing and bettering output.

"The National Conservation Exposition is a marvelously written volume illustrating the advances of man from human slavery and drudgery to the harnessing of nature's forces. It sets forth how men have become more and more guiding hands rather than lifting muscles.

"In the departments devoted to domestic science, household comforts and the like, in the Woman's Building, there is exhibited the coming transformation of the kitchen, the laundry and the household plant generally. The Emancipation of Woman is at hand and women have arranged the exhibits that show how this will come about. The age of electric motors, gasoline engines, water motors, electric and gas cooking appliances, improved light cooking utensils, vacuum cleaners, and the like is here and it is high time that the women were insisting upon other rights than those now claimed throughout the world; the right to share with the men the results of science and invention. They will find at the National Conservation Exposition interesting and suggestive exhibits. Let them take to their homes a catalogue of the things that are offered to lighten their labors and a firm resolve to get them.

"The National Conservation Exposition will attract hundreds of thousands of visitors from this and the other states of the South and many from more distant

sections. Knoxville invites them and has provided for their comfort and their pleasure, as well as their instruction. The railways are co-operating. The hotels have made their plans on a large and liberal scale. There will be no lack of good rooms in private families. The Bureau of Public Comfort in the Board of Commerce is ready to give information, find rooms and do everything requisite to lessen the minor anxieties of a journey. Visitors can come with a mind open as to the length of their stay. That they will be pleased is our confident expectation.

"Knoxville has done its part in planning and erecting buildings and in getting together varied and attractive exhibits and choice amusement features. Music, art, literature, the treasures of mines, fields and forests, and the refined products of factories are shaken out as it were from a copious horn of plenty before the eyes of its guests. Knoxville will continue to do its part until the exposition gates close. The greatest and most successful of its undertakings is offered to the discriminating judgment of the nation."

The following editorial on the exposition and its objects appeared in the *St. Louis Globe Democrat*:

"The National Conservation Exposition which opened in Knoxville, Tennessee, Monday is on a much larger scale than would be expected in the mountains of Tennessee, even in so modern a city as Knoxville. Conservation in every form, not only of the vast variety and extent of our natural resources, but of our energies and activities as a people, will be taught by the exhibits and instruction given there during the two months of its existence. There is nothing the American people need more to learn than this principle of conservation. They need to imbibe its spirit and to practice it individually and in the aggregate. It is as important to the nation that the health of the people be conserved as that the sources of wealth be guarded from wastefulness and destruction. If we are to rush madly along in the work of development and the piling up of wealth to the utter destruction of our nervous energy, our children will see strangers come in and reap the fruits of our activity. A land flowing with milk and honey is ever the goal of those who would partake, and if we are to have and to hold we must make ourselves even stronger to hold than to have.

"As for conservation of our physical resources, and especially that part of it which has to do with the saving of the forests and the prevention of floods in the rivers, Knoxville is splendidly situated for the seat of such an exposition. Around her are vast sweeps of timbered mountains covering portions of six states, and through them run great streams that contribute the rains and melted snows of those mountains to the vast volume of water which flows down the Mississippi and floods millions of acres of land. River control is a problem which must take of this mountain forest region as one of its leading elements.

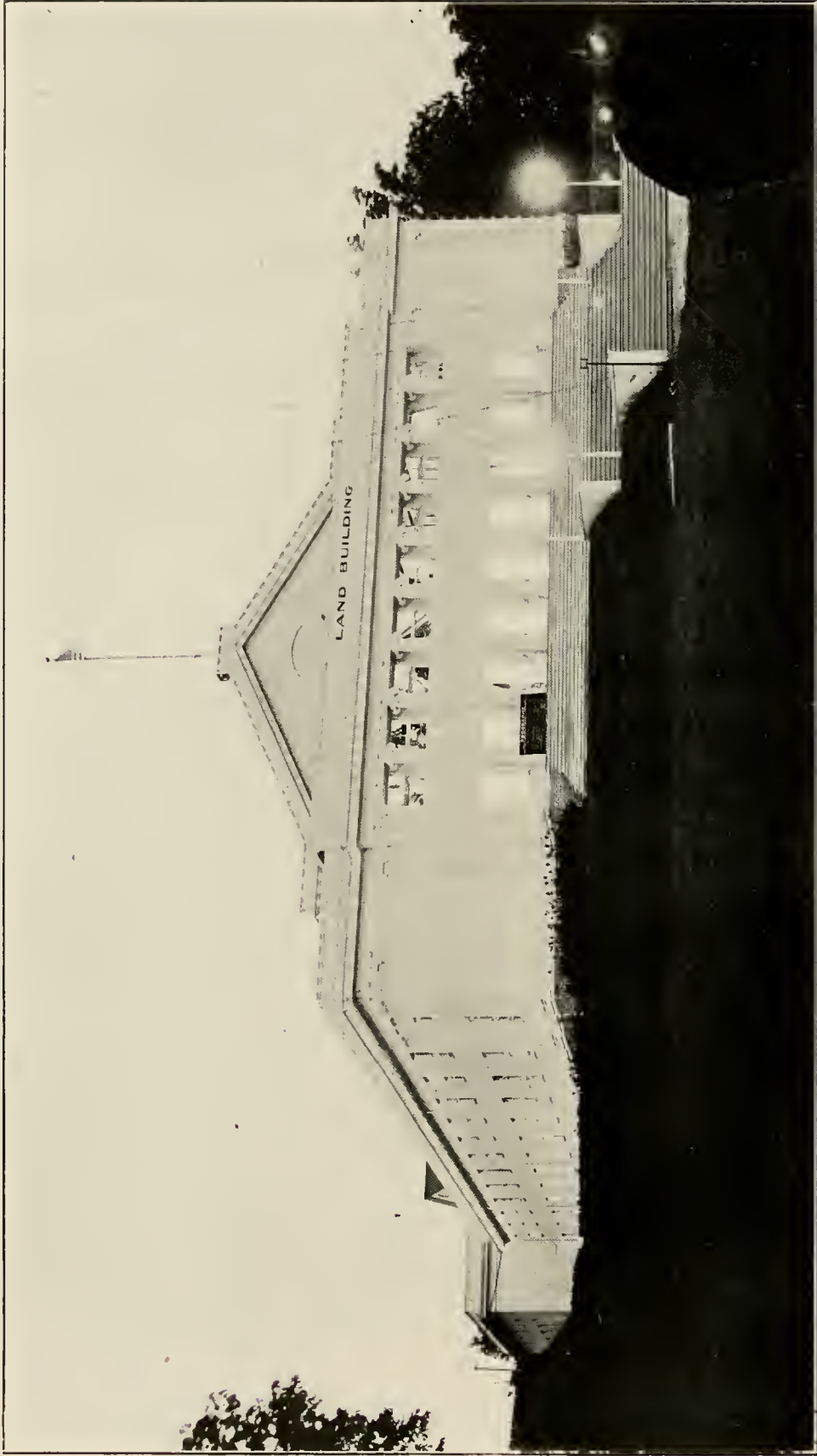
"The whole subject of conservation of resources and flood control is so interwoven that it must be considered as one general problem. The people must adopt an all comprehensive attitude towards it if practical results are to be accomplished.

Such an exposition as that at Knoxville is educational in the highest degree in the bringing about of the right state of the public mind which is needed to support conservation, protection of lands from floods and development of river navigation. In the future the country is going to spend vast sums of money to accomplish these things, sums beside which the last cost of the Panama canal will look small, indeed. But it will be money well invested, much better invested than that which has gone into the canal, the use of the canal in war not being considered. Conservation is in its infancy. Those who live to see it reach maturity will behold a wonderful country and a prosperity beside which that of the present is small."

SPECIAL DAYS AND EVENTS, NATIONAL CONSERVATION EXPOSITION.

- Sept. 1. Opening Day. Address by Gov. Ben W. Hooper, of Tennessee.
- Sept. 6. Address delivered at Exposition grounds by Speaker Champ Clark.
Jovian Day.
- Sept. 11. Home Makers' Day. Maryville and Blount County Day.
- Sept. 12. Woman's Club Day. Address by Mrs. Percy V. Pennybacker, President-General Federation of Woman's Clubs.
- Sept. 13. Farmers' Conservation Conference. Gifford Pinchot, Chairman, presiding. T. P. A. Day.
- Sept. 16. G. A. R. Day.
- Sept. 17. G. A. R. Day.
- Sept. 18. G. A. R. and Hoo-Hoo Day.
- Sept. 19. Red Cross Day. Address by Miss Mabel Boardman, President American Red Cross Society. Convention of State Geologists.
- Sept. 20. Miners' Field Day.
- Sept. 22. Confederate Veterans' Day.
- Sept. 23. Poultry Show Opened. Real Estate Day.
- Sept. 25. American Museum of Safety Day. Alabama Day.
- Sept. 26. Children's Day.
- Sept. 27. U. C. T. Day.
- Sept. 30. Helen Keller Day.
- Oct. 2. Moose Day.
- Oct. 4. D. A. R. Day. Address by Mrs. William Cummings Story, President-General. Pan American Day. Address by John Barrett, Director Pan-American Union and by Senator Duncan U. Fletcher, Pres. So. Commercial Congress.
- Oct. 5. Elks' Day. Edward Leach, Grand Exalted Ruler, B. P. O. E., and other prominent members of the fraternity present.
- Oct. 6. Live Stock Show Opened. Corn Show.

- Oct. 7. Atlanta and Georgia Day. Night Horse Show Opened.
- Oct. 8. Kentucky Day. Needlework Guild of America Day.
- Oct. 10. Bird Day. Temperance Day.
- Oct. 11. Sunday School and Mothers' Day. Address by Hon. William Jennings Bryan, Secretary of State.
- Oct. 13. Knights of Columbus Day. Address by Cardinal Gibbons.
- Oct. 14. Nashville Day.
- Oct. 15. National Civic Federation Day.
- Oct. 16. Chattanooga Day.
- Oct. 17. Shriners' Day. Address by William W. Irwin, Imperial Potentate.
- Oct. 18. Tennessee Manufacturers' Day.
- Oct. 20. Mountain Work Day. Address by Booker T. Washington, Exposition Grounds.
- Oct. 21. Railroad Day.
- Oct. 21. Ben Hur Day.
- Oct. 22. North Carolina Day.
- Oct. 24. Odd Fellows' Day.
- Oct. 25. Public Health Day. Address by Dr. Harvey W. Wiley.
- Oct. 28. Knoxville Day. Press and Writers' Day.



VIEW OF LAND BUILDING. AS LIGHTS ILLUMINATING EXTERIOR WERE TURNED ON AT SUNDOWN



MAIN ENTRANCE, NATIONAL CONSERVATION EXPOSITION

GOVERNMENT EXHIBITS

The government exhibits at the National Conservation Exposition were housed in the Land and Minerals buildings. Practically the entire lower floor of the Land Building was occupied by exhibits from various bureaus of the Department of Agriculture. Thus was shown the interest manifested by the government and its official recognition of the national scope of the exposition. Don Carlos Ellis, in charge of educational co-operation of the United States Forest Service, arranged the various displays and directed their installation.

The largest exhibit furnished by the government was from the Forest Service. Concerning this feature of the exposition Mr. Ellis says:

"It was most fitting that forestry should have occupied a prominent place at a conservation exposition in the Southeast, and particularly at the first conservation exposition ever held in the United States, or for that matter, in the world."

"Forestry is naturally the forerunner of all movements for the conservation of natural resources, because forests are by their very nature the resource first to be exploited and wasted. While mineral resources lie hidden beneath the earth, and the waters which are wasted are quickly brought back to their sources in the form of rain, and the soils are comparatively slow in giving up their fertility, and the game resources may flee from the haunts of men and take refuge in the wilderness, the forests lie immediately at hand, unable to flee—awaiting, and inviting, exploitation. Hence it is that the forests of a new land are among the first of its natural resources to become scarce.

"The diminution of wild life usually precedes even the wasteful destruction of forests, but the effect is not felt so widely or so soon. In this country, as in most other countries, therefore, the movement for the conservation of natural resources, as it is known today, began with the forestry movement. Furthermore, next to soil, forests are the most important of our resources. Not only do they furnish the raw material for the lumber industry, the third greatest of our nation, and many other important industries which depend directly upon the forest, but upon the continuance and efficacy of other classes of resources. The forests prevent the erosion of land, help to diminish floods and add to the soil's fertility. They regulate stream flow, thus holding back flood waters and making power streams and the navigable portions of our rivers more dependable and efficient. They afford homes for game, protect streams in which fish abound, and even make the utilization of our mines practicable, for they supply props and roofs, which keep the tunnels open and wooden ties supporting the rails on which run wooden cars carrying the mineral products. As the forests are destroyed, wild life disappears, the streams become irregular and filled with silt and the productiveness of farms and mines is seriously impaired.

"The South, particularly the Southern Appalachians, is rich in forests. The yellow pine forests of the coast states have long lead over all other kinds of timber in this country in the amount lumbered, and in the Southern Appalachian region, the finest hardwoods of the country grow in luxuriance. The Appalachians are rapidly becoming the center *and soon will be the sole prominent source of the hardwood supply*. In these Southern Appalachian mountains all the principal species of trees which grow anywhere in the East reach their highest development.

"The department of forests of the National Conservation Exposition showed the forest wealth of the country and particularly of the South, how these forests control the country's prosperity directly and through their influence upon other



VIEW OF LOWER FLOOR LAND BUILDING, SHOWING RAILWAY AND GOVERNMENT EXHIBITS

1917



EXHIBIT MADE AT THE NATIONAL CONSERVATION EXPOSITION BY THE NEW YORK STATE SCHOOL OF FORESTRY

resources and how these forests can be used so as adequately to meet all present day demands and yet insure for the future their own perpetuation and the benefits which flow from them."

The largest of the department's exhibits was that prepared by the United States Forest Service. Both its Washington office and the Forest Products Laboratory at Madison, Wis., furnished an extensive exhibit covering all fields of the government's work in forestry.

How the government handles the sale of timber on the national forests was shown by two models representing an acre of western yellow pine land in a national forest in the Southwest before and after logging. In the "before" model a virgin stand of mature western yellow pine was shown, the trees ranging in age from young growth of a few years of age to over-mature, stagheaded individuals. On the second model the mature trees and all trees over a certain diameter which are of good form from the lumberman's standard were shown as cut down and made into logs and cordwood. To avoid all unnecessary waste stumps are cut low, the logs taken from as high up into the tree as practicable and cordwood made of such available material as is not fit for the making of lumber. This model showed the care exercised in felling in order that the young growth be not unnecessarily injured and the ground cover not badly torn up. The brush was shown as piled into heaps for burning after the lumber has been removed, so as to dispose of a serious fire menace. The exhibits were on a scale of about 1 inch to 5 feet, making trees of about 100 feet in height appear as 20 inches high on the model.

These exhibits were meant to teach several lessons:

(1)—That the timber on the national forests is lumbered and sold:

(2)—That it is cut in such a way as to eliminate avoidable waste of wood, to insure the continuance of the stand, the preservation of the forest cover for the protection of stream flow and the reduction of fire menace;

(3)—The general underlying principles, applicable to any logging operations, that over-matured and unhealthy trees should be removed, that thriftily growing, young trees should be left in the stand, that young growth should be protected, etc.

A miniature fire tower and miniature fire fighting equipment station, similar in everything but size to those used in the national forests, were among the exhibits. Fire towers in the national forests are erected to enable the forest officers who are on the lookout for fire to get high enough above the tree tops or other obstacles to see over a large stretch of country. These towers are equipped with field glasses, alidades, range-finding maps, and other equipment, all of which were shown in the exhibit, to enable the forest officers to locate the position of a fire with considerable accuracy. Usually two lookout stations several miles apart need

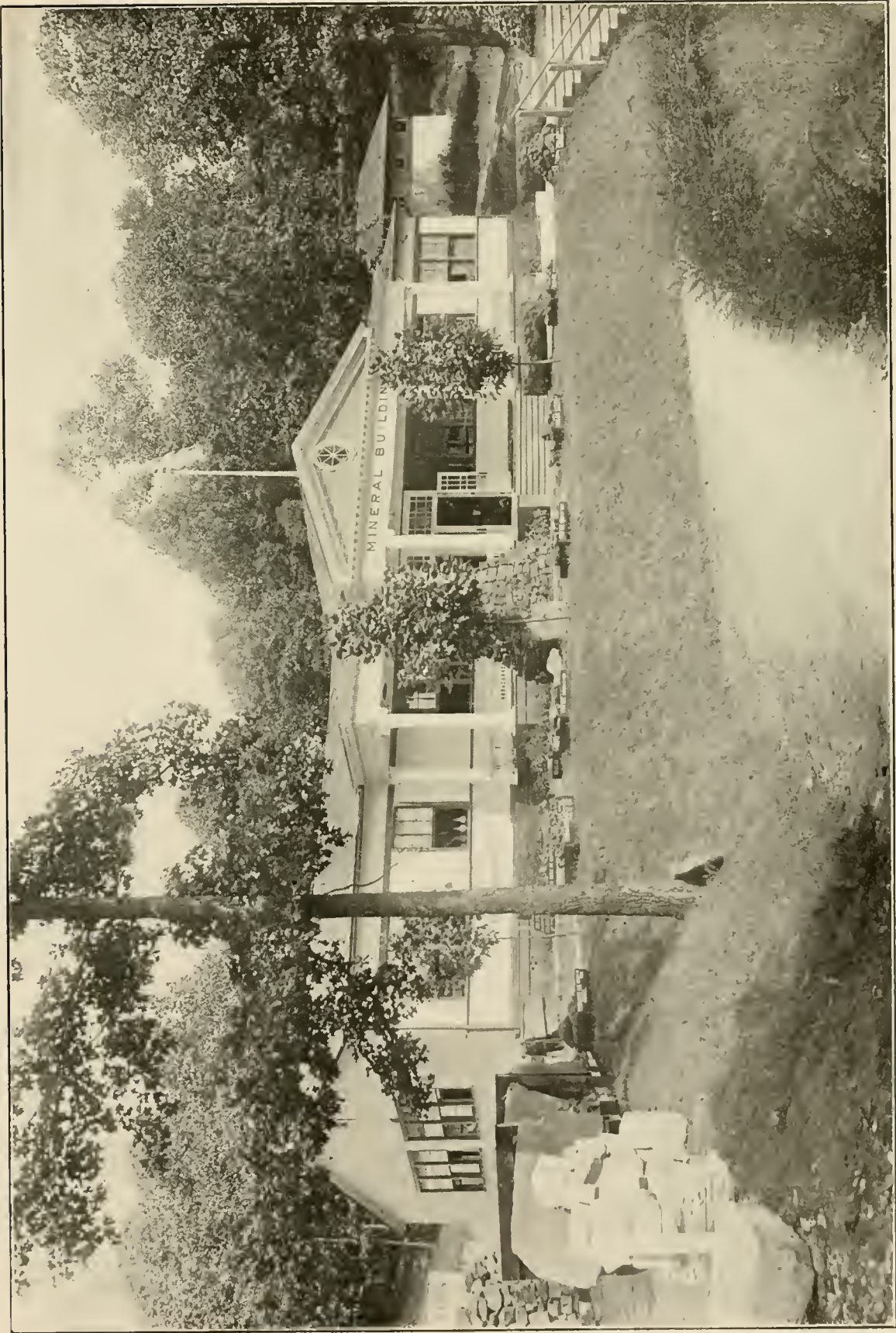
to work in conjunction to find out the exact location of a fire. These lookout stations are in telephonic communication with each other and with headquarters. Many of these are also equipped with heliographs, by which they are able to flash sun messages to other heliograph stations. The towers take different forms, dependable upon the nature of the location. Sometimes they are enclosed rooms, at other times open platforms. They are usually built of wood or steel, but in some cases, upon high mountain peaks, where stone is the most readily available material, they are built of broken stone. The fire equipment stations are merely large substantial boxes, well protected from the weather and painted a conspicuous color, in which supplies for fire fighting, tools, such as shovels, picks, mattocks, water buckets, hose, etc., and emergency rations are stored.

An improved form of the working erosion model which was originally shown at the first Appalachian exposition, and attracted so much attention in forestry exhibits elsewhere and has been widely written up in scientific and popular journals both in this country and abroad, was installed.

This model is a working demonstration of the effect of deforestation upon surface formation and stream flow. Two hills are built up of the soil of the region in which the model is shown. One is covered with a mimic forest, the other is left bare. Water in the form of rain falls in equal quantities upon both hills. It washes away the soil from the uncovered hill and deposits it in the channel of a river below. The forested hill absorbs the water, no erosion occurs and the stream is regular and clear.

Recent investigations have demonstrated that the growing of basket willows, which is now confined commercially to a few locations in the northeastern and lake states, is practicable in widely scattered regions through other sections of the country, including the Southern states. A very complete basket willow exhibit was on display, showing both in transparencies and colored bromide enlargements and by actual specimens the best methods of willow culture and basket making. Maps were used to show the locations where willow is now grown commercially and where successful experiments have been conducted in willow culture.

The Forest Products Laboratory at Madison, which is engaged in investigations and experiments directed toward securing more complete utilization of timber, the introduction of species now little used, greater efficiency of timber and timber products in use, and the reduction of waste, furnished an exhibit including (1) nine timbers treated with preservative and untreated, after different lengths of time in use, (2) charts showing methods of preservative treatment of timbers and the length of life added to various species in contact with the soil, by preservative treatment, (3) exhibits showing the improved quality and greater quantity of resin obtained and the protection afforded the forests by the use of the cupping



MINERALS BUILDING, NATIONAL CONSERVATION EXPOSITION

system of turpentine in place of the wasteful and antiquated method of boxing, (4) various species of timbers tested in various ways for strength, to determine the relative efficiency of different timbers in different uses, and to encourage the introduction of little used species, (5) exhibits of by-products manufactured from wood wastes, (6) a paper-making exhibit showing new species of timber found suitable by the forest service for paper making, and samples of paper pulp made from them.

One of the most interesting exhibits was a display of instruments used in forestry. Many of these are little known and were strange looking. Among them were instruments for measuring intensity of light, to determine the height, diameter and volume of trees, the amount of evaporation inside and outside the forest, and instruments for marking timber in various ways.

Particular stress was placed upon the work which the government is doing in establishing and administering national forests in the Southern Appalachian region. Maps showed the location of the areas purchased. The results of erosion and stream flow studies which enable the government to establish these forests under the interstate commerce clause of the constitution, were graphically presented, and the visitors to the exposition were given an unparalleled opportunity of learning just what the establishment of these national forests mean to the country and how they will benefit the region, its industries, and its people.

Many magnificent newly colored transparencies and bromide enlargements were made especially for this exposition, showing the work of the forest service upon the national forests and elsewhere, methods used in fire protection, in control of grazing ranges, reforestation, and permanent improvement work, such as building trails, bridges, wagon roads, telephone lines, and ranger cabins. These pictures also showed forest conditions in all parts of the country and abroad, the importance of retaining forests on watersheds, and the devastation wrought by forest fires. Two artists worked in the forest service for several weeks coloring this material. One of these artists had just returned from a two-years course of advanced study abroad, and the pictures received the benefit of the best ideas in art which the old world has to teach.

A most interesting feature was two diagrams designed and prepared especially for this exposition showing in great detail the manner in which a tree grows. Longitudinal and cross sections of a tree showed the various parts of the tree and the functions they perform in its life history.

The forestry exhibits were not confined to those furnished by the United States Government. The department of parks of New York City sent a large consignment of material showing city tree problems and how they are met, and the New York State College of Forestry at Syracuse furnished an exhibit of the forest problems and conditions in New York State.



SECTION OF EXPOSITION GROUNDS, SHOWING APPROACH TO LAND BUILDING

The state foresters of North Carolina and Kentucky sent exhibits from their states, and maps of forest conditions in other Southern states were on display. Commercial institutions also contributed their share of educational material. The Forest Products Company of Louisiana, sent an exhibit of products made from what hitherto has been wood waste, such as stumps and slash left in the Southern pineries after logging, and a manufacturer of sawmills in Ohio contributed an exhibit showing the saving of timber accomplished by the use of the band sawmill instead of the circular sawmill. The average circular saw cuts out a kerf of sawdust three times as wide as that cut out by the average band saw, and the amount of timber which can be saved through the use of the band saw aggregates the almost unbelievable amount of about 2,250,000,000 board feet per year.

Excellent Wood Exhibits, including cuts from large specimens of all trees of the Southern Appalachians were furnished by the Little River Lumber Company, Townsend, Tennessee, and by the Vestal Lumber Company, and the D. M. Rose Lumber Company, of Knoxville.

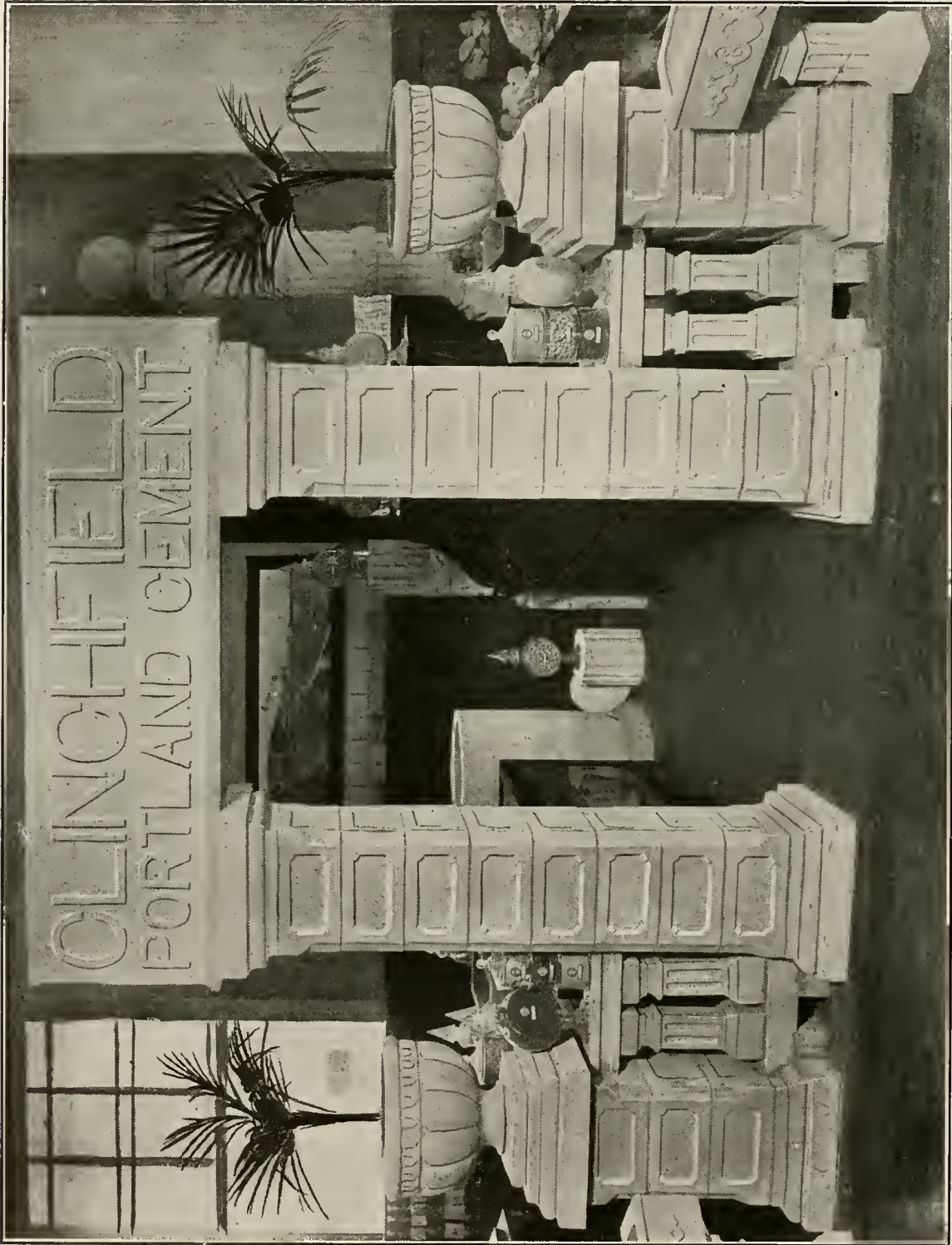


EXHIBIT OF THE CLINCHFIELD PORTLAND CEMENT COMPANY, KINGSPORT, TENN., MINERALS BUILDING, NATIONAL CONSERVATION EXPOSITION

The Western Forestry and Conservation Association, a league of co-operative patrol associations, maintained by the private timber owners of the Pacific northwest, extending from northern Montana through Idaho, Washington and Oregon to northern California, sent a display of splendid educational material which it is distributing broadcast in its campaign for protection of forests against fire.

The other bureaus of the Department of Agriculture represented by extensive exhibits in the Land Building were Animal Industry, Plant Industry, Entomology, Chemistry, Office of Public Roads, and Office of Experiment Stations.

The exhibit of the Department of Animal Industry was complete in every detail. A model dairy barn, fully equipped, was one of the interesting and instructive features. A model slaughter house was also shown, in which the idea of perfect sanitation was carried out. The barn and slaughter house were brilliantly lighted, which added much to the attractiveness of the models. The exhibits were planned to teach the farmer and packer the best methods employed in the dairy and packing industries. Lessons were taught concerning the proper care and feeding of live stock. Illustrated lectures on dairying by department experts were given in the auditorium annex.

The work of the bureau as carried on in Washington and elsewhere was clearly shown by the exhibits. The inspection and stamping of meats for Interstate Commerce was illustrated. This feature of the exhibits gave a general and very practical idea of the methods employed in slaughtering and in packing meats for shipment, showing the care taken in preserving all meat products in the interest of public health. Exhibits showing the diseases of cattle, hogs and poultry, were among the most important displays of this department. Actual cuts of diseased meats and livers, carefully preserved in glass cases, and plainly labeled, taught an important lesson to those who give little thought to the dangers that lurk in the food which they consume.

The plant industry exhibit included many large cases of artificial fruit, showing varieties as perfect in shape and coloring as the choicest products of orchard and vineyard; examples of drainage, irrigation and other modes of treatment designed to improve the soil and enhance productiveness; methods for preventing and combatting diseases of trees and fruit and for the extermination of insects; plant crops, with special reference to new varieties; methods of cultivating, harvesting and of increasing production; tillage best adapted to particular soil types and climates, shown on a small scale by models and machinery as well as by photographs and other illustrations.

An important object of the display was to illustrate the availability of unknown or little used crop plants for increasing the income yield of farms beyond that practicable with such staples as corn and cotton. Another object was to illustrate

every stage in the process of growth and manufacture of typical crops, in such manner that growers, manufacturers and consumers may better adjust and co-ordinate their respective functions. Special displays were also made of successful methods of multiplying production per acre as has been recently illustrated by corn and tomato clubs.

Lectures and literature telling how to care for fruit trees, their husbandry, pruning, planting, plucking periods, etc., were gone into fully, giving the farmer and orchardist a practical and not a theoretical story of fruit growing and plant industry. Specimens of corn, tobacco, standard grades of cotton, wheat, potatoes, tomatoes, etc., were on exhibition. Colored pictures of diseased plants, lectures telling how to prevent or stop the appearance and spread of disease, methods for its eradication, etc., were fully set out by a government representative.

One of the most beneficial exhibits, especially to Southerners was that from the Department of Entomology. Models of injurious and beneficial insects in the South were shown. An especially interesting exhibit was that of a mosquito, which was about eighteen inches in length, and so constructed that it could be taken to pieces and its anatomy shown. Insects of every kind, including boll weevil, potato bug, ants, grasshoppers, birds of every kind, were represented. The idea presented was that by some process of elimination the extinction of the insects that are injurious may be accomplished, while the farmer must be taught to preserve and conserve those insects which help him in the raising of his crops. There are many birds which feed upon insects injurious to growing plants, and which would make dangerous ravages into the Southern farmer's crops if it were not for the insect-destroying bird. On the other hand, there are also certain kinds of birds that do damage to crops, and are of no benefit to the farmer. Some insects destroy other insects, this being their purpose in living. Farmers do not understand the purpose of these insects which are sometimes looked upon as nuisances.

In the department of chemistry, drugs and foods which have come under the ban of the pure foods and drugs act were shown. This exhibit was made to show the value of this law, and how it has benefited in the prevention of the spread of poisonous drugs and injurious foods. It was strictly educational, and the operations of the law whose application the exhibit represented were clearly demonstrated.

The office of Public Roads had on exhibit twenty-five models showing the most approved methods of construction and the best materials in use; also model rock crushers, quarries, photographs of good and bad highways. This exhibit was one of the largest in the building. Lecturers told of the qualities of various materials used in building highways, the ease of destruction by erosion, washing, etc.,

and all the more durable qualities of highway building, from the ground foundation to surfacing.

The office of Experiment Stations had a small exhibit. It consisted of charts demonstrating the nutritive value of foods, etc., the preparation of foods, domestic science and domestic arts instruction.

Lectures, illustrated with stereopticon slides, was one of the most important features of the exposition. These were given by government experts and were intended to be helpful rather than entertaining.

Prof. F. Lamson-Scribner was the special agent of the government in charge of the preparation of exhibits from the Department of Agriculture. F. L. Scribner, Jr., was the custodian of the government exhibits.

The exhibit made by the Department of Agriculture was the most extensive ever shipped to the South, a number of cars being required to transport it to Knoxville, and the collection was one that appealed to every visitor. The conservation idea was brought to the front in all features of the display. The assistance thus given by the department to the builders of the exposition was just what the management required to complete the great work of teaching by example the necessity for conserving resources and for promoting industrial development in a way that will make these resources permanent sources of wealth.

The exhibit from the U. S. Geological Survey was housed in the Minerals Building, and embraced a comprehensive display of minerals found in this country, and especially in the Southern Appalachian region; also the estimated quantities of ore, their quality and values. The exhibit strongly emphasized the conservation idea.

Scattered through the government exhibit were many verses and mottoes, appealing for the conservation of the natural resources of the country. "It is a debt one generation owes to all succeeding generations to conserve the minerals and timberlands, and prevent the destruction or wasteful utilization of such resources," appeared on one placard. These sentences and mottoes were in themselves excellent lectures on conservation.



R. F. Graf & Sons, Architects

MACHINERY AND LIBERAL ARTS BUILDING

INDUSTRIAL EXHIBITS

The industrial exhibits which were made at the National Conservation Exposition were housed in the Southern States Building, the Machinery and Liberal Arts Building, the Land Building and in special buildings erected by exhibitors. The accompanying illustrations will give a clear idea of the character and variety of these displays, although less than half the number are thus shown.

The Southern States Building was designed for exhibits of Southern manufactured products, and in this structure was found one of the most interesting and extensive displays ever made by the cities of the South. Large sections of the floor space of this building were occupied by manufacturers of Baltimore, Louisville, Birmingham, Lynchburg, Knoxville, and by Greenville, S. C. Greenville made an excellent exhibit as a Southern textile manufacturing center, occupying more space than any other city. The manufacturers represented were: Dunean Mills, Parker Cotton Mills, Piedmont Manufacturing Co., F. W. Poe Manufactur-

ing Co., Camperdown Mills, Nuckasee Manufacturing Co., Union Bleachery, Scales, Wilson Co., Greenville Mantel Manufacturing Co., Greenville Chamber of Commerce, Brandon Mills.

Other exhibitors in the Southern States Building were: The William J. Oliver Manufacturing Company, Knoxville, B. F. Avery & Sons, Louisville, Jobbers Overall Co., Lynchburg, Appalachian Mills, Knoxville, International Harrow Cultivator Co., Birmingham, White Blakeslee Mfg. Co., Birmingham, Semet-Solvay Company, Ensley, Ala., Stockham Pipe & Fittings Co., Birmingham, McNaughton Grate Bar Co., Maryville, Tenn., Cherokee Table Co., Maryville, Tenn., Peter Kern Co., Knoxville, Littlefield & Steere Co., Knoxville, Martin, Gillett Co., Baltimore, McCormick & Co., Baltimore, C. D. Kenny Co., Baltimore, Nickerson Mfg. Co., Knoxville, Jas. E. Thompson, Knoxville, Tennessee Power Co., Ocoee, Tenn., Tennessee Metal Culvert Co., Nashville, Smith & Lamar Publishing House, Nashville, Emerson Drug Co., Baltimore, Stokely Bros., Newport, Tenn., Whittle Trunk & Bag Co., Knoxville, The Po-da-ero Co., Morristown, Tenn., J. Allen Smith & Co., Knoxville, Knox Stove Works, Knoxville, Sibley-Menge Brick & Coal Co., Birmingham, Jefferson Powder & Dynamite Co., Birmingham, Rockwood Hosiery Mills, Rockwood, Tenn., joint exhibit with the Richmond Hosiery Mills, Chattanooga Knitting Mills, Harriman Hosiery Mills and Magnet Knitting Mills, Adler Mfg. Co., Louisville, Ky., King Mantel & Furniture Co., Knoxville, C. B. Atkin Co., Knoxville, Knoxville Knitting Mills, Knoxville Printing & Box Co., Knoxville Lithographing Co., Standard Machine Co., New York, H. Brinton & Co., Philadelphia, Morrow Machine Co., Hartford, Conn., House-Hasson Hardware Co., Knoxville.

Greever-Lotspeich Co., exhibit in Woman's Building.

Exhibitors in the Land Building were: The Southern Railway Company, Louisville & Nashville Railroad Co., Norfolk & Western Railway Co., Western Electric Co., A. H. Tindell Nursery Co., Barber Asphalt Co., American Ballast Co., Little River Lumber Co. These in addition to government exhibits on the first floor, and educational department exhibits on the second floor of the Land Building.

The industrial and commercial exhibits in the Machinery and Liberal Arts Building were made by the following: National Cash Register Co. (industrial hygiene—educational), Oliver Chilled Plow Works, Rand Powder Co., Schenk Electric Co., Spirella Corset Co., Metropolitan Life Insurance Co. (health exhibit), Travelers Insurance Co. (health and accident), W. J. Savage Co., Arnold, Hene-gar, Doyle Co., Cumberland Motor Co., Hackney, Broyles & Lackey Co., Tennessee Mill Supply Co., Crane & Co., Bickley, McClure & Co., The American Wagon Co., Belding Bros. Co., The Rudolph Wurlitzer Co., The Geo. Wiedeman Brew-



EAST TENNESSEE BUILDING. THIS VIEW SHOWS HOW BUILDINGS WERE OUTLINED WITH INCANDESCENT LIGHTS. THE EXPOSITION GROUNDS AND BUILDINGS SHOWED TO BEST ADVANTAGE AFTER NIGHTFALL

ing Co., The Blanton & McKay Co., Dalton Adding Machine Co., Standard Oil Cloth Co., Sharples Cream Separator Co., Republic Tire & Vulcanizing Co., Walker Vehicle Co., J. E. Rhodes & Sons, Starr Piano Co., Universal Stenotype Co., Dwinell Wright & Co., C. M. McClung & Co., Majestic Range Co., Doty Mfg. Co., Orange Judd Co., Mrs. Elizabeth C. Lewis, Underwood Typewriter Co., Sterchi Bros., The Jas. Heekin Co., Engeman-Matthews Range Co., Osheosh Grass Matting Co., Ypsilanti Reed Furniture Co., S. Carpen & Bros., Caswell & Runion Co., S. Weisglass & Co., Simmons Mfg. Co., Knoxville Excelsior & Mattress Co., American Furniture Buyers' Association, Emrich Furniture Co., Sidway Mercantile Co., Old Hickory Furniture Co., C. F. Schmoe Furniture Co., Indianapolis Chair Co., Mt. Airy Mantel & Furniture Co., Brookside Mills, Autopiano Co., Armour & Co., R. T. Blow Co., Postal Life Insurance Co., (health exhibit), Knoxville Overall Co.

Exhibits in special buildings: Wheeling Mold & Foundry Co., Masillon Engine & Thresher Co.

O. J. Childs & Co., exhibits in all buildings.

Reference to the industrial exhibits, as well as to other features of the Exposition, is made in the following newspaper accounts, which were published during the exposition period. These articles present the views of outsiders, and are given as supporting the claims made by the management. The following article, which appeared in the *Atlanta Constitution*, was written by Isma Dooley, Editor of the Woman's Department of that paper:

"The National Conservation Exposition well illustrates the meaning of the name, and the buildings, beautifully located on grounds which show the genius of the landscape artist, are filled with wares, inventions and products proclaiming the riches of the central South.

"The splendid cattle exhibit, which brought interested people from every part of the country, was one of the finest ever held in the United States, and there still remain of the exhibit specimens which would make a day of inspection there too short a time. The horse show was held at the same time, and marked the ascendancy still of 'King Horse,' with types of the best from Kentucky, the Northwest, Virginia, North Carolina, Georgia and Tennessee.

"The Southern States Building, a new one of distinct architectural expression, contained many meritorious exhibits, there being machinery of international note shown, the products of Tennessee craft, textile exhibits from the leading mills of the South, furniture proving the ability of the South to manufacture the woods of which she has rich stores, and many interesting exhibits of the smaller industries which are making so directly for our general prosperity.

"In the Land Building, several railroads have illuminating exhibits showing the richness of the lands through which their lines are the transportation mediums.



EXHIBIT OF THE OLIVER CHILLED PLOW WORKS, SOUTH BEND, IND. WINNER OF GOLD MEDAL, NATIONAL CONSERVATION EXPOSITION

The subject of good road building is dealt with in a series of exhibits demonstrating the methods being pursued in this all-important phase of our upbuilding. The native woods in all their variety and beauty were exploited here, and the marble and granite riches which are ours.

"An exhibit of minerals was equally interesting, and the government, besides demonstrations of forestation in small exhibits, has contributed to the exposition a highly instructive health exhibit, and one showing several phases of educational progress.

"The Liberal Arts Building is complete with interesting departments, and there is a creditable exhibition of art.

"The building containing the work of the negroes of the South eloquently proclaimed their progress, beyond the knowledge of the many who do not know the many-sidedness of this progress. Conferences of significant import have been held in this building.

"No department of the exposition has attracted more universal attention than the child welfare exhibit brought to the exposition through the efforts of the Mothers' Association, of Knoxville, of which Mrs. Percy Lockett is one of the leading spirits. Mrs. Lockett was president of the women's board of the second Appalachian Exposition.

"The welfare exhibit is one collected through the efforts of the Russell Sage Foundation, the national child welfare committee of New York, and Miss Julia Lathrop of the national child bureau, of Washington, D. C.

"Miss Lathrop was present at the installment of the exhibit and spent several days in Knoxville. The Russell Sage Foundation had an enthusiastic representative in the building, and Dr. Francis Sage Bradley, of Atlanta, is the demonstrating physician in charge.

"Charts, photographs, original illustrations, cartoons and illuminated literature tell the story of the child and what should be done for its conservation from the time it comes into the world until it reaches the age when it can take care of itself. The dangers which beset the child, the protections that should be given in the home and in the school were forcefully impressed upon the mind by the various devices of the exhibit.

"The Atlanta Anti-Tuberculosis Society contributes a creditable department to the exhibit; also the Atlanta Surgical Institute in the matter of the treatment given deformed children.

"An interesting part of the welfare exhibit is that sent by the city of Memphis. It shows a complete little hospital and equipment for children, according to the fresh air idea, and illustrates the work being done by the children's open air hospital of Memphis, maintained through a special tax levied on bachelors. A wealthy bachelor of that city contributed the funds for the little exhibit sent to the Knoxville exposition.

"In the department of common school education a most creditable showing is made by the school children of Knoxville, those of the grammar grades, and those of the high schools, the Knoxville school system demonstrating the success of industrial education being combined with the academic in the general curriculum.

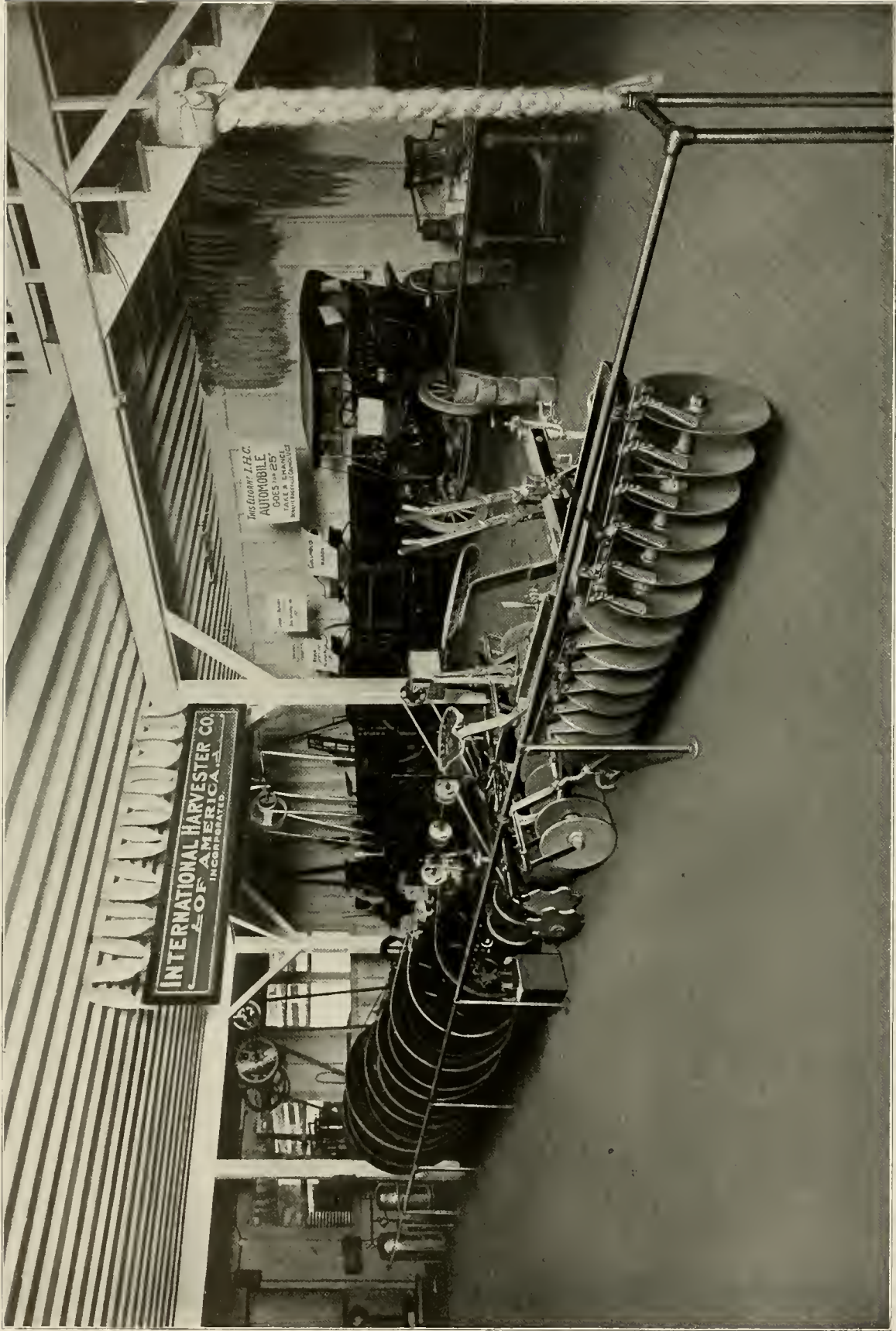


EXHIBIT OF INTERNATIONAL HARVESTER COMPANY OF AMERICA, 1911 APPALACHIAN EXPOSITION

"The school problem, I learned, was almost as complex in Knoxville as it is in Atlanta, in the lack of large enough school buildings and adequate facilities. The recent enactment of a splendid law for compulsory school attendance has brought suddenly to the school a large element of children who might without the law have never had a chance.

"Besides their invaluable aid in making the social side of the exposition a success, the woman's board, of which Mrs. Horace Van Deventer is the efficient president, has a beautiful exhibit of woman's wares and hand-crafts in the woman's building. Every department commands interest and reflects the genius and talent of women from the simple work of the rural and mountain women with their hands to the literary achievements of the women of the South to be seen in the library exhibit and those of art and the sciences domestic. A loan exhibit is a feature of the woman's building, and the whole reflects the continued effort of the women of Knoxville commenced in the regime of Mrs. Herbert Hall, the president of the first woman's board, continuing under the leadership of Mrs. Percy Lockett, and ably carried to the present status of interest by Mrs. Horace Van Deventer."

THE LAND BUILDING

With its thousands of dollars worth of exhibits, teaching the lesson of the conservation of forests, soil, etc., the beautiful Land Building was probably the main point of interest on the big National Conservation Exposition grounds.

This building is one of the most beautiful at the grounds, and the second largest exposition structure. It is situated on a high elevation, with the ground about it terraced and beautified with flowers. It is not only beautiful on the exterior, but the interior was equally as attractive. A large fountain, surrounded by green plants and gravel walks, occupied the center of the building. The decorations were United States flags, festooned very gracefully from the ceiling, and the colors blended prettily with the many plants around the fountain.

In this building were housed most of the principal exhibits teaching the conservation of natural resources, and one studying them carefully had almost the equal of a college education on those particular subjects. Conservation of soil and forests, two of the most important factors of the present civilization, were taught. In addition to this, one might gain a good knowledge of the many resources of the Southern states, and how they are being developed from the exhibits of the Southern Railway, Norfolk & Western Railway, and the Louisville & Nashville Railroad, three great railroad systems that have belted the South with their tracks.

Upon entering the building, the visitor was first impressed with the beauty of the appearance of everything, and the charming color harmony. In the lobby were a large number of hand-colored forestry pictures, and passing from this into the main part of the building, the Norfolk & Western Railway exhibit stood on the

left of the entrance and the Louisville and Nashville Railroad exhibit to the right, while looking through the center of the building the visitor saw the fountain and the exhibit of the Southern Railway at the extreme rear. On the sides of the building were the forestry and soil exhibits on the right, and the good roads, pure food and drugs exhibits on the left, together with one or two commercial exhibits that had some relation to the large government exhibits.

SOUTHERN STATES BUILDING

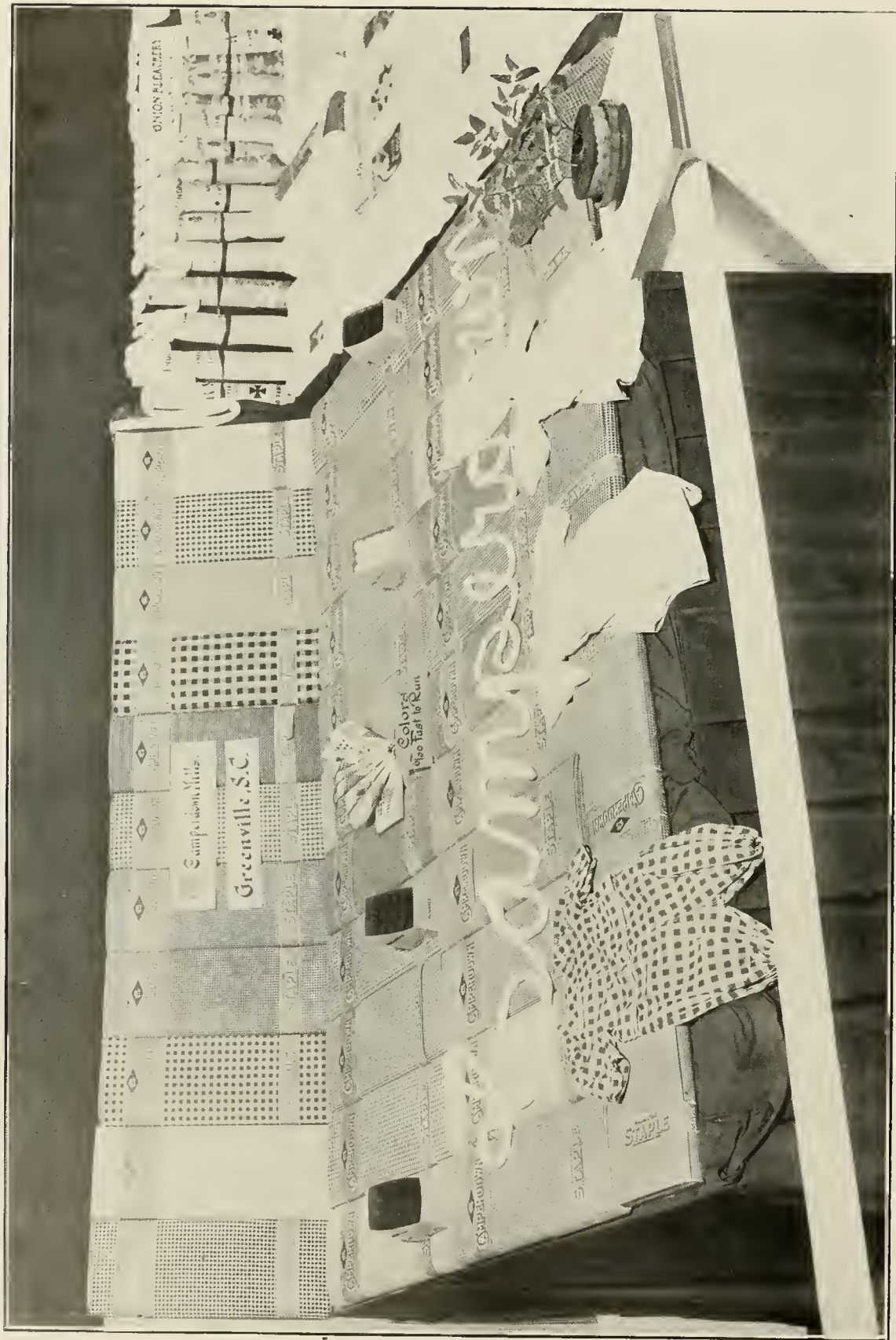
The Southern States Building, one of the largest of the permanent exposition structures, is located in the northwestern part of the grounds, west of the lower lake. It has a commanding site on the hill, overlooking the lake, and in dignity, grace and beauty of architecture, is second to none. Handsome columns grace the main entrance to the building, while hundreds of electric lights are trained around it, so that when illuminated, the building is most impressive in appearance.

Within the building, which was dedicated to the sixteen Southern states, were shown the exhibits that demonstrated very effectively the great progress that has been made by the "New South" along commercial and industrial lines. Very diversified, indeed, were the articles on display, ranging in size from tiny pieces of candy and similar articles to the great dump-cars made in Knoxville, one thousand of which were bought by the United States Government for use in the building of the Panama Canal.

Hundreds of manufactured articles were arranged most attractively within the building, wherein was found indisputable evidence that the South could "hold its own" with any section of the country, commercially and industrially. In one section of the building the growth of the manufacture of textiles in the South was emphasized in a number of booths, several extensive plants being shown complete in miniature. There is scarcely a phase of commercial activity that was not represented in some way, and the versatility of the man of the South at manufacturing was shown beyond the question of doubt.

The South is especially rich in valuable water power, and in this section great dams are now under process of construction in order that the power available may be converted into electrical power for use in countless industries. The power company exhibits were surrounded practically all the time by persons interested in the development of this most valuable natural resource.

Not far distant from the exhibits referred to above were others in which were displayed articles used in the home, in building, in heating, in manufacturing, for clothing, and for a "thousand and one" other purposes, for nothing was lacking in the array that confronted the vision of the sightseer as he made his round through the building.



ONE OF THE GREENVILLE, S. C. TEXTILE EXHIBITS IN THE SOUTHERN STATES BUILDING....A GOLD MEDAL WINNER

AGRICULTURAL EXHIBITS AND BUILDING

Visitors to the National Conservation Exposition who were interested in agriculture were not disappointed with the East Tennessee Building, in which was located the agricultural exhibits, nor with the exhibits. The display was said to compare favorably with that of any former exposition in the country. Aside from the tasteful arrangement of the exhibits in the spacious building, the wide variety of products exhibited attracted the eye of every visitor interested in rural pursuits.

This department had a distinct advantage in the location of its building on the main walkway leading from the main entrance to the Land Building.

The East Tennessee Building is especially well adapted to the exhibition of agricultural products. It is 130x90 feet, and the exhibits were placed in well arranged sections and booths.

This building was erected by various counties of East Tennessee, but was open to exhibits from every section.

There were hundreds of articles exhibited, many varieties of hay, corn, wheat and grain of all kinds, fruits, cotton and many other products of the farm being shown. There was not an article grown in this entire section, no matter in how small a quantity, but what was on exhibition there.

Among the exhibits that attracted particular attention during the days of the exposition was that of the girls' tomato clubs of Tennessee. It occupied one of the largest booths, and was comprised of canned products, photographs, historical sketches of the work, and information about how clubs may be established in any neighborhood, etc. The exhibit was not confined to tomato products alone, but to practically all fruits and vegetables, which were produced and canned by members of the tomato clubs.

The single entry exhibits also attracted much attention. They were located in the center of the building, and occupied one of the largest booths. Products of all kinds grown on the farm were represented. The various exhibits in this booth were labeled and arranged so that they might easily be located and understood by the layman, as well as by the agriculturist.

One feature of the building that proved of particular advantage was its spaciousness. While it is but one story, it is perhaps the "roomiest" building on the grounds. Wide windows and doors are provided, while wide walkways were reserved so that the throngs that visited it were not crowded.



FINE ARTS BUILDING, IN WHICH WAS DISPLAYED THE GREATEST COLLECTION OF PAINTINGS
EVER SHOWN IN THE SOUTH

FINE ARTS

The Fine Arts Building of the National Conservation Exposition is a superb structure for the showing of large and valuable works of art, and its setting, in a grove of stately trees, is ideal for the lover of beauty.

The building is spacious in its dimensions, affording sixty by eighty feet of almost unbroken wall space for the hanging of paintings, and giving that feeling of breadth and freedom that is proper in a building housing one of the best and most exclusive exhibits of paintings and statuary ever shown in the South.

Located on the crest of a hill, overlooking the lake and affording a panoramic view of the entire exposition grounds, the situation is ideal for cultural and artistic purposes. The Fine Arts Building is simple and elegant in its plan, and the pictures were hung far enough apart to obviate all feeling of crowding or confusion. The building was lighted from above, and all canvases were hung against a background of a soft shade of brown. The floor is of concrete and a number of

The AUTOPIANO factories in New York City (50th to 52nd Sts.) facing the Hudson River
The largest factories in the World devoted to the Manufacture of Player Pianos Exclusively



The Atlantic Battleship Fleet passing up the Hudson River

The Autopiano

is the Choice of the U.S. Navy. Over 70 are in use on American Warships
Come in and hear the Marvelous Autopiano.

UNIQUE AND ATTRACTIVE PANORAMIC EXHIBIT IN THE EXTENSIVE DISPLAY MADE BY STERCHI BROTHERS, OF KNOXVILLE, TENNESSEE

white benches were placed at convenient points, so that visitors might study the paintings at their leisure.

In the center of the gallery was a beautiful fountain, surmounted by a bronze figure of a nude boy playing on a pipe of reeds. The statue was the work of a rising young woman artist, and the fountain, which was made of white granite and green tiles, was donated by Mr. Morgan, of this city, who, with the assistance of Mr. Charles I. Barber, planned and designed it. Around the fountain, decorative plants and classic seats were placed. This central ornament, with the water splashing and playing over it, was a work of art in keeping with the exhibits.

The exhibit of paintings, which far surpassed those shown at former expositions, consisted of fifty oils and sixty-five water colors and illustrations, secured through the American Federation of Arts, work by local artists, and work from artists of Nashville, New Orleans, Memphis and Athens.

The exhibit secured from the east, through the Federation of Art, touched the high water mark of excellence. It was representative of the best of contemporary American painting. No special school of art was adhered to in this exhibit, and the pictures were as varied as the genius of the artists differ. This collection contained work by such well known men as John W. Alexander, Sargent, William



R. F. Graf & Sons, Architects

THE BUILDING IN WHICH AGRICULTURAL EXHIBITS WERE DISPLAYED

Chase, Edward Tarbell, Childe Hassam, Daniel Garber, J. Alden Wier, Irving R. Wiles, Charles W. Hawthorne and others whose have become household names to those in touch with the world of art. The subjects of these paintings were varied, and covered a wide range of interest. There were many landscapes and coast views in the collection, and the realistic, idealistic, impressionistic and classic themes were all represented.

One corner of the gallery was devoted to the showing of work by local artists, and in this collection were paintings which demonstrated the fact that Knoxville has a group of artists of which she may well be proud.

The committee on the selection of paintings for the local exhibit was very strict in adhering to a high standard for admittance. A certain degree of excellence was required in a picture before it was favorably passed upon and only original work was considered.

The jury of selection and awards for the fine arts department was composed of Mr. John Carlson, of New York, instructor of the Art League's Summer School, Miss Ella Hergesheimer, of Nashville, a successful young Southern artist, and Miss Catherine Wiley, of this city, chairman of the fine arts department of the Exposition.

The jury reserved the right to accept or reject any picture submitted, and judged each picture by the same standard, wholly on its merits and without knowing the name of the artist.

A feature of the fine arts exhibit never before shown in this city was the collection of statuary. This collection, consisting of fifteen pieces, was also obtained through the American Federation of Art. The figures were small bronzes, and were beautiful in conception and form. They were shown upon six marble pedestals, and added greatly to the educational value of the exhibit.

The awards, officially announced by the Jury of Awards, were as follows:

Oils.—Gold Medal—George H. Marcum, "The Pile Driver."

Silver Medal—K. A. Bucher, "Breakfast on the Grass."

Bronze Medal—Richard Miller, "At the Window."

Water Colors.—Gold Medal—Blanch Dillaye, "Moonlight."

Silver Medal—Katherine Patton, "In Chadford."

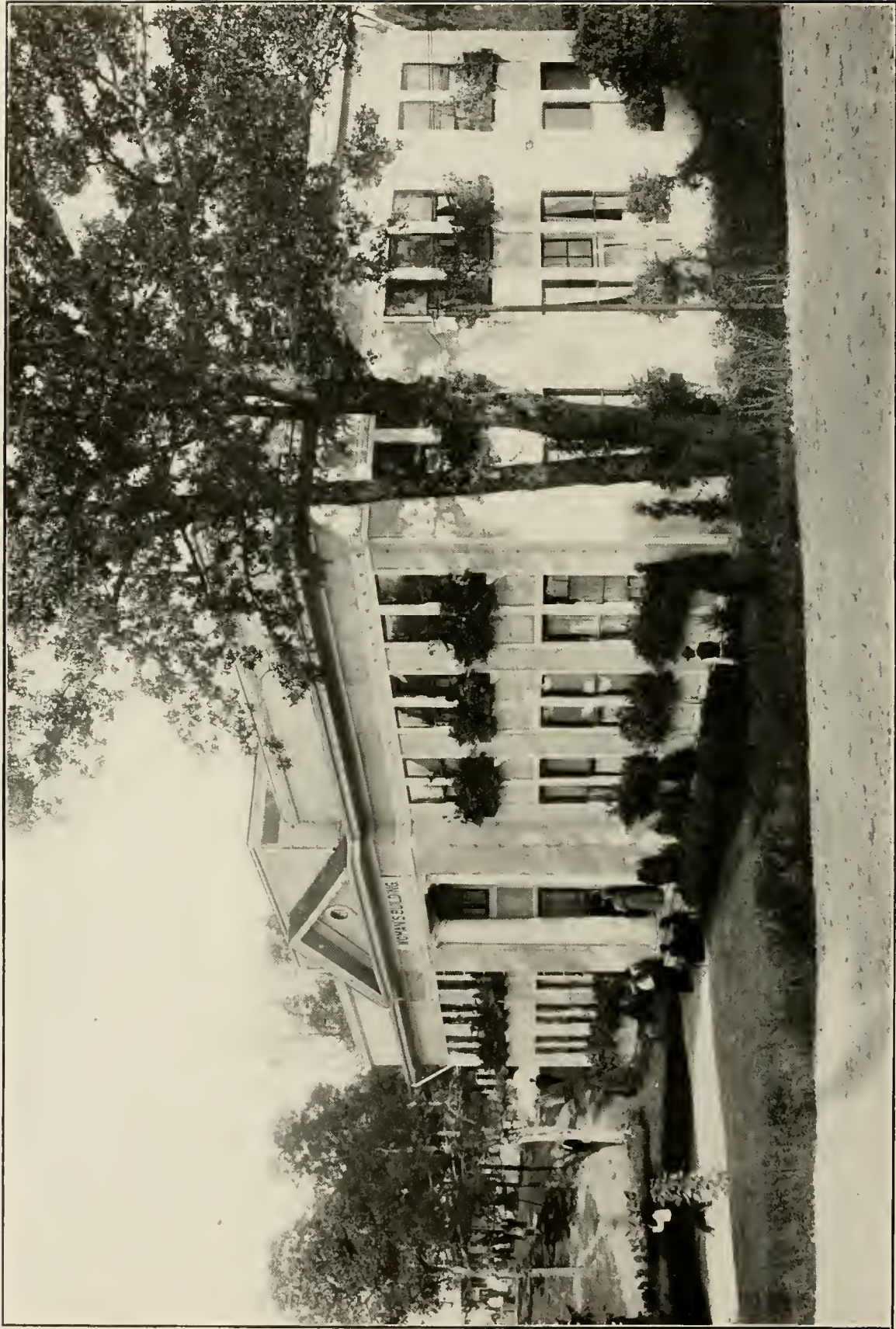
Bronze Medal—Wagner, "A Bright Day."

Twenty-dollar Branson prize for best portrait by Southern artist—Miss Elizabeth Gettys, of Athens.

Twenty-dollar Strong prize for best landscape in oil—Robert Lindsay Mason.

Ten-dollar award for best water color by Southern artist, offered by Miss Rucloux—C. C. Krutch.

H. J. Cook gold medal for best collection in Appalachian region—Hugh Tyler.



R. F. Graf & Sons, Architects

WOMAN'S BUILDING, NATIONAL CONSERVATION EXPOSITION



MRS. HORACE VAN DEVENTER,
PRESIDENT WOMAN'S DEPARTMENT, NATIONAL CONSERVATION EXPOSITION



EXHIBITS, WOMAN'S BUILDING, NATIONAL CONSERVATION EXPOSITION

THE WOMAN'S BUILDING AND EXHIBITS

The Woman's Building, in which was demonstrated by handsome exhibits many and various lines of activity, was one of the most attractive, interesting and popular buildings on the exposition grounds.

Located just inside the main entrance of the exposition, it was the first building to arrest the attention of the visitor.

The exterior of the building and the grounds immediately surrounding, showed the artistic touch of woman's hand. In every window were boxes of luxuriant blooming flowers and beds of vari-colored decorative plants, brilliant salvia and dwarf evergreens, surrounded by green, well-kept lawns, formed a fitting setting for the building.

Upon entering the building, the visitor was impressed at once by the fact that the attractive exterior was only a suggestion of the bewildering beauty and interest presented on the main exhibit floor. The building, which was rectangular



ONE OF THE ATTRACTIVE EXHIBIT ROOMS, WOMAN'S BUILDING.

in shape, was divided, on the main floor, into a sort of central court, with spacious wings on either side. In the center of the floor was a fountain, surrounded by palms, ferns and other plants. This fountain served to center the interest and around its cool greenness was grouped the various exhibits.

The general effect upon entering the building was such that one marvelled at what women had accomplished. Everywhere there was order, harmony, color and interest, and the beholder was at a loss where to begin a detailed inspection, so imposing was the general appearance of the main floor.

However, upon closer inspection, the exposition visitor realized that the exhibit space had been planned and utilized so that every available square foot counted. The wing to the left of the central court had been fitted up as a reception room and there, during the two months of the exposition, receptions, afternoon teas and social affairs of a more or less formal nature were given. This reception room was spacious, and afforded ample room for these functions. On the walls hung the celebrated Freer collection of oil paintings, consisting of fifteen large canvases valued at \$30,000. This exhibit of paintings came from Nashville, and is a rare collection



VIEW NEAR ENTRANCE. EXPOSITION GROUNDS

of art gems. On the floor were many handsome rugs, while easy chairs and lounges made the place one of beauty and comfort. Just back of the reception room was the president's office.

To the right of the central court a large wing was devoted to the arts and crafts exhibit of which Mrs. J.R. McDowell was chairman, and Mrs. Walter Vangilder vice-chairman. This was one of the largest and most complete exhibits in the building and was, without doubt, one of the most exhaustive collections of the kind ever shown in this section.

The arts and crafts exhibit occupied considerable floor space, and its chief interest was that it showed the various hand-craft of women. Among some of its interesting features were the following: Collection of genuine Navajo Indian blankets, which came from Arizona, and were hauled 150 miles to the railroad to be shipped to the exposition, these blankets being wonderful in color and material, and marked with weird Indian designs, a large collection of Indian baskets, from Avery's Island, off the coast of Louisiana, and an exhibit of basketry and weaving done by the mountain whites of Western North Carolina, both of unusual charm and interest;

collection of hand-carved furniture, from the Biltmore estate industries; large and handsome showings of Rookwood, Sophia Newcomb, and Paul Revere pottery, and an exhibit from the Kalo arts and crafts shop, of Chicago, these forming only a suggestion of what was contained in this exhibit.

On the main floor, directly back of the central fountain, was a most unique exhibit. This consisted of the Red Cross nurses of every country in the world, shown in their native costumes. Dolls dressed to represent the various nationalities formed the exhibit, which was sent direct from the new National Museum in Washington by Miss Mabel Boardman, president of the American Red Cross Society.

Under the stairway was an exhibit of relics and curios sent by Miss Carnie Johnson, from Clarksville. This little city has many historic connections from the early settlement of the state, and the exhibit contained articles of priceless value and absorbing interest to the lover of the old and the curious.

An exhibit by the Needlework Guild of America was also shown on the main floor, together with several commercial exhibits.

The scene presented on the second floor of the building was just as full of interest as that on the main floor, and every exhibit was as well arranged and attractive.

Upon ascending the stairs, perhaps the first thing that attracted the eye was the Southern Library exhibit, of which committee Miss Kate White was chairman and Mrs. W. A. Knabe vice-chairman. This exhibit occupied the entire front of the central portion of the second floor. It consisted of a collection of books by Southern authors, presented either by the author or publisher. These books are of great value, and were not loaned, but were given to the exposition, and are to be preserved in a private room in the public library. Inspection of the books will be of great interest to those concerned with the literary history of the South. A bust of Edgar Allen Poe, the South's greatest literary genius, was accorded the place of honor in this exhibit, and over the cases, in which the books were arranged, hung paintings, while a place for resting and writing postcards was provided.

In one wing of the second floor was the historical loans exhibit, of which committee Mrs. W. D. Wright was chairman. The other wing was occupied by the home economics exhibit, Mrs. W. R. McCargo, chairman, and Mrs. Lewis Tillman, vice-chairman. Both these exhibits were exhaustive, and of vital interest, the latter especially so to women.

In the historical loans exhibit were to be seen curios and relics of colonial days, of the Indian wars, the Mexican war, the Civil War, and the war of 1812. The Andrew Jackson relics occupied three cases, and the Lincoln Memorial Uni-



MARBLE BAND STAND, DONATED TO THE APPALACHIAN EXPOSITION, 1910

versity, at Cumberland Gap, furnished some valuable relics of the war of 1812. There were in this exhibit, articles used by many of the prominent men and women in the history of the country, also articles typical of various historical periods.

Perhaps the most interesting and practical exhibit for women was the home economics department, which was shown on a strictly modern and scientific basis, with the central idea being that of demonstrating that the home may be comfortably and attractively furnished at small cost.

The exhibit was arranged to show a modern home. It was divided into seven departments, or rooms, a bed room, dining room, living room, sewing room, pau-

try, kitchen and laundry. Each of these was equipped in a model way, and in each were modern labor-saving machines, invented to assist woman in doing her house work. How to keep house without a servant was shown in this department, and demonstrations of various kinds were made several days of each week. The weaving exhibit, on the second floor, attracted both men and women. In this exhibit, of which Mrs. B. D. Brabson was chairman and Mrs. George F. Mellen vice-chairman, the world's progress in weaving was shown. Looms of all kinds were to be seen, from the Indian primitive and those operated during colonial days by foot-power, to the modern electric loom. Not only were looms, spinning wheels, etc., shown, but weaving was actually done and the articles made exhibited.

That the women of Knoxville who assisted in the work of collecting and installing the exhibits in this building met with unprecedented success was demonstrated at a glance.

Everything was in readiness on opening day, and each officer, chairman, and vice-chairman was at her post. The ladies worked together like one machine, and the result was one of the most complete and up-to-date woman's exhibits ever shown at any exposition.

The floor, or exhibit space, available in the building was three times as great as that at any former local exposition, but the women had demonstrated their ability to cope with big propositions, and they made every foot of space in their building of absorbing interest.

DEPARTMENT OF MINES AND MINERALS

BY C. H. GORDON, PH. D.*

APPALACHIAN EXPOSITION, 1910, 1911.

At the Exposition of 1910 the minerals exhibits occupied a part of the building known as the Forestry and Minerals Building. The central space arranged in the form of a pavilion together with a portion of the side walls were devoted to the displays of mineral products. The display of Tennessee marble was presented in the form of pedestals marking the limits of the pavilion between which were glass cases containing minerals collections largely the loan of the University of Tennessee. In addition to the fine display of marbles in the pavilion which were contributed by the various companies operating in East Tennessee there were slabs and other specimens representing the different qualities of the stone.

A large and varied collection of copper and iron ores represented the resources of Tennessee in these minerals. In addition to representative collections displayed in the Forestry and Minerals Building, the coal resources of the Appalachian region were represented in a building constructed wholly of coal contributed by the companies operating in this district.

A display of special interest was that of the North Carolina Geological Survey.

The mineral display of the exposition of 1911 was along similar lines but differing in the size of the collections showing the resources of the region in coal and iron especially. Large quantities of red and brown iron and coal from various points in Tennessee were grouped in and about the building, presenting an impressive display of these resources.

THE NATIONAL CONSERVATION EXPOSITION, 1913.

Following is the statement of the aims and purposes of the Department of Mines and Minerals as set forth in the preliminary announcement:

The National Conservation Exposition to be held in Knoxville, September and October, 1913, is designed to set forth in a concrete and practical way the natural wealth in forests, lands, waters, minerals and human efficiency of the United States and especially of the South, and to direct attention to the importance and the methods of the conservation of these resources.

*Associate State Geologist of Tennessee, Superintendent and Chairman Department of Mines and Minerals National Conservation Exposition.

The mineral resources of the country constitute one of the foundation stones upon which rests its greatness in manufacturing and the conservation of which is essential to the maintenance of our industrial supremacy.

It will therefore be the aim of the Department of Mines and Minerals to provide such an exhibit as will show not only the nature and extent of our mineral resources, but also to show the methods of utilization and how they may be more effectively conserved in the interests of our people.

The minerals exhibits were in a special building constructed for the purpose. This building known as the Minerals Building was located near the Liberal Arts Building formerly called the Main Building. In the plan of arrangement the wall space was divided into sections which were devoted to special exhibits, state exhibits, etc. The central space was in the form of a pavilion with marble pedestals at the corners as in the former expositions. Within this space were various collections, general and special, grouped in such manner as to present a pleasing effect. Off the rear of the main room were two smaller rooms one of which served as a store room and the other as the office of the superintendent. The exhibits of this department may be comprised under the following heads:

1. General educational exhibits of minerals, rocks, etc.
2. Collections of economic minerals comprising:
 - a. Ores. b. Non-metalliferous Minerals.
3. Exhibits relating to the mining industry.
4. Maps, models and literature relating to geology and mining.
5. Exhibits by other states.
6. Special Exhibits.

General collections of minerals and rocks were presented systematically arranged to illustrate the character and relations of the materials composing the earth's crust for the special purpose of furnishing information of interest to the lay visitor. For the most part these collections were loaned by the department of geology of the University of Tennessee.

2. Collections of economic minerals.
 - a. Ores.—The collections of ores embraced a large and varied assortment of material representing the coal, iron, zinc and copper resources of the region. On a lesser but nevertheless important scale were the collections of lead, aluminum and other ores. As the interior space was insufficient for all the material offered the iron and coal exhibits were arranged in an attractive manner in the open space in front and at one end of the building. The display of copper included excellent collections from Ducktown and from Virginia and North Carolina, while a

fine assortment of zinc ore represented the product of the zinc mines in the vicinity of Knoxville.

b. Non-Metallic economic minerals.

In structural materials special mention is due the beautiful display of Tennessee marble contributed by the companies operating in East Tennessee. In addition to eight pedestals constructed of marble showing in an artistic manner the varied qualities of the material, there were on display several large slabs of striking beauty and perfection contributed from the quarries of the Royal Marble Company, the Knoxville Marble Company and the Victoria Marble Company. The pedestals were contributed by different companies and a feature that attracted great interest was the set of four colored transparencies at the top of each pedestal giving views of the quarries, mills, etc., owned by the company that contributed the pedestal.

The clay industry was represented by a fine collection of ball and pottery clays from West Tennessee together with the products made from them such as glazed ware, saggars, insulating material, etc., contributed by the Mantle-Sant Clay Company of St. Louis, Mo. This exhibit is now on permanent display in the Geological Museum of the University of Tennessee.

Other non-metallic materials such as feldspar, barytes, siliceous, etc., were represented by various and complete collections from the Appalachian region.

The coal resources were shown by blocks and pyramids of bituminous coal arranged about the grounds outside the building.

Building stone of different kinds was shown, the most striking exhibit of this material being two massive blocks of sandstone placed near the entrance to the building. These blocks came from quarries located at Rockwood, Tenn., owned by T. L. Brown, and were sent for display at the Exposition of 1911.

3. Mine Exhibits.

This feature of the exhibits comprised a tunnel driven a short distance into the bank and fitted up to show a typical mine entrance. Coal cars and other coal mining machinery were appropriately displayed. In a glass case inside the building was a complete collection of mine rescue apparatus exhibited by Siebe, Gorman & Company, Limited, of Chicago, Ill.

4. Maps, models, etc.

This part of the exhibit comprised (1) a fine model showing relief and geology of the Appalachian region, loaned by the University of Tennessee, (2) several models of different sections of the United States loaned by the U. S. Geological Survey, (3) large map showing the occurrence of economic minerals in the Southern States loaned by the U. S. Geological Survey, (4) State geological survey reports.

5. State Exhibits.

Excellent exhibits were made by the following states:

North Carolina.—Varied collection of economic minerals, including Iron, Tin, Monazite, Tale and Soapstone, Mineral Waters, Granite, Marble, etc.

Mississippi.—The chief interest in this exhibit lay in the clay resources represented.

Indiana.—An excellent showing was made by the State Geological Survey of this State of its resources in building stone, clay products and mineral waters.

Tennessee.—No separate display was made of the mineral products of Tennessee. They constituted a large part of the general collections and in addition there were several special collections worthy of record.

6. Special Exhibits.

Cement Manufacture.—The booth of the Clinchfield Portland Cement Corporation of Kingsport, Tennessee, was an attractive exhibit of the products of this company and was greatly admired.

Norfolk and Western Exhibit.—The exhibit made by the Norfolk and Western Railway of the mineral resources along their road prepared by the Mineral Agent of the company was worthy of high commendation. The chief interest of the display lay in the coal and other non-metallic resources shown but there was included as well a varied collection of iron ores, and other metallic substances indicative of the rich field tributary to this road.

DEPARTMENT OF MINES AND MINERALS—ORGANIZATION.

Executive Committee:

C. H. Gordon, Ph. D., Professor of Geology and Mineralogy, University of Tennessee. Superintendent and Chairman of Committee.

Howell J. Davis, President East Tennessee Coal Company, Knoxville. In Charge of Fuels.

John M. Ross, President Knoxville Marble Company, Knoxville. In Charge of Marbles.

Charles A. Weller, B. S., M. E. Knoxville. In Charge of Ores.

Royal P. Jarvis, Ph. D., Professor of Mining and Metallurgy, University of Tennessee. In Charge of Mines (Absent, not acting).

Associate Members:

State Exhibits:

State Geologists:

Fuels:

E. C. Mahan, President Southern Appalachian Coal Operators' Association, Knoxville.

George M. Camp, Superintendent Coal Creek Mining and Manufacturing Company, Knoxville.

J. E. McCoy, Secretary Southern Appalachian Coal Operators' Association, Knoxville.

Marble:

George T. Fenton, Fenton Construction Company, Knoxville.

H. Oscar Healey, With Victoria Marble Company, Knoxville.

John P. Kern, President Royal Marble Company, Knoxville.

Ores:

E. L. Larison, Metallurgical Engineer, Ducktown S. C. and I. Company, Isabella, Tennessee.

W. H. Kemler, Industrial Engineer, C. C. and O. Railway, Johnson City, Tenn.

R. J. Koch, Contractor Diamond Core Drilling, Knoxville.

F. J. Fohs, M. E., Former Assistant State Geologist, Lexington, Ky.

Mines:

G. T. Bridgeman, Superintendent, American Zinc Company, Mascot, Tenn.

George E. Sylvester, Chief Mine Inspector, Nashville, Tenn.

F. A. Clymer, Superintendent, Roane Iron Company, Rockwood, Tenn.

E. F. Buffat, President Tennessee Mine Foremen's Association, Oliver Springs, Tenn.

D. T. Blakey, Representing Allis Chalmers Company, Knoxville.

PROCEEDINGS OF THE CONVENTION OF GEOLOGISTS AND MINE ENGINEERS.
HELD UNDER THE AUSPICES OF THE NATIONAL CONSERVATION EXPOSITION.

On September 19th and 20th, 1913, there was held at Knoxville a convention of geologists and mine engineers called by the Chairman of the Department of Minerals of the National Conservation Exposition for the purpose of discussing matters relating to the conservation and development of the mineral resources of the country. The Governors of seventeen states appointed delegates to the convention of which number those of twelve states were present, also one representative each from the Government Bureau of Mines and the Department of Forestry.

The first session was held Friday afternoon, September 19th, in the rooms of the Board of Commerce. The meeting was called to order by the Chairman of the Department of Minerals of the National Conservation Exposition, Dr. C. H. Gordon, at three o'clock. Dr. F. W. DeWolf, State Geologist of Illinois, was chosen temporary chairman, after which the delegates to the convention who were appointed by the governors of their respective states were extended addresses of welcome.

On behalf of the city, Mayor S. G. Heiskell extended a welcome to the geologists and mine engineers, touching informally upon a number of scientific questions, and

stressing especially the benefits to be derived from a discussion of subjects relating to conservation by such a gathering of scientists and scholars.

Speaking for the University of Tennessee, in the absence of Dr. Brown Ayres, the president of the institution, Professor Charles E. Ferris also extended a welcome to the visitors.

A brief response was made to the addresses of welcome by Dr. J. Hyde Pratt, State Geologist of North Carolina, who thanked the gentlemen for their kind words of welcome and declared that great results must come from the National Conservation Exposition because of the things for which it stood and the principles it was striving to stress. Dr. F. W. DeWolf, the temporary chairman, also spoke in response to the addresses of welcome by Mayor Heiskell and Professor Ferris.

The permanent organization was then perfected, Dr. C. H. Gordon being chosen permanent chairman and Dr. F. W. DeWolf, Secretary. The following persons registered as members of the convention:

STATE DELEGATES APPOINTED BY GOVERNORS.

Florida—E. H. Sellards, State Geologist, Tallahassee.

Georgia—S. W. McCallie, State Geologist, Atlanta.

Illinois—F. W. DeWolf, State Geologist, Urbana.

Indiana—Edward Barrett, State Geologist, Indianapolis.

Indiana—F. I. Pearce, Chief Mine Inspector, Indianapolis.

Kentucky—J. B. Hoeing, State Geologist, Frankfort.

Kentucky—H. D. Easton, Professor Mine Engineering, State University, Lexington.

North Dakota—H. A. Hard, Director State Geological and Soil Survey, Fargo.

North Carolina—J. Hyde Pratt, State Geologist, Chapel Hill.

Oklahoma—Charles N. Gould, Consulting Geologist, Oklahoma City.

Oregon—H. N. Lawrie, Chairman Oregon Bureau of Mines and Geology Commission, Portland.

West Virginia—George S. Patterson, Mining Engineer, Vivian.

OTHER MEMBERS ENROLLED.

Don Carlos Ellis, In Charge Educational Co-operation, U. S. Forest Service, Washington, D. C.

H. N. Wilson, Engineer in Charge, U. S. Bureau of Mines, Pittsburg, Pa.

Richard R. Hice, State Geologist, Beaver, Pa.

Brown Ayres, President University of Tennessee, Knoxville.

E. A. Schubert, Mineralogist Norfolk and Western Railway, Roanoke.

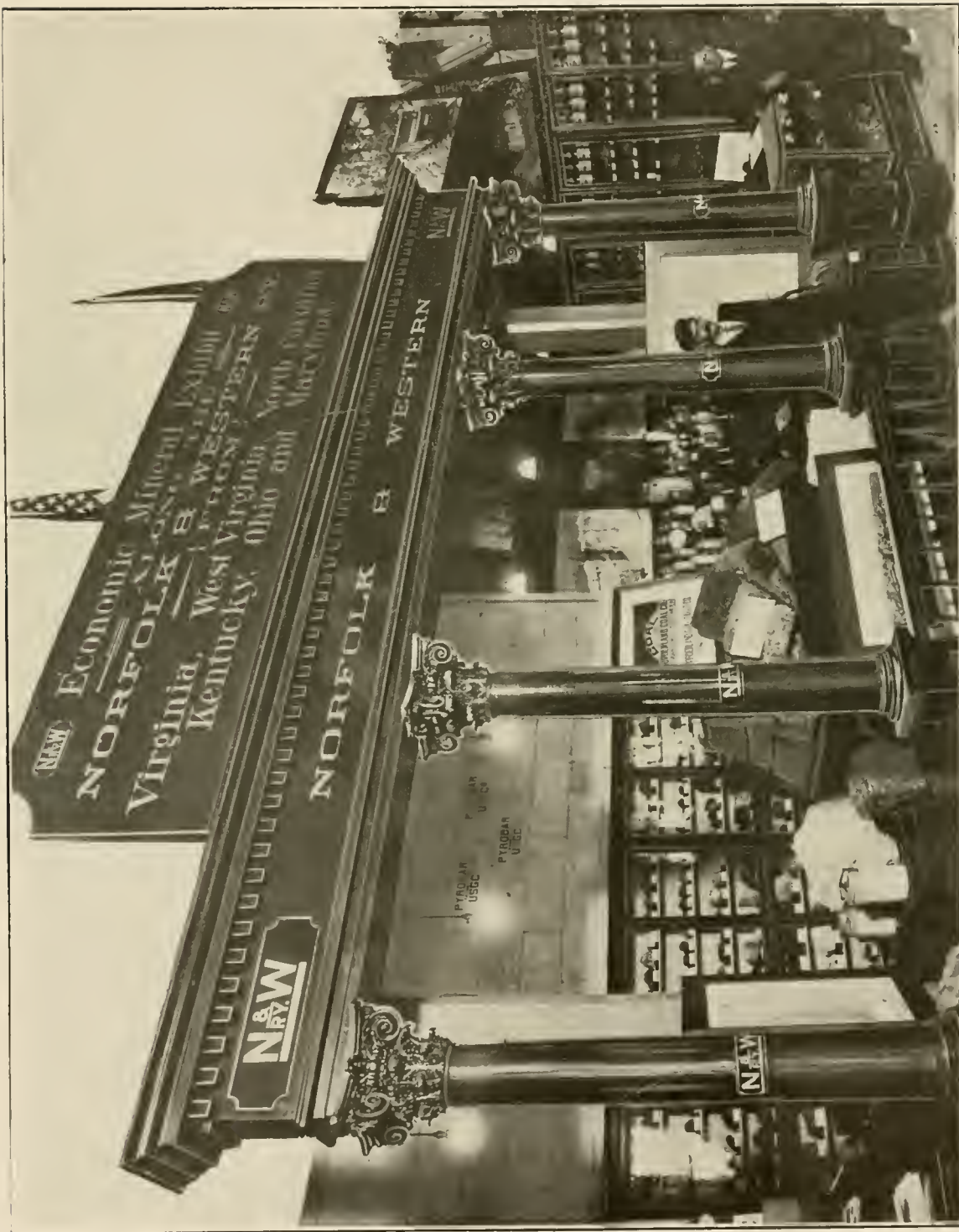


EXHIBIT OF THE NORFOLK & WESTERN RAILWAY, MINERALS BUILDING, NATIONAL CONSERVATION EXPOSITION

C. E. Ferris, Dean of the College of Engineering, University of Tennessee, Knoxville.

J. A. Switzer, Professor Hydraulic Engineering, University of Tennessee, Knoxville.

C. H. Gordon, Professor of Geology and Mineralogy, University of Tennessee, Knoxville.

John S. Moore, Plainfield, Indiana.

Will C. Yerger, Chemist Clinchfield Portland Cement Corporation, Kingsport, Tennessee.

Mrs. B. C. Kyle, Jacksonville, Fla.

Charles Cramer, Knoxville.

Ralph W. Dwight, Knoxville.

G. H. Sharp, Mine Foreman, Coal Creek, Tennessee.

W. M. Sharp, Miner, Coal Creek, Tennessee.

James Elliott, Miner, Coal Creek, Tennessee.

Ed. Harris, Coal Creek, Tennessee.

I. Livingston, Mine Superintendent, Petros, Tennessee.

The chairman then read a telegram just received from Dr. A. H. Purdue, State Geologist of Tennessee, expressing regret at not being able to attend the Convention owing to important matters pending before the legislature then in session at Nashville. Dr. Purdue's paper was received too late to be read before the Convention.

The following papers were then presented:

The Conservation of Natural Gas in the Mid-Continent Field. C. N. Gould.

Economic Non-Metallic Minerals of the Southern States. J. Hyde Pratt.

A Partial Inventory of the Mineral Resources of Georgia. S. W. McCallie.

Methods of Mining Lime Phosphate in Florida. E. H. Sellards.

The Development of the Mineral Lands on the National Forest Reserves. Don Carlos Ellis.

Adjournment was then taken to Saturday at ten o'clock in the auditorium of the National Cash Register Company in the Liberal Arts Building on the Exposition Grounds.

In the evening a reception was tendered to the visiting delegates and others at the Minerals Building.

SATURDAY 10 A. M.

The convention was called to order by the chairman and the following papers were read and discussed:



RESCUE WORK, MINERS' FIELD DAY, NATIONAL CONSERVATION EXPOSITION.

The Regulation of Oil and Gas Wells, Especially When Drilled Through Workable Coal Beds. Richard H. Hice.

Possible Dangers to Mines in Drilling for Oil and Gas in the Coal Measures. Edward Barrett.

Oregon Problems of Resource Development. H. N. Lawrie.

The Iron Resources of the World. E. A. Schubert.

Soil Survey and Conservation Versus Soil Mining. H. A. Hard.

On motion of H. N. Lawrie a committee of three was appointed to draft resolutions which should give expression to the opinions of the convention upon matters of special import. The following were named as members of this committee: H. N. Lawrie, Chairman, F. W. DeWolf, and E. H. Sellards.

In view of the limited time the committee was authorized to prepare its report the same to be submitted to the members of the convention for their signatures.

On motion of H. N. Lawrie seconded by Don Carlos Ellis, the convention then adjourned.

RESOLUTIONS.

In pursuance of the will of the convention the Committee on Resolutions prepared the following resolutions and the same were sent to each member for endorsement or rejection, receiving the vote of approval with a single dissenting voice.

I. For an Increase in the Appropriation by the National Government for the Purpose of Expediting the Classification of the Public Domain.

Whereas, The burden of classification of our public domain rests heavily, and perhaps unjustly, on the applicant desiring to title such lands, and

Whereas, Many conflicting interests with the consequent loss and embarrassment to the land and mineral claimant results from an absence of adequate classification of the Federal Domain, and

Whereas, There are not sufficient funds available for the purpose of expediting the work of classifying the Federal Domain, and

Whereas, It is recommended by this Convention of Geologists and Engineers assembled at the National Conservation Exposition, at Knoxville, Tennessee, September 19, 1913, that this work be accelerated, and that the same should be comprehensive so as to include the possibilities of agriculture, timber, hydro-electric and mineral development and, if practicable, simultaneously; be it therefore

Resolved, That we, the Members of the Convention of Geologists and Engineers assembled, memorialize Congress of the United States to increase this appropriation sufficiently to enable the work as herein noted to be carried out efficiently by the Departments of the Interior and Agriculture.

II. Endorsement of the Findings of the Oregon Conservation Commission in Favor of the Federal Ownership of the National Forests.

Whereas, There has been an extended argument concerning the merits of State versus Federal control of the National Forests; and

Whereas, The Oregon Convention Commission has made an exhaustive study of this subject, which resulted in their conclusion in favor of Federal ownership; be it therefore

Resolved, That we, the members of this Convention of Geologists and Mining Engineers, assembled at this National Conservation Exposition at Knoxville, Tennessee, September 19, 1913, do hereby endorse the findings of the Oregon Conservation Commission in favor of the Federal ownership of the National Forests.

III. Commendation of Exhibit of Minerals.

Recognizing the merits of the comprehensive and well displayed exhibit of the mineral resources of the South prepared by the Minerals Department of the National Conservation Exposition,

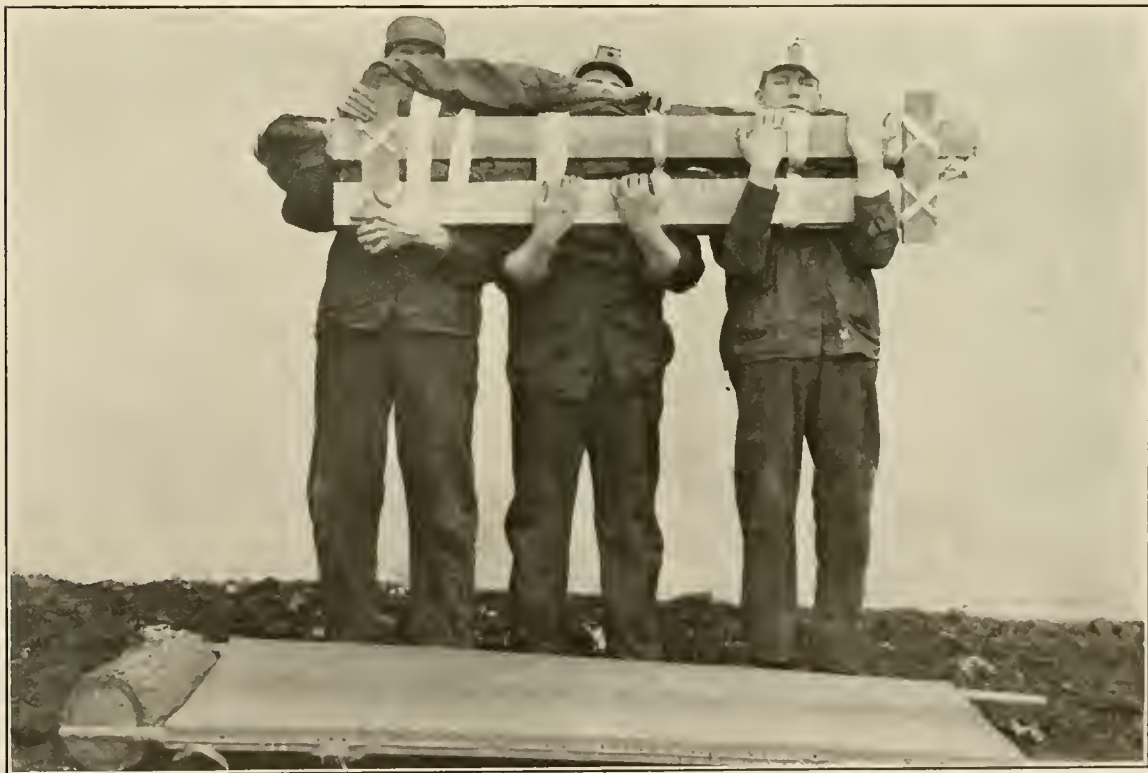
We, the members of this Convention of Geologists and Mining Engineers assembled at Knoxville, September 19, 1913, do hereby highly commend the exhibit as well calculated to stimulate the cause of conservation in the development of our mineral resources, for which contribution due recognition should be accorded to the National Conservation Exposition whose zealous activities made this display possible.

IV. Recognition of Hospitality of the Department of Minerals of the National Conservation Exposition.

Whereas, The members of this Convention of Geologists and Mining Engineers assembled at the National Conservation Exposition were favored with a reception tendered by the Department of Minerals in the Minerals Building on the Exposition Grounds on the evening of September 19, 1913; be it therefore

Resolved, That a vote of thanks and appreciation be extended to the Department of Minerals for this manifestation of hospitality to the members of the Convention.

Following are the papers read at the Convention:



RESCUE WORK, MINER'S FIELD DAY, NATIONAL CONSERVATION EXPOSITION

THE STATE GEOLOGIST AND CONSERVATION

BY A. H. PURDUE.*

By conservation now-a-days is meant the best use of our natural resources, without waste. Probably more than any one else, the state geologist is expected to assist in the development of natural resources; and a little reflection will convince one that his role in conservation is a responsible one, if he meets the requirements of the statutes that provide for geological surveys in many of the states.

Take for example, the statute under which the Geological Survey of Tennessee is working, and which, I take it, is not greatly unlike those of many other states. By this statute, it becomes the duty of the State Geologist to make:

"1. A study of the geological formations of the State, with especial reference to their economic products, including coal, oil, gas, ores, fertilizers, building stones, road-making materials, clays, cement materials, sands, soils, forests, mineral and artesian waters, drainage of swamps, streams, and water powers, and other natural resources.

"2. A study of the character, origin, and relations of the soils of the State, with especial reference to their adaptability to particular crops, the maintenance of soil fertility, and the conservation and utilization of supplies of natural fertilizers.

"3. A study of the road-making materials of the State, with reference to their character, distribution, and the best methods of utilizing the same.

"4. A study of the occurrence and availability of underground water supplies.

"5. An investigation of the forests, streams, and water powers of the State, with especial reference to their conservation and development for industrial enterprises.

"6. A study of the swamp and other non-tillable lands of the State, with reference to their reclamation for agricultural purposes.

"7. A study of the physical features of the State, with reference to their bearing upon the occupation, physical welfare, and intellectual pursuits of the people.

"8. The preparation of special reports, with necessary illustrations and maps, which shall embrace both general and detailed descriptions of the geology, topography, and natural resources of the State.

*State Geologist of Tennessee.

"9. The preparation of special geologic, topographic, and economic maps to illustrate the structure, relief, and natural resources of the State."

Lest the above might not be sufficiently comprehensive, there is added a blanket section.

"10. The consideration of such other scientific and economic questions as in the judgment of the Commission shall be deemed of value to the people of the State."

Thus legally, in the states that have laws similar to that of Tennessee, the responsibility of conservation rests perhaps more upon the state geologist than any one else, because he is the one, more than any other, whose duty it is to study and inform the public upon the occurrence, quality, quantity and uses of natural resources.

These resources may be divided into two kinds—those that are inexhaustible and those that are exhaustible. Of the former are such as sand, clay, road material, building stone and water power. While these and others are inexhaustible in quantity, they do not occur universally, so may become, and in most places do become, products upon which it is vitally important that the public be informed.

Here it might be well to call attention to the fact that geologists somewhat, and the public to a large extent, lose sight of the common things, in their anxiety to discover and develop the rare ones. Often a bed of shale for brick making, sand for building, or limestone for cement or other purposes, is of more local importance than a bed of coal, iron ore, or some other of the less common products. A bluff of stone may stand unused for years, before some one will see its value, perhaps for railroad ballast or concrete work, and not only realize a fortune himself, but supply a needed commodity to industry. In studying these inexhaustible materials, as well as the exhaustible ones, the state geologist must consider their quantity and quality, and the possible uses to which they can be put. This involves the conditions of supply and demand; mining or quarrying; transportation facilities for the raw material; facilities for converting the raw material into the manufactured product; and all other things that bear upon its profitable utilization. He must carefully determine whether on the whole these conditions are favorable or unfavorable, for his conclusion may decide whether or not a deposit will be used at once or left unused for many years to come.

It is sometimes tempting for the geologist, whether acting as an official for the public or an expert for a company, in those cases where he is doubtful as to the value of a deposit, to take the easiest way out and report unfavorably. May it not be that good property is thus often condemned? Should we not, when placed where we must pass judgment upon deposits of doubtful value, intensify our investigations to the limit of time and means and make sure of our ground, if possible?



GOLD MEDAL WINNER, BEST OUTDOOR EXHIBIT, NATIONAL CONSERVATION EXPOSITION

If we can not, then the favorable and unfavorable features of the deposit should be fully presented, so that our clients may exercise their best judgment about risking their money in its development.

In studying the exhaustible materials, the state geologist has a double duty. In the first place, it is a part of his work to make known the areas in which such actually, probably, or possibly occur, to indicate their quantity and character, and to make suggestions as to their development. This part of the state geologist's work has been heretofore and is yet considered his main duty. But with the probability of some of our most important products becoming exhausted in the not distant future, the geologist's duty in conserving known material is next in importance to discovering what is unknown. To this end, he should exercise the powers of his office to prevent waste of exhaustible raw material of all kinds. For example, if there is no other bureau whose duty it is to see that the least amount of coal consistent with good mining is left in the ground as pillars, etc., it plainly is the duty of the state geologist to exert himself toward bringing about mining methods by which the largest possible amount can be recovered. The same line of action will apply to oil, natural gas, the metalliferous ores, and all other exhaustible material.

Again, the state geologist should, at least to a reasonable degree, be alive to the use of by-products. This will of course take him into the field of metallurgy and chemistry, but most geologists are informed on the elements of these subjects, if they are not experts in them. We can hardly remain unconcerned and permit by-products to be wasted, on the assumption that those operating the mines should employ experts to get the most out of the raw material. If the experts are not employed, the duty of the geologist becomes all the more incumbent, for the loss, while one to the operating company, may be primarily one to the public. It may mean the waste of valuable material the public can ill afford to spare.

Recently there has been impressed upon me the lesson that it is a duty of the state geologist to look carefully into developed mines, not only to ascertain if there is not a waste of the ore for which the mine is worked, or of some by-product, but of material that is too important to be classed as a by-product. In the case of the Embreeville iron mines of Tennessee, mines that have been operated intermittently for something like seventy years, it appears that there have been wasted during all that time, large quantities of zinc ore, the presence of which was only recently discovered by an employe of the mining company now owning the property. This has, during all these years, been mined with the iron, dumped with it into the furnace, and driven off as volatile matter into the air. It is not at all improbable that the value of the zinc thus wasted is greater than that of the iron recovered. But whether this is true or not, or whether or not these mines will



AUDITORIUM, NATIONAL CONSERVATION EXPOSITION

prove of importance as zinc mines, it should be an object lesson to both mine operators and geologists. It is as necessary to keep our eyes open in a developed mine as on unprospected ground.

In those states that are subject to rapid erosion, there is no more important duty of the state geologist than to do what he can to reduce the waste from soil wash, to the minimum. No one knows so well as he, the slow process of soil formation, and the rapid rate at which the hillside accumulations of many thousands of years are removed by uncontrolled running water. The education of those who till the soil to the great importance of preserving it from wash is an overwhelmingly discouraging undertaking, but notwithstanding, one which we can not shirk.

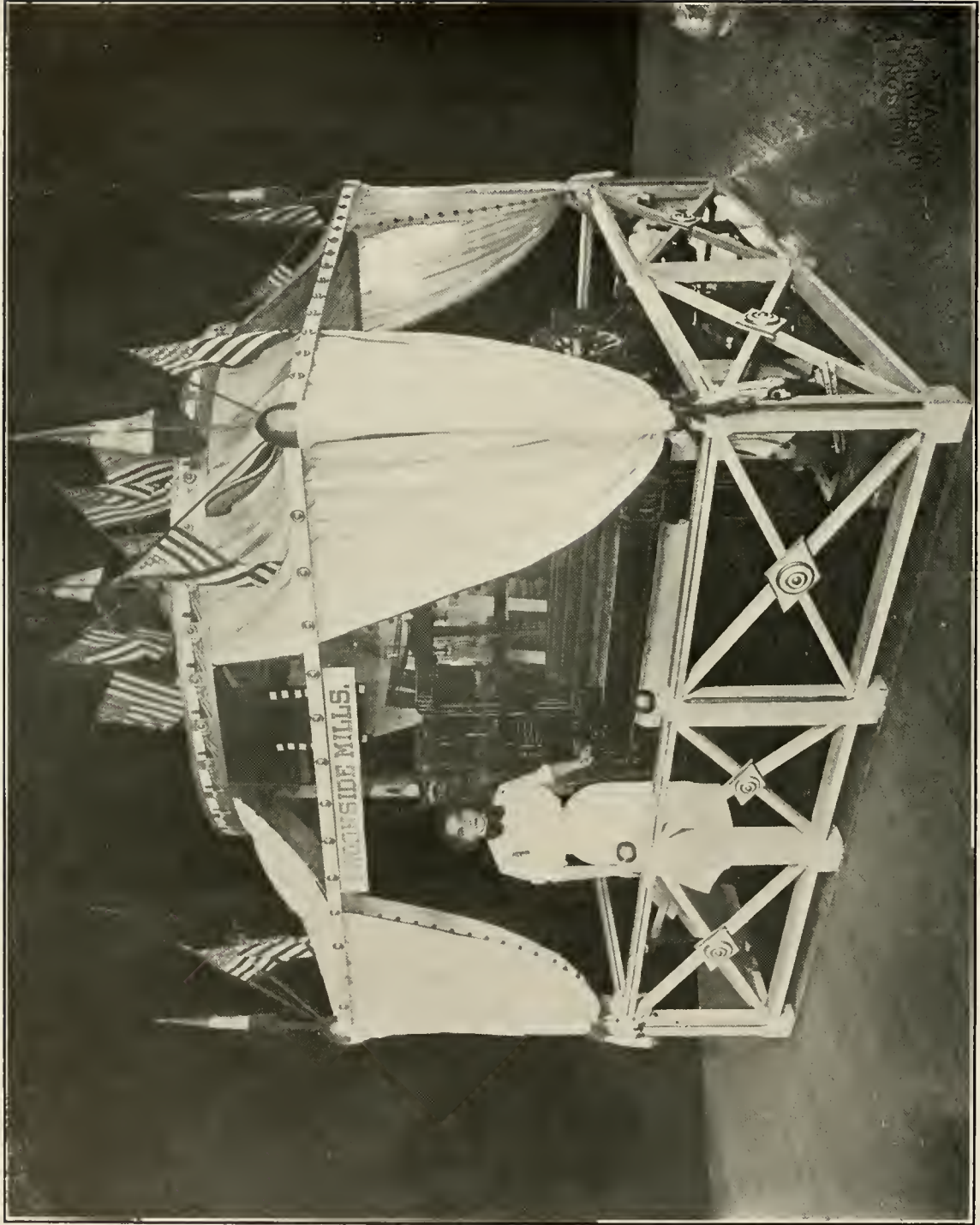
In the conservation of our resources, the state geologist, possibly above all others, should look into the future and be controlled by its prospective demands. Our rapidly increasing population; the near occupancy of all our farming and pastoral lands; the possible, even probable, depletion of the soil, natural fuels and useful minerals;—all these should have his most serious attention. In those states where

forestry legally comes within the duties of the state geologist, an additional responsibility of the greatest importance and one that often requires much diplomacy, is placed upon him.

The comprehensive efforts of the state geologist for conservation ultimately require him to do what he can for constructive statesmanship. It is best to attempt conservation through the education of those who earn their livelihood from our natural resources, but at times it becomes necessary to supplement this by legislative enactment. This does not of necessity mean that those engaged in placing natural products on the market are vandals, or even that they are indifferent to waste of material. Among our most ardent and practical conservationists at present are men engaged in farming, mining, and lumbering. The necessity for legislation may, and often does mean that the complete and economic utilization of a natural resource requires conformation to a broad and well-worked-out plan that can be put in operation in statewide or it may be inter-state proportions. In such cases, it becomes incumbent upon the state or the nation to impose such restrictions as are consistent with the most complete utilization of such product, the rights of the public, and fairness to capital.

Of such nature is the problem of water power development in the states that possess it in large amount. This is a natural resource, the future importance of which probably the most sanguine do not realize. There are two ways of having it developed. One is the haphazard way, by which any power site can be occupied without regard to whether the available power is all utilized or not, without regard to other sites on the same or neighboring streams, or without regard to where transmission lines go. This means the future non-utilization of a great deal of energy that will be sorely needed. The other is the systematic plan in which all these things are worked out in detail. This means the ultimate utilization of most of the available water power, and this can be secured only by the assistance of the state. Likewise, conservation of forests, fuel supply, and possibly the soil, need to be encouraged by legislative enactment. In part or all of these, depending upon the scope of his duties as defined by statute, the state geologist is expected to take the initiative, by deliberately calling the attention of those charged with administrative and legislative affairs to those resources which the state can aid in conserving.

The object of most legislators in supporting geological surveys is to develop the natural resources; that is, to increase the wealth of the state. We have no fault to find with this attitude, and we willingly exert our energies to that end; but geological work, whether for economic or scientific purposes, requires the strictly scientific spirit as its impelling force, without which no results can be relied upon. For this reason we must ask the public to indulge us if, occasionally, a



1910 APPALACHIAN EXPOSITION, TEXTILE EXHIBIT.

bulletin appears that does not seem to have economic importance. Such may in the end prove to be of the greatest economic value. The state geologist should be a man who can make his work practical, but he should at the same time be a scientist with irresistible inclinations toward the purely scientific problems that confront him. Only such a geologist can effectually serve a state.

CONSERVATION OF NATURAL GAS IN THE MID-CONTINENT FIELD

BY CHAS. N. GOULD.*

Petroleum and natural gas are usually associated in the same rocks. This is only what might be expected from the essential nature of the two compounds. It is a well known fact that petroleum and natural gas are but two manifestations of the same series of hydro-carbons, the one being the gaseous, the other the liquid form.

In the Mid-Continent field of Kansas and Oklahoma there are a number of gas wells in which the amount of petroleum produced is negligible. There are, also, occasional oil wells which produce little or no gas. But, taking the entire field as a whole, at least 90% of all the wells so far drilled produce both oil and gas.

This is by no means the time nor the place to enter into an extended discussion of the origin of these substances. Geologists and chemists, the world over, have long waged controversy regarding the origin of petroleum and natural gas. Partisans of the organic theory, and the chemical theory, have contended valiantly. The smoke of the battle still hangs over us. For the purpose of our discussion it does not matter, however, whether oil and gas have been formed by the action of hot water on the carbides of certain metals, chiefly iron, deep-buried in the earth, or by the long-continued distillation of animal and plant remains which were buried in the mud and ooze of prehistoric seas.

I wish to discuss briefly the subject of the hour under three heads:

1st. The location of natural gas in the Mid-Continent field and the geological condition under which it occurs.

2nd. The approximate amount of gas available.

3rd. The utilization waste and conservation of the gas.

THE LOCATION OF THE GAS.

As stated in the opening paragraph, natural gas in the Mid-Continent Field, is almost always associated with petroleum. Petroleum or natural gas have been found in paying quantities in some fifteen counties in southeastern Kansas and in twenty-five counties in eastern and northeastern Oklahoma.

The limits of the productive field have not yet been sharply determined, and

*Consulting Geologist of Oklahoma.

probably will not be for many years. The most northern points at which oil has been found in quantity is near Paola, Kansas, some 50 miles southwest of Kansas City. The most southern point is near Coalgate, Oklahoma. The southeastern part of the Mid-Continent Field extends from Oklahoma into the vicinity of Fort Smith, Arkansas. The westernmost limit, as at present developed, is at Blackwell, Kay County, Oklahoma. The area within which oil and gas have been found in commercial quantities contains approximately 20,000 square miles.

There is a region lying south of the Arbuckle and Wichita Mountains, in southwestern Oklahoma and northern Texas, that shows promise of being, when thoroughly developed, a very prolific gas field. Wells with capacity of 15 to 20 million feet a day have been drilled in and only a very small part of the territory has yet been prospected.

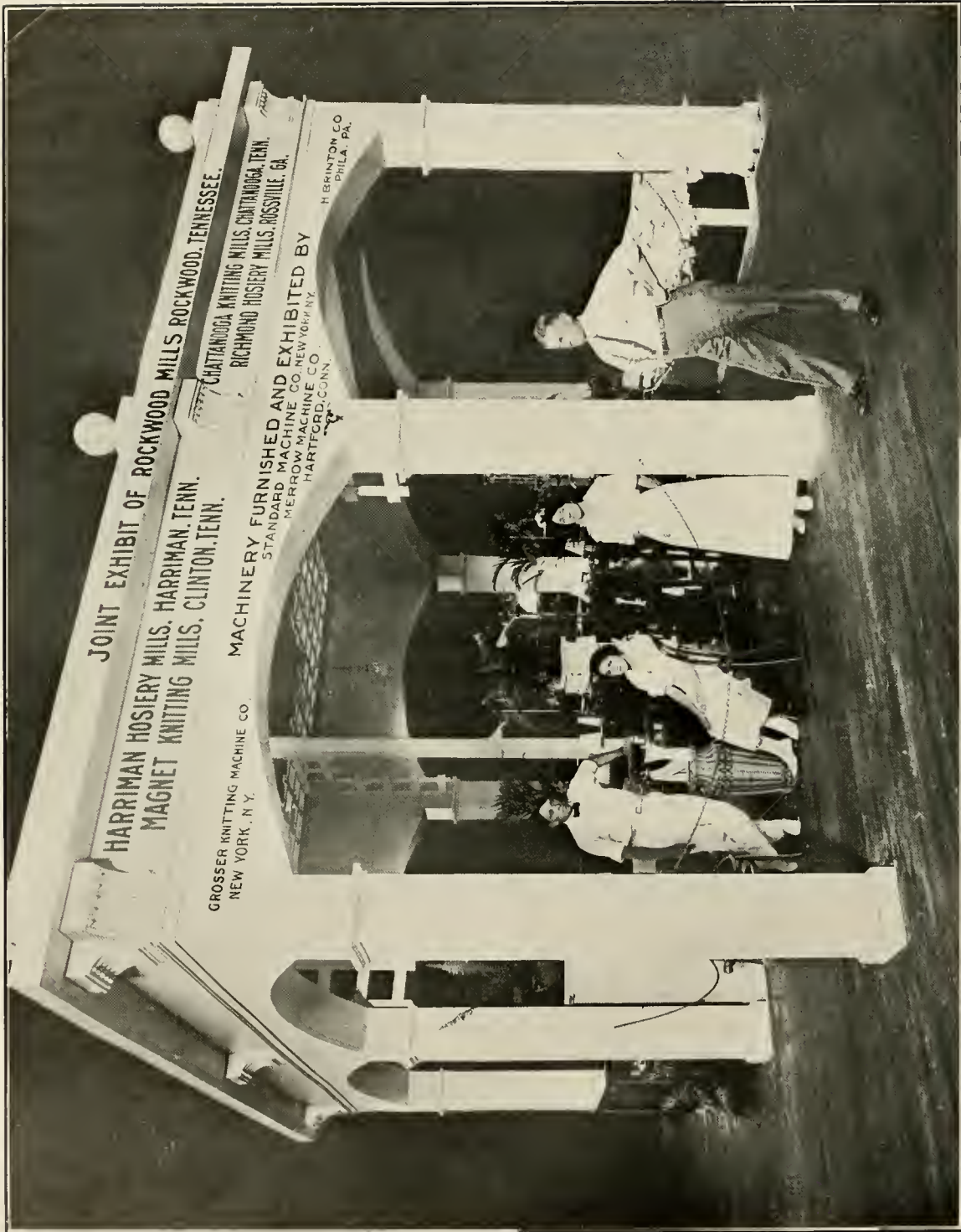
GEOLOGY OF THE GAS.

The rocks in which the hydrocarbons occur throughout the two states, consist of sediments of Pennsylvanian age which lie, usually unconformably, above the Boone chert, a limestone of Mississippian age. This limestone, popularly known to the oil men as "the Mississippi Lime," outcrops in the region east of Grand River, in northeastern Oklahoma, and southeastern Kansas. The Pennsylvanian formations, as exposed in the Mid-Continent Field, consist of alternating sandstones, shales and limestones with an occasional bed of coal. Throughout northern Oklahoma and Kansas the Pennsylvanian rocks dip west at rather constant angles, varying from 50 feet to the mile near their eastern exposure, to less than 20 feet to the mile in the western part of the area. In the southern part of the Mid-Continent Field the rocks have been folded into a series of anticlines and synclines. The oil and gas occur in the Pennsylvanian sandstones which lie interbedded with the shales.

AMOUNT OF NATURAL GAS.

At the present time there is not sufficient data to enable us to estimate accurately the amount of natural gas in the field. Practically every oil well so far drilled in the State produces gas, while at the same time many of the strongest gas wells do not contain oil. The daily capacity of a gas well in this field varies from a few cubic feet up to millions of cubic feet per day. The average sized well in the Tulsa or Bartlesville region runs all the way from 1,000,000 to 10,000,000 cubic feet per day. Wells in various parts of the State have been reported to produce 40,000,000; 50,000,000 or even 60,000,000 cubic feet per day.

Any estimate of the amount of gas actually in sight at any particular time in the Mid-Continent Field is little better than a guess. So many factors enter into



AWARDED GOLD MEDAL, NATIONAL CONSERVATION EXPOSITION.

the problem. Old wells are being rapidly exhausted while new ones are being brought in, so that, it is impossible to estimate the amount of gas actually available.

Three years ago I stated that at that time, taking into account all known data, and estimating as nearly as possible the amount of gas produced from the various wells, including those then being utilized, those shut in, and those going to waste, the amount of gas then available in Oklahoma should be somewhere between 1,500,000,000 and 3,000,000,000 cubic feet per day. A conservative approximation of the amount then in sight would probably be 2,000,000,000 cubic feet daily. I am of the opinion that this estimate is too high for the amount in sight in September, 1913. Those best informed are of the opinion that the total gas supply available is now somewhere between 1,250,000,000 and 1,500,000,000 cubic feet per day.

UTILIZATION, WASTE AND CONSERVATION OF NATURAL GAS.

The unusual development during the past two years, incident upon the greatly increased price of petroleum has brought to light a large amount of natural gas. As a general rule no one wants a gas well. Ninety-five per cent of all the wells drilled in the Mid-Continent Field are drilled for oil. If gas is encountered it is valueless unless a market can be obtained. Pipe lines, pumping stations and distributing plants are expensive. Only a few companies who have sufficient capital can engage in the gas business. Many of the gas wells discovered during the past few months are now shut in awaiting a market.

For several years after gas was discovered in Oklahoma, it remained practically unutilized. At the present time, much of it still goes to waste. This is particularly true of the casing-head gas so-called, that is, the gas which escapes from the well producing oil. Much of the dry gas, or the gas which is found in wells which produce no oil, is at the present time either piped away or shut in.

One cannot drive anywhere through the gas field of northeastern Oklahoma today, however, without being shocked at the prodigal waste of fuel now going on. In hundreds of places, gas is permitted to burn in torches or flambeaux day and night without ceasing. A plugging law, passed by the Oklahoma Legislature, three years ago, the object of which was to attempt to conserve the natural gas, has done much to check this waste. In Kansas a similar law is well enforced and only a relatively small amount of gas is wasted. At the present time in Oklahoma, a vast amount, possibly hundreds of millions of cubic feet a day of the best fuel the world has ever known, is permitted to escape into the air. For while the dry gas wells are shut in the wells that yield both oil and gas are permitted to flow unchecked.

In territorial days little attempt was made to save the gas. To cite but one instance out of a score: when gas was first encountered in Bartlesville, it was permitted to escape. The roaring of the gas was so persistent that people in the town could not sleep at night, and so the gas was carried in pipes outside of the city limits, where it might escape without the noise disturbing the sleepers.

Three years ago the waste throughout the field was much greater than at the present time. I quote from a periodical published in February, 1910:

"A party of eastern investors took a run down to the new Preston oil field, near Okmulgee. While there accurate measurements were made of the gas well recently brought in, and it was shown to be good for 36,000,000 cubic feet per day. This is the largest gas well ever developed in the southern Creek country, and one of the largest that has been completed recently in Oklahoma. Its magnitude was a surprise, even to the owners of the well. It has been running wild ever since it was brought in and the roar of the escaping gas can be heard for miles. The owners are purposely allowing the gas to go to waste with the belief that the well will finally drill itself into oil."

It should be said that the gas from this well has long since been exhausted, and the oil now produced does not exceed five barrels per day.

It is greatly to be regretted that some really effective plan has not been devised to curtail the prodigal waste of this valuable fuel, which has been going on in eastern Oklahoma and southern Kansas, for the past ten years, and which is still in progress. For this there is no excuse except the cupidity of man. The well having been drilled, in search of oil, and gas having been encountered, for which there is no immediate demand, it is easier to pull the tools, letting the well stand open, permitting the escape of the gas, than it is to plug the well. In many cases, as the one above cited, a gas well with a capacity of many millions of cubic feet per day is permitted to flow unchecked in the hope that it will some day drill itself into oil. The gas is all wasted to save the small amount of oil. When it is remembered that 6000 cubic feet of gas has a fuel value equivalent to a barrel of oil, it will be understood that 6,000,000 cubic feet of gas equals a thousand barrels of oil. In many cases the equivalent of 1000 barrels of oil is permitted to go to waste each day in order to save ten or twenty barrels of oil. For these reasons Oklahoma and Kansas are day after day losing hundreds of thousands of dollars worth of valuable fuel, which should be saved for future generations. This waste is nothing short of criminal, and it is high time that the people were awakening to a realization of conditions.

Gas from the heart of the Mid-Continent Field is being piped in all directions. Lines lead northeast to Topeka and Kansas City, east to Joplin, northwest to Wichita, southwest to Oklahoma City, and southeast to Muskogee. In the States

of Kansas, Missouri, and Oklahoma there are over 215,000 different consumers supplied with gas from the Mid-Continent field.

A brief history of the development of the gas industry in Oklahoma, citing a few of the most striking specific instances, may aid in the understanding of the problem.

The first natural gas pipe line in the Oklahoma fields was built in 1903-4 from the gas fields near Independence, Kan., and from which point a line ran to Kansas City, Mo., taking in various cities and towns along the line. At that time there was an enormous amount of gas developed in the Kansas pool, the open flow volume from all the wells totalling over one billion five hundred million cubic feet of gas per day. For the first few years very little attention was paid to the field operation except to the matter of drilling on leases in order to hold them. The idea of a shortage of gas at that time was never dreamed of. The Company, urged on by the people of the various cities within reasonable distance of the pipe line, kept laying branch lines into practically all the cities and towns of any importance in southeastern Kansas. This was a natural and proper development of the industry, but the evil day came when financiers began to build large smelters and cement plants at various points adjacent to the gas pool. These smelters and cement companies built their own pipe lines into the gas pool and for three years their demand upon its contents was greater than that of the Gas Companies. The gas was sold for only a few cents per thousand and this enormous field was very quickly depleted. This evil was not entirely the fault of the smelter and cement interests. They could not be blamed for building their plants where they could get the cheapest fuel. The management of the Gas Companies realized the dangers of such an enormous drain upon the field but they were unable to keep the smelters out. The result is now very apparent. Today this Kansas pool has very little gas and it can only be obtained by the use of large and expensive compressors.

In 1909 the gas companies in Kansas began to look elsewhere for a supply and the only available source was to the south in Oklahoma. When they began to extend their line into that region they were speedily stopped by the state authorities, who claimed that the gas in Oklahoma could not be transported outside of the state. After a long hard fought legal battle, which was finally terminated by a decision of the Supreme Court at Washington, the gas companies were able to pipe the gas out of Oklahoma. The smelters and cement manufacturers immediately followed the natural gas companies into Oklahoma. The pool near Caney, a few miles south of the Kansas state line was the first to which the various interests extended their lines. This pool hardly lasted a year. The pipe lines were then extended farther south to what is known as the Hogshooter pool, about twenty-five miles south of the Kansas line. For the past three years these big trunk lines

have been taking out of the pool an average of nearly 200,000,000 cubic feet per day. This pool has been unable to stand this enormous drainage. The rock pressure has decreased very rapidly and at the present time about one-half of the wells have been abandoned and the field will only produce about 10 to 15% of its original capacity, and in order to produce that quantity, it must be done with the aid of large compressor stations. During the past year there have been three large compressor stations erected in the Hogshooter pool, and it is an open question today whether there will be enough additional gas to pump from the field to pay for erection of these stations. The smelters and cement companies have discontinued the extension of their pipe lines into Oklahoma and it is hoped, for the benefit of the people of that state, as well as in Kansas, that these companies will use other fuel than natural gas in the future.

In addition to the Caney and Hogshooter pools, which have already been mentioned, gas was discovered at Collinsville in the year 1906. The pool covered an area of about one mile in width and three miles long. In the fall of 1909 lines were extended into this field, and in the fall of 1911 two smelters were erected at Collinsville, which demanded ten million cubic feet of gas per day from the pool. During the year 1912 it is estimated that thirty million feet of gas was taken out by the different companies each day. The rock pressure and volume dropped off rapidly and only twenty million feet per day can be procured at the present time. It is estimated that the life of this pool will not exceed two years more.

The Osage gas pool, located in the Osage Nation, was first discovered in the year 1901. In 1903 the gas was piped to Tulsa. The rock pressure in this field, which originally was 600 pounds, is now down to 150 pounds.

The Glenn pool and Tancha gas fields were discovered in 1907. A number of gas wells drilled into this field range in volume from two to thirty-five million feet, but declined or became exhausted very rapidly, due to the large amount of gas that was allowed to escape through producing oil wells. Very little gas from this pool was marketed.

A pool was discovered south of Mounds in 1907. Four wells were drilled which had a volume of from eight to ten million feet. With one exception these wells have been exhausted and abandoned.

There has been a number of gas wells drilled in the Bald Hill pool. Several of these wells came in with a volume of from ten to thirty million feet. The pressure and volume rapidly declined, due to the large amount of gas wasted through the oil wells. No gas has been marketed from this pool.

The Morris pool was discovered in the year 1907-8. Both gas and oil were produced. The only gas marketed from this field was conveyed to the towns of

Okmulgee and Morris. The rock pressure and volume at this present time is about one-half the original amount.

In the Tiger Flats pool, about nine miles southwest of Okmulgee, two gas wells were drilled in the year 1911. At the present time these wells are shut in and no gas has been marketed. Several dry holes have been drilled to the south and west which indicated that the pool does not cover a very large area.

At Winchell is located the Henryetta or Schulter pool, in which a number of gas wells have been developed in the same sand from which oil has been produced. These wells range from five to twenty-five million feet in volume. The pressure is diminishing very rapidly, due to the waste of gas by producing oil wells.

Within the past ninety days I was informed by a man, conversant with conditions, that he stood ready to contract to deliver 500,000,000 cubic feet of gas per day from Okmulgee County. Very little of the gas in this county is now being utilized. The greater part of it is shut in.

The latest gas pool discovered in Oklahoma is known as the Cushing field. From the present developments in this field the sand looks quite favorable to cover a large area of gas-producing territory. The present production is estimated at 130,000,000 cubic feet per day. Owing to the fact that several strata in the Cushing field, produce both oil and gas, it is impossible to estimate how long the gas will last in this field. In all probability it will suffer the same fate as that of the gas in other oil pools developed and operated in Oklahoma.

The matter of the conservation of the gas has recently been taken up by the United States Government. Much of the lands upon which gas is found belongs to the Indians, who are still government wards. Dr. Holmes, of the Bureau of Mines, with his assistants, has been conducting experiments along the lines first successfully carried out in certain California fields.

The greater part of the work so far done along this line has been in the Cushing field. Some of the upper sands contain large amounts of gas and but little oil. The drillers do not want the gas, cannot use it, but do want the oil which is contained in the lower sands. The problem is to shut in this upper gas and permit the driller to proceed to the oil sand below.

The methods employed by Dr. Holmes consist of "mudding in" the upper gas sands. That is to say, when the sand is encountered mud is forced down the well and back into the sands, the intention being to fill the pores in the sand rock, and prevent the escape of gas. As might have been expected the first experiments were only moderately successful, last attempts have shown the plans to be feasible. It is believed that in most cases the gas may be shut in by this method.

No one regrets the waste of natural gas going on in the Mid-Continent Field more than the natural gas men themselves. They are desirous of conserving and using all the gas available, but, as stated above, the development has been so rapid and so many new fields are constantly being opened up, that the gas men have difficulty in extending their lines to the new wells.

One method of conserving the gas which should perhaps be discussed in this place, is in the manufacture of gasoline. It has been found that much of the gas coming from oil sands contains a considerable amount of gasoline in the gaseous form. In rare instances is gasoline found in the gas from wells which do not contain oil. In other words "dry gas" so-called contains little or no gasoline.

Throughout a number of the oil pools in the Mid-Continent Field gasoline plants have been installed. The casing-head gas, that is to say, the gas which comes from around the casing, is run into a compressor, condensed and liquified. Considerable difficulty has been encountered in the manipulation and marketing of this gasoline. It has been found necessary to mix with it a certain amount of naphtha, which product, however, can easily be purchased from the refiners in the field. Experiments have shown that from three to five gallons of gasoline may be manufactured from each thousand cubic feet of casing-head gas. There are now nearly twenty gasoline plants in active operation in the field and more are being built.

The future of the conservation of gas in the Mid-Continent Fields holds much of promise. While it is doubtless true that as new fields are developed very much natural gas will still go to waste, and while it must be understood that much remains to be done in the way of the utilization of this product, we can but congratulate ourselves that conditions are much better than in former years. As new oil fields are developed much gas will continue to escape before pipe lines can be brought in. This is particularly true in the outlying districts where new wells sometime come in many miles from any lines. On the other hand the practical exhaustion of the gas in Kansas, and the larger fields in northern Oklahoma, has taught the gas companies the absolute necessity of attempting to conserve all the gas in sight. The gas companies are spending much money in building new lines and installing machinery.

The work of the Bureau of Mines in teaching the drillers how to shut in the gas in the upper sands, the utilization of casing-head gas for the manufacture of gasoline, and the activities of the companies in attempting to utilize all the gas in sight, are all hopeful signs.

A good beginning has been made. Much yet remains to be accomplished, but the results of the past few months lead to the hope that the time is not far distant when the prodigal and unchecked waste of nature's most priceless fuel in the Mid-Continent Field will cease.

OREGON PROBLEMS OF RESOURCE DEVELOPMENT

BY H. N. LAWRIE.*

The problem of conservation is probably the most important for national consideration at the present time, for upon the wisdom of the use of our natural resources depends the future prosperity and well being of our nation. The public brain is now much confused since so many conflicting and varying views of this subject have been presented, and is therefore in need of clarification. The result of this meeting will be most effective, if it succeeds in concentrating these many diverse opinions held with regard to conservation, into a set of principles which will become a unit in the public brain, and henceforth for this reason a true guide for operation both independently and by way of innovations in legislation, should the same be found necessary. With this idea in view, it is my privilege to convey to you, the most recent tribunal assembled for joint debate upon this subject of conservation, opinions based on Oregon problems of resource development.

Advancement of Science a Substantial Aid to Conservation: Mining, milling and metallurgical practice has made a tremendous advancement in the past decade and every improvement has resulted in the conservation of the natural resource. In Oregon, the elimination of natural waste, through lack of development, is the chief cause for study. With sixty-one million acres in total area, and but four million acres in cultivation, it is evident that there has been but a small development. Since the human, agricultural, timber, water and mineral resources overlap, it is apparent that a discussion of conservation must take into consideration the basic elements involved in each. An equilibrium of development of the five factors is imminent to the ideal of economics of production, and where one of the resources of the five must be sacrificed, in order to render possible the development of one of the remaining four, it is reprehensible and to be condemned. Examples: First: The destruction of agricultural pursuits by smelter fumes or stream pollution. Two: An excessive power development in any one water-shed, thereby depriving the valley land from irrigation. Three: A waste of the timber resources by slashing and burning as a means of reclaiming land for agricultural use. Four: A consumption of coal for the generation of energy when hydro-electric energy is available. Five: A waste of human energy, due to inefficient

*Chairman Oregon Bureau of Mines and Geology Commission.

labor application, or the farming of lands capable of increased production with fertilization, irrigation, drainage or all three combined.

In many instances, the force of necessity and the limits of investment, hold sway. But should we consider the five well defined quantities in this equation of equilibrium, and so co-ordinate the five functions of development, the risk of error would be limited and the conservation of our natural resources become a certainty.

The Development of Energy; Hydro-Electric vs. Coal: Of the sixty-six million available hydro-electric horse power in the United States, but five million are developed at the present time. This type of installation is being rapidly extended, which indicates that the future will demand less coal for the generation of energy and the conservation of the coal resource will result. Outside of locomotive haulage, twenty-six million horse power is annually generated by coal. There is available, therefore, more than double this horse power equivalent in terms of hydro-electric power now going to waste. It is apparent from these figures and with the present acceleration of hydro-electric operations that there is no imminent danger of the premature consumption of our coal resources. The chief danger lies in monopoly on the one hand, and the limitation of development, due to inefficient laws, both national and state, on the other. The Oregon water code was created with the idea of limiting monopoly, and to serve the interests of power and irrigation development with equal efficiency.

Interstate Streams: Much of the water power in the west must be derived from inter-state streams. It is not too early to call attention to the possibility of error in administering the water rights of interstate streams. It has been common practice to consider the development of such streams by sections, rather than to map out the water shed as a whole, when considering any particular project. Any states which contain sections of the water shed of the same stream should combine by legislative appropriation to map out the entire water shed with respect to power and irrigation development. Otherwise, the principle of conservation as represented by the equation of equilibrium would be sacrificed, and a possible resource crippled or lost. At the 1913 legislative assembly of Oregon and Washington, a joint appropriation of \$15,000 each was voted, to investigate the Celili Falls Power Development. At this point in the Columbia river, it is estimated two hundred and fifty thousand horse power will be available, and that the same could be sold for \$9.00 per horse power per year. It is evident from these figures that a tremendous industrial development could operate on such cheap power, and that this would require an extremely large capital investment in proportion to the original investment in the power plant. An unrestricted private corporation with high charges would limit seriously the influx of industry which is not desired by either state.

The Equation of Equilibrium Must be Controlled by Nation and State: From experience it is not practical for the capitalist or the corporation to consider the elements of the equilibrium equation, and hence it is clear that only by federal and state control we may hope to combine the most logical development of our natural resources with the highest degree of efficiency. It is also imperative, considering our premise that there should be the closest co-operation between the corporation entering upon a project—the state commissions in control of their respective branches of resource development, and especially the latter, with the Departments of the Interior and Agriculture.

Resource Commissions of Oregon: The result of constructive legislation. These commissions represent the state control of the Elements of the Equation of Equilibrium as applied to the development of natural resources. These commissions also become agencies through which close co-operation with government departments and bureaus is made possible.

1. *The Oregon Conservation Commission; Duties:* To ascertain and make known the natural resources of the state; to co-operate with the National Conservation Commission to the end, that the natural resources of the State may be conserved and put to the highest use.

2. *Oregon State Immigration Commission; Duties:* Transaction of immigration matters for the state. Has issued the Oregon Almanac, a statistical reference book and general information for the guidance of prospective settlers.

3. *The Desert Land Board* controls reclamation and enters into contracts with the Secretary of the Interior based on acts of Congress:

4. *State Board of Forestry, State Forester in Charge; Object*—Protection State Forest Lands. To illustrate the co-operation of the state with the Federal service, I would like to call attention to the fact that the United States Forester in charge at Portland Oregon is a member of this Commission.

5. *Oregon Bureau of Mines and Geology Commission* has an appropriation of \$40,000 to conduct research of the mineral resources of the state with special reference to their economic products; administered by a commission of seven members. The President of the University of Oregon and President of the Oregon Agricultural College are Ex-Officio members. Three must be technically qualified and the remaining two members must be actively engaged in mining. Eight Committees were appointed from this personnel.

First, Metal and hydraulic mining,

Two, Ceramics,

Three, Fuels, salines and fertilizers,

Four, Road materials,

Five, Forestry relations,

Six, Conservation,

Seven, Transportation,

Eight, Finance.

The Chairman of each committee is a man well seasoned by experience in the work coming under his supervision. A Director of the Bureau of Mines was selected by the Commission who assumes the active charge of all field parties. This season we entered into two co-operative contracts with the U. S. Geological survey. These were mutually advantageous and the state wins the enlarged benefit.

Oregon's National Forest: Twenty-four per cent of Oregon's area is in the national forest. Forty-three per cent of this area is above the five thousand foot altitude, about 17 1-2 per cent between the four and five thousand foot contours, and nine per cent from three to four thousand feet above the sea level. The topography of this reserve area being very new is rough and precipitous. The area possible of farming is therefore limited, and not attractive on account of its remoteness from transportation. We have heard many complaints since the creation of this forest reserve, on the ground that it withheld agricultural land from settlement. This analysis shows that such argument is erroneous. These same people urge that the state should own this national forest. The Oregon Conservation Commission made a thorough research of the problem and their conclusions are as follows:

"This Commission does not wish its position misunderstood. From a selfish standpoint, if from no higher motive, as citizens of this state directly interested in its speedy development, it favors the widest and wisest use of our natural resources. It believes all agricultural land should be open to the settler, and every encouragement given the prospector. It believes in maintaining in every possible way the greatest possible opportunity to the individual striving to better his condition. To do this, we do not believe the interest of the public should be deliberately sacrificed under the guise of development or under the temptation for immediate personal gain. The forests are a public asset, a public resource. They fill a function in nature's plan, that necessarily not only now but always will be impartial in the orderly and growing life of our nation. They will not only serve, if conserved, to furnish forever a never failing source of supply of lumber, but under God's providence serve even more useful purposes in other directions.

"The sole question is what agency will best secure results. The forests are as national as the rivers they help maintain, and as broad in their influence as the plains for which they store the life giving water. It would seem that every one except those directly interested in profiting thereby has all to lose and nothing to gain by a transfer from nation to state.

"In our opinion the proposition is wrong in principle and would be disastrous in results. The time may come when such a step may be justifiable and proper, but this is an eventuality not necessary now to discuss.

"This Commission would fail in its duty and be unfaithful to the trust imposed in it did it not defend this heritage of all the people against any attempt, no matter how well meaning, for its spoliation. In the interests of the whole people we submit that this great resource should remain public property, used and controlled in the interest of the public, and all who believe this should resist all attempts in whatever guise they appear, to transfer the national forests to the states, as the first step towards a complete private monopoly of the forests, and the first gun of a direct attack upon true conservation."

Mineral Resource of Forest Reserve: For the same reasons that the agricultural possibilities in the forest reserve are limited, there is more of a general occurrence of mineral resource. The policy of the forestry service as outlined in their report to the American Mining Congress early this year, would indicate that they are in favor of assisting the prospector by the closest co-operation and to replace any enmity which might have incurred thro' a misunderstanding of his true position with regard to resource development. He is now regarded as an asset to assist in protecting the public domain, rather than an interloper seeking to misappropriate the national forest by mineral filings. Since March 2nd, 1907, no reserves have been created in Oregon and the policy to sell the ripe and burned over timber has been inaugurated with good effect. If there has been any retardation in the resource development on the public domain it has been due to inefficient law rather than mal-administration of the law. Some years ago, settlement was made difficult through delays which arose from precautions, the Department of the Interior and the Forestry Service found it necessary to employ to protect the public domain from the land speculator, and thereby conserve it for the use of the settler for family support.

The present administration: The people of Oregon are extremely well pleased with the Honorable Franklin K. Lane, Secretary of the Interior. He is a man extremely well versed in problems of natural resource development, and judging from his speeches on the subject of reclamation, while in Oregon, we were thoroughly convinced that his would be an extremely active administration for development. At a banquet given in his honor, at the Commercial Club of Portland, Oregon, the Hon. Oswald West, Governor of Oregon, made the following remark: "That in the course of the past four months, more transactions with the Department of the Interior had been culminated than during a period covering the past four years." This indicates that our Secretary of the Interior has the right kind of scissors to cut red tape, which has been previously a menace to our development.

Suggestions to Aid Development: It is not for me to essay any changes in the laws governing our natural resources, but I would like to place before you for consideration a few suggestions:

1st. The burden of classification of our public domain should not rest with the applicant who is desiring to win title. The work of classifying the public domain should be accelerated as rapidly as possible. The classification should be comprehensive, and if practicable, should include the possibilities of agriculture, timber and mineral development at the same time.

2. Complications arising from the Apax law are numerous, and have a marked tendency to withhold valuable deposits from development. There should, therefore, be some revision of the law governing mineral patent.

3. The prospector should find relief in a law which would enable him to file the possible extension of his vein, which does not out-crop land adjacent to his discovered claim. Much development is either prohibitive, or extremely expensive, due to the absence of such protective rights, and often an injustice to the original locator results.

4. A system of federal co-operation with the prospector should be developed, in order that he might devote his time to the work of prospecting, rather than that of trail cutting. The west is a difficult country at best, in which to prospect, and this Federal assistance would mean much in opening up the mineral resources.

5. The states should be urged to provide winter courses in mineralogy and elementary geology for the benefit of the prospector, thereby increasing his inefficiency, and so stimulate the development of the mining industry.

Thanking you for your close attention, I respectfully submit these suggestions for your consideration.

CONSERVATION AS APPLIED TO METHODS OF MINING PHOSPHATE

BY E. H. SELLARDS.*

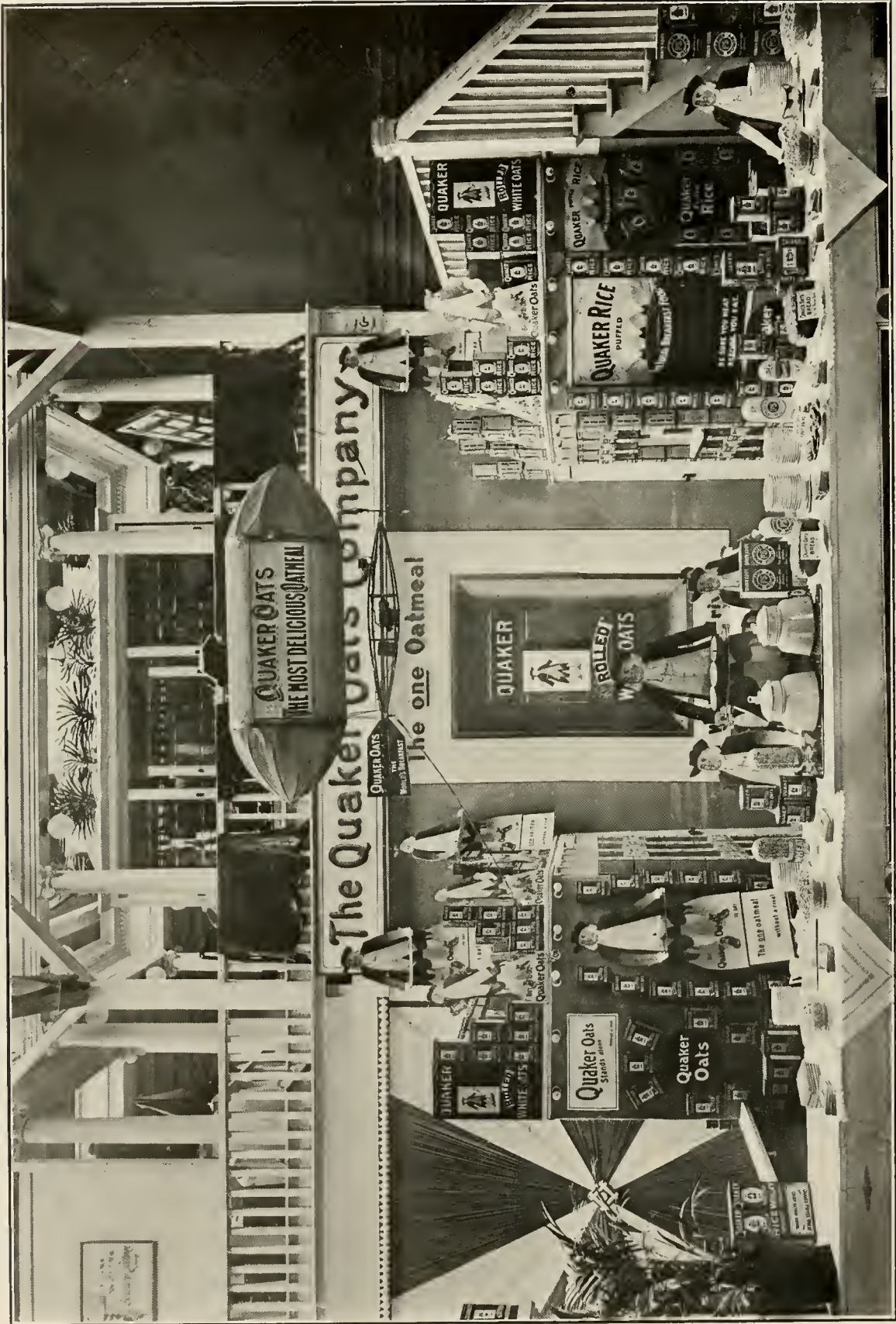
The mining of phosphate in Florida, and I believe the same applies to other fields, is carried on by companies well equipped for the business, and managed by men well trained for this work and ingenious in the methods of producing phosphate rock on an economic basis. It is, therefore, in no spirit of criticism or fault finding that I approach this subject of conservation as applied to phosphate mining. In fact the present mining practices are a necessary outgrowth of existing conditions. The agricultural interests of the country on the one hand demand phosphate rock, while on the other hand economic necessity demands that the mining of the rock be carried on, upon a money making or at least a self-sustaining basis. That there is a great waste in phosphate in connection with the mining operations is a fact well known to the miners and much regretted by them. Under these conditions it becomes the duty of the scientific investigator, without criticism of existing conditions, to find if possible economic methods of reducing the waste or of utilizing the waste material.

I shall speak more particularly of the Florida fields with which I am familiar, and discussing the Florida conditions I wish to say, that no class of miners will more gladly welcome suggestions nor more promptly apply methods reducing waste than will those engaged in mining the Florida phosphates.

It is always more agreeable to bring to an assembly of this kind the solution of some difficult problem. In this instance, however, I must content myself with the statement of a problem for which the solution is yet to be found.

Two kinds of phosphate rock are now being mined in Florida, the land pebble and the hard rock. The deposits which carry the hard rock phosphate are found over a considerable extent of country in the western part of the central peninsular Florida. The area includes the southern part of Columbia and Suwannee Counties, the western part of Alachua and Marion Counties, the eastern part of Levy, Citrus and Hernando Counties, and the northern part of Pasco County. From north to south the hard rock area extends through a distance of about 100 miles. Its width from east to west is variable. The greatest width is found in Marion County, almost the whole of the western half of this county being included

*State Geologist of Florida.



ONE OF THE ATTRACTIVE FOOD PRODUCTS EXHIBITS AT 1910 EXPOSITION.

in this belt. West of the Suwannee River a limited amount of hard rock phosphate has been found in Lafayette, Taylor and Jefferson Counties. The mines now operating are found in a narrow belt reaching from Alachua to Hernando Counties. Mining has been carried on continuously in this section for more than two decades. Forty plants under the ownership of fourteen companies were operating in this section at the beginning of the present year.

The land pebble phosphates are found in southern Florida in Polk and Hillsboro Counties, and, as will be explained later, are of a different type from the hard rock deposits.

The matrix in which the hard rock phosphate is imbedded is extremely variable. The formation includes a mixture of materials from various sources and of the most diverse character, further complicated by pronounced chemical activity within the formation itself. The prevailing phase of the formation is feebly coherent, more or less phosphatic, light gray sands. Aside from these sands the principal materials of the formation are clays, phosphate rock, flint boulders, limestone inclusions, pebble conglomerate, erratic and occasional water-worn flint pebbles, vertebrate and invertebrate fossils.

The gray sands may be observed in every pit that has been excavated in this section. Moreover, from drill and prospect holes it is known that these sands occur very generally over the intervening or barren area. The sands are of medium course texture, the grains being roughly angular. The amount of phosphate associated with these sands is variable. Upon prolonged exposure, as seen in numerous abandoned pits, these sands oxidize at the surface, assuming a pink or purple color. When affected by slow decay and by water, carrying more or less iron in solution, they become reddish or ochre yellow in color.

The clays in this formation occur locally as clay lenses imbedded in the sand, or separating the sand from the phosphate rock, or overlying the phosphate rock. The clays are often of a light buff or blue color. When lying near the surface, however, they often oxidize to varying shades of red. The phosphate boulders seem to have a tendency to group around and to be associated with local clay lenses. Frequently the productive pit gives place laterally to barren gray sands.

Flint boulders occur locally in this formation in some abundance, and occasionally phosphate pits that are otherwise workable are abandoned on account of the number of flint boulders encountered. The flint boulders are usually oval or somewhat flattened in shape and are of varying size, some weighing several tons. The exterior is usually of a light color. Some of the boulders are hollow and occasionally the cavity is filled with water; other boulders are solid, compact and of a bluish color throughout. Occasional limestone inclusions are found in these deposits.

Phosphate rock, although the constituent of special economic interest, nevertheless makes up a relatively small part of the formation. The phosphate in these deposits is found as fragmentary rock, bolder rock, plate and pebble rock, soft phosphate and phosphatic clays. The boulders are often of large size, in some instances weighing several tons, and not infrequently it is necessary that they be broken up by blasting before being removed from the pit. It is also necessary to operate a rock crusher in connection with all hard rock phosphate mines to reduce the larger pieces of rock to a size suitable for shipping. The soft phosphate, the very fine pebble and the phosphatic clays, are unavoidably lost in mining. The relative amount of material that it is necessary to handle to obtain a definite amount of phosphate is always variable with each pit and with the different parts of any one pit. The workable deposits lying within this formation occur very irregularly. While at once locality the phosphate may lie at the surface, elsewhere it may be so deep as not to be economically worked; while a deposit once located may cover more or less continuously a tract of land some acres in extent, elsewhere a deposit appearing equally promising on the surface, may in reality be found to be of a very limited extent. As to location, depth from surface, extent into the ground, lateral extent, quantity and quality, the hard rock phosphate deposits conform to no rule. The desired information is to be obtained only by extensive and expensive prospecting and sampling.

The thickness of the phosphate bearing formation is as variable as its other characteristics. It rests upon the Vicksburg Limestone, the top surface of which owing to solution by underground water, has become extremely irregular. The limestone projects as peaks into the phosphate formation. In Citrus County the phosphate bearing formation is known to reach a thickness of from 75 to 100 feet. When of this thickness, the phosphate is worked to the permanent ground water level by the dry pit method of mining, and is then mined from 40 to 50 feet below this level by the floating dredge. In the northern part of the area the formation is as a rule much thinner, and is worked almost entirely by dry pit mining.

The materials lying above the phosphate, the over burden, include pale yellow incoherent sand underlaid frequently by a red sandy clay commonly known as hardpan. The superficial incoherent sand varies exceedingly in thickness. Five to fifteen feet may be given as an average as seen in the pits, although a thickness of as much as thirty feet has been observed. The red sandy clay has sufficient coherence to stand as a vertical wall in mining. This clay is frequently absent and when present varies greatly in thickness.

The land pebble phosphate found in Polk and Hillsboro Counties differs in its manner of occurrence from the hard rock deposits. The land pebble formation includes a lower phosphate bearing member and an upper sand or sandstone mem-

ber. The lower member of the formation contains the workable phosphate deposits. The upper member forms the over burden which must be removed in mining. The phosphate bearing member is more or less definitely stratified, the stratification line being frequently continuous along the full length of the pit, a distance of a half mile or more. Elsewhere the stratification is irregular and cross bedding is evident. Although variable from place to place this part of the formation has an average thickness of from 8 to 12 feet; its maximum thickness is possibly 18 or 20 feet. The formation consists of clay, sand, soft phosphate and pebble phosphate.

The indurated sand above the phosphate has an average thickness of from 10 to 14 feet. Its maximum thickness, however, is much greater. On the other hand owing to decay and erosion these sands are in places much reduced and may be locally entirely absent, the phosphate lying at the surface. Usually the sand contains sufficient admixture of clay to give it coherence. Under these conditions it oxidizes red near the surface. While this is the prevailing phase of the sand it is nevertheless subject to considerable variation from place to place. Not infrequently the sand is firmly cemented forming the so-called "hardpan" which gives much trouble in prospecting and frequently necessitates blasting in mining. In places the sand has a calcareous or phosphatic cement. Locally it varies also to an indurated rock with innumerable small cavities which give a vesicular appearance to the mass.

The methods of mining are of chief importance in this connection. The open pit method is used entirely. In the land pebble section the over burden is removed either by hydraulics or by the steam shovel. In the hard rock section the over burden is now removed largely by hydraulics, although in the earlier stages of mining such primitive methods as team and scraper or horse and dump cart were used.

The phosphate itself in the land pebble section is taken up almost entirely by hydraulics, being dumped direct to the washer. In the hard rock phosphate section in the dry mines the phosphate is loaded on to tram cars by pick and shovel, these being drawn by cable to the washing plant. In the dredge mines the phosphate is lifted by dipper into the dump carts and it is then drawn by cable to the washer. It is thus seen that all materials of the matrix is passed through the washers.

The washers in use are the revolving log washers in which the phosphate is pushed forward by steel blades meeting streams of water flowing from the upper end of the washer. In the process of washing, all of the finer materials of the matrix including the same, clay particles, soft phosphate and fine pebble phosphate are carried out with the waste. That there is a large amount of calcium phos-



UNDERWOOD TYPEWRITER EXHIBIT
WINNER OF GOLD MEDAL, NATIONAL CONSERVATION EXPOSITION.

phosphate carried out with the waste is well known. The phosphate discarded includes the soft phosphate the phosphatic clays and the very fine pebble phosphate. The amount lost varies in different mines and under different conditions. After reaching the dump there is also more or less mechanical separations of materials. Two samples taken somewhat at random from the phosphate dumps in the hard rock region showed upon analysis 21.81 and 26.50 per cent calcium phosphate respectively. Two samples from the dump of a plate phosphate mine give the following analysis: Analysis by P. Jumeau.

	No. 1.	No. 2.
No. 1 Silica	58.95	60.10
Iron and Alumina	11.70	11.20
Calcium Phosphate	27.92	26.80
Not accounted for	1.43	1.90

The manager of the plant from which these last samples came estimates that approximately four tons of matrix is handled in order to obtain one ton of phosphate rock, 77 per cent calcium phosphate. In other words, of the material taken from the pit three-fourths carrying about 27 per cent calcium phosphate goes into the dump, while one-fourth carrying 77 per cent calcium phosphate is saved. From this it would appear that of the calcium phosphate taken from this pit about one-half goes into the dump.

From the land pebble region a sample of phosphate mud deposited on the edge of the waste pond gave the following analysis: Analysis by P. Jumeau.

Calcium Phosphate	45.69
Silica	27.10
Iron Alumina	2.48

From tests made in one of the land pebble mines Mr. P. Jumeau concludes that about five per cent of the material going to the waste pond can be recovered by using a twenty mesh screen, and that the material thus saved will analyze 74.4 to 75.5 per cent calcium phosphate. By using forty mesh screen 20 to 35 per cent of the material is obtained containing from 51 to 61 per cent calcium phosphate.

The amount of phosphate now being produced in Florida approximates two and a half million tons annually, and it is probable that fully as much more is discarded in the process of mining. It is true that a large part of the phosphate thus discarded is too high in alumina to be used in manufacturing fertilizer under exist-



DRIVEWAY IN FRONT OF MAIN BUILDING.

ing conditions. It is, however, none the less desirable that methods be devised by which the phosphoric acid can be saved. The lines of investigation that seem to be open include mechanical devices with which to recover the very fine pebble phosphate, and the search for a sufficiently cheap solvent, to make it practicable to dissolve out the calcium phosphate from the phosphatic clays and to reprecipitate it in a purer condition.

PARTIAL INVENTORY OF THE MINERAL RESOURCES OF GEORGIA

BY S. W. McCALLIE.*

Georgia, often designated the Empire State of the South, comprises an area of nearly sixty thousand square miles. It is the largest state east of the Mississippi, being nearly equal in area to the six new England states, namely: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, and Connecticut. It is more than one-fourth the size of Germany, one third that of the entire empire of Japan, and larger than England and Wales combined. From north to south its length exceeds three hundred miles, while its greatest width from east to west is approximately 250 miles. The southern part of the state, known as the Coastal Plain and comprising an area six times as large as Massachusetts, is comparatively level with an average elevation of about 150 feet above sea level. North of the Coastal low land is the Piedmont plateau, an elevated area varying from 300 to 1,500 feet, while still farther to the north is the Appalachian Mountain region where many ridges and peaks attain an altitude of from 4,000 to 5,000 feet above sea level.

All of the greater time divisions of geological history are represented in Georgia with only one or two exceptions. To the south, embracing the entire Coastal Plain, occur the Quaternary, the Tertiary, and the Cretaceous formations with their extensive beds of limestones, clays, marls and sands. To the north, forming the Piedmont Plateau region, are the crystalline rocks, including the granites, gneisses, and marbles of Archaean and Pre-Cambrian age, while to the northwest, forming the Appalachian Mountain and Valley regions, are the Cambrian, Silurian, Devonian and Carboniferous rocks. This great diversity of geological formations, together with the intense metamorphism which the rocks have undergone in certain sections, accounts for the great variety of minerals found within the limits of the State. Some idea may be had of this variety from the following list of minerals now being produced in commercial quantities: Bauxite, copper, gold, iron ore, manganese, granites, gneisses, marbles, limestones, slates, sandstones, serpentine, kaolins, fire-clays, shales, coal, cements, corundum, garnet, tripoli, pyrites, barytes, brown and red ochers, asbestos, fuller's earth, talc and soapstone, graphite, marls, and mica.

*State Geologist of Georgia.

Of the several minerals above enumerated, I will here discuss in a very general way only a few of the more important, and to this discussion will add such remarks on the inventory of each individual mineral as our present knowledge seems to warrant. The minerals to which I wish to call your special attention are: Bauxite, iron ore, marble, granite, ocher, fullers' earth, asbestos, and clay.

Bauxite.—The first discovery of bauxite in America was made near Rome, Georgia, in 1887. Eleven years later the first bauxite was mined at this point and the following year the first shipment of ore was made to the Pennsylvania Salt Company, Natrona, Penn. This lot of ore, consisting of 728 tons, was said to have been used in the manufacture of alum and the metal aluminum, and constituted the entire production of bauxite in the United States in 1889. Subsequent to the last named date, other deposits were discovered in the vicinity of Rome and Cave Springs, and in a short time mining became quite active at a number of localities. At first the mining of bauxite was confined to Floyd and Polk Counties, but later deposits were discovered in Bartow, Gordon, Walker, and Chattooga Counties. These deposits are all confined to the Paleozoic area of the State, and are always intimately associated with the Knox Dolomite series of rocks of Cambrian age. In 1907 a member of the State Geological Survey, Otto Veatch, discovered bauxite associated with Cretaceous rocks about thirty miles east of Macon in Wilkinson County, and only two years ago what appears to be valuable deposits of bauxite were found in Sumter County, near Americus, associated with Tertiary clays.

In the Paleozoic area the bauxite is usually found in more or less irregular pockets somewhat similar to the occurrence of brown iron ore, whereas, in the Tertiary and Cretaceous areas in Wilkinson County it appears to occur in well defined beds of greater or less extent. Since the first shipments of bauxite from Georgia, the annual output has varied from 2,000 to 26,000 tons. For a number of years Georgia led in the production of bauxite, but at present it occupies second place, its output being exceeded by that of Arkansas.

It is an exceedingly difficult matter to give even an approximate idea of the tonnage of bauxite, yet to be mined in Georgia. This difficulty arises from two different causes, namely: In the Paleozoic area of northwest Georgia the ore occurs chiefly in irregular pockets or deposits, whose ore contents in many cases can only be determined by actual mining; and in the Cretaceous and Tertiary areas of south Georgia the deposits have not yet been sufficiently prospected to determine definitely either the thickness or the lateral extension of the different beds. In view of the facts here stated, it would seem to be a hazardous undertaking to give even a rough guess as to the probable tonnage of bauxite still to be mined. Nevertheless, I am fully persuaded that, taking into consideration the deposits recently discovered and those which are almost certain to be discovered in the

future, Georgia has ample bauxite to keep up its present annual production for fully a quarter of a century. To state it differently, Georgia has more bauxite ore now in sight than at any time since the discovery of bauxite twenty-five years ago.

Iron Ores.—Georgia, at present, stands fourth in the production of iron ores of the Southern states, being exceeded only by Alabama, Virginia, and Tennessee. These iron ores are confined chiefly to the Paleozoic rocks in northwest part of the State, where they have been worked almost continuously for more than three-fourths of a century. In the last 25 years the total annual output of ore from these various mines has varied from 150,000 to 450,000 tons. These ores occur in two different varieties, namely, the brown or limonite ores, and the fossil or hematite ores. The former class of ores are usually found in irregular deposits associated with the residual cherts and clays derived from the Knox Dolomite and the Weisner Quartzite, both of which are of Cambrian age. The main district in which these ores have been mined in large quantities, is located in Bartow County, near Cartersville, and in Polk County, in the vicinity of Cedartown. A large amount of ore has also been mined in Floyd County, in the Hermitage district and in the Etna district near the Georgia-Alabama state line.

The fossil or hematite ores, which are found mainly in Dade, Walker, and Chattooga Counties, belong to the same series of fossil ores as those now being so extensively worked in the Birmingham district. These ores have been largely worked along the Alabama Great Southern Railroad in Lookout Valley, Dade County, and along the Tennessee, Alabama and Georgia Railroad east of Lookout and Pigeon mountains in Walker and Chattooga Counties. More or less extensive mining has also been carried on near the Central of Georgia Railroad along Taylor's Ridge and Dirtseller Mountain. The aggregate length of outcroppings of the fossil iron ores of Georgia is estimated at 175 miles. Assuming that these ore-bearing beds will average 30 inches in thickness and they can be worked 1,000 feet back from their outcropping, Edwin C. Eckel, formerly of the U. S. Geological Survey, estimates that Georgia still has in reserve more than 200,000,000 tons of fossil iron ore. To this should be added the reserve brown iron ore which has been estimated at approximately 100,000,000 tons, giving a grand total reserve of 300,000,000 tons. The significance of this enormous tonnage of iron ore can be better understood when it is stated that at the present rate of mining Georgia has today sufficient iron ore in store to last for more than 1,000 years. I would here add that I do not wish to convey the idea by this statement that under the present economic conditions that the estimated amount of iron ores here given is now available, but in the near future, however, when less wasteful methods of mining are

resorted to and the higher grade of ores is exhausted all or a great part of these ores will become available.

Marble.—The value of Georgia marble for the last several years has exceeded that of any state in the Union with the exception of Vermont. The seat of this great industry is located on the Louisville and Nashville Railroad in the vicinity of Tate, Pickens County, 61 miles north of Atlanta. Marble has been quarried in this district since 1840, but it was not until 1884, which marks the date of the organization of the Georgia Marble Company, that the quarries began to produce marble on an extensive scale. The value of the output of stone from these quarries last year passed beyond the million dollar mark, an amount exceeding that of any previous year in the history of the marble quarrying industry. There are three large companies now operating in the district, namely: The Georgia Marble Company, The Southern Marble Company, and the Amicalola Marble Company. All of these companies are at present working a full force of hands and are at the same time increasing their capacity by enlarging their plants and extending or opening up new quarries. I question if there is any restricted area in the South which will compare with this small district in the point of the quarrying industry. Longswamp Creek Valley is scarcely four miles long, yet within its limits are to be found some of the largest marble mills and quarries in this country. From a financial standpoint these quarries and mills tell only a part of the importance of the marble industry to the State. Another feature of the industry, and one which largely augments its commercial importance, is the marble finishing plants which give employment to several hundred hands. The largest and most important of these plants are located at Tate, Ball Ground, Nelson, Canton, and Marietta. At these plants the rough stone as it comes from the quarries is carved and fashioned by skilled workmen into all classes of structural and monumental designs. The Georgia marble is pre-eminently a building stone, having but few equals if any superiors in this country for this class of work. Its purity and great strength, together with its extremely low absorption properties, fits it for all classes of exterior work and at the same time, even in the most rigid climate, gives it a lasting quality rarely excelled. The dark and flesh color of the stone, which is due mainly to the presence of graphite and iron oxide, are but little affected by atmospheric agencies and as a consequence the colors are permanent and as durable as the stone itself. In addition to the use of the Georgia marble for building purposes, it also has an extensive use in monumental work and in interior finishing. Some of the most costly buildings erected in this country in the last few years have been constructed of Georgia marble. These buildings include such structures as the Corcoran Art Gallery, Washington, D. C.; City Stock Exchange, New York City; Rhode Island State Capitol; Minnesota State Capitol; and the Field Museum, in

Chicago. There is probably no building stone in this country which has in recent years gained such a widespread use and given such universal satisfaction as the Georgia marble.

The amount of marble still in store for future generations might for all practical purposes be referred to as limitless. The deepest quarries have, so far, attained a depth of only about 200 feet and the stratum has not yet been penetrated. Taking into consideration the great thickness of the marble, together with the length of outcroppings, which are several miles in extent, it will at once be seen why the supply is referred to as limitless.

Granite.—Georgia produces more granite at present than any other Southern state. The granites are widely distributed throughout the Piedmont plateau where they occur, for the most part, in large, flat, horizontal masses and in the form of huge dome-shaped areas. Stone Mountain, in DeKalb County, 17 miles east of Atlanta, which rises to an elevation of 686 feet above the surrounding country, and which has a basal circumference of approximately 7 miles, is one of the most conspicuous of these dome-shaped masses. Other granite masses of much larger basal area, but of less altitude and therefore less conspicuous, are to be found in a number of localities.

The first granite quarries of the State were opened at Stone Mountain about 1850. The stone from these quarries, a light colored muscovite granite, has an extensive use as a building material and is also largely employed in street improvement. Other extensive quarries are located at Lithonia, Oglesby, and elsewhere. The stone from the Oglesby quarries is used entirely for monumental work, for which purpose it is said to equal in weathering and finishing properties the famous Barre granite of Vermont. In the case of granites, as in that of marbles above referred to, the supply is practically inexhaustible. Stone Mountain alone has ample granite to supply the entire United States for a long period of years.

Ocher.—Georgia has produced ocher on a more or less extensive scale since 1877. The output of Georgia ocher mines today exceed that of the combined output of all of the states in the Union. This industry is located in Bartow County in the vicinity of Cartersville, where the ocher occurs associated with the Weisner Quartzite. The Georgia ochers are largely used in paints and in the manufacture of linoleum. The greater part of the output of these mines is exported at present to England, Scotland, and other European countries. The occurrence of the Georgia ochers is always in pockets or irregular deposits and the available tonnage is therefore difficult to estimate. Nevertheless, there is not at present any sign, whatever, of immediate exhaustion, although the mines have been continuously operated for more than a quarter of a century.

Fuller's earth.—With the exception of Florida, Georgia leads in the production of fuller's earth. These earths occur in the Tertiary deposits in Twiggs County near Macon, and in Decatur County near Attapulgus. At the former locality the earth attains a thickness of 20 feet and it is quite free from impurities. It is claimed by the General Reduction Company, now the only producers in that district, that their earth has no superior in clarifying or bleaching cotton seed oil, a use for which it is now solely employed. Taking into consideration the wide area over which these earths extend, together with the unusual thickness of the beds, it would seem that they are in sufficient abundance to supply any reasonable demand for an indefinite period.

Asbestos.—The chief supply of domestic asbestos in this country for the last several years has been obtained from the Sal Mountain Asbestos mines located in White County, Georgia. It has been the opinion of the company operating this mine for some time that their supply of asbestos was well nigh exhausted, but development work in the last few months has brought to light what appears to be a larger amount of the material and of a higher grade than has heretofore been in sight. In addition to this locality, undeveloped prospects of asbestos, which appear to be of fair grade, are widely distributed throughout the Piedmont Plateau, indicating that the reserve of this material is not only large, but that it will long continue a source of revenue.

Clay.—The value of clay mined and sold in Georgia exceeds that of any state with the exception of New Jersey, Pennsylvania, Missouri. There are a number of varieties of Georgia clays put on the market, but the main output is high-grade kaolin used chiefly in the paper trade. Nearly fifty per cent of the paper clays used in this country are obtained from the Georgia mines. In addition to supplying the paper trade, there is also a limited amount of these high-grade clays used in the manufacture of fire-brick, china ware, etc. These kaolins, which are of sedimentary origin, are found in the Cretaceous formation near the northern boundary of the Coastal Plain where they occur in great purity, forming beds often twenty feet thick. So pure are some of these clays that they are put directly on the market without washing or other preparation.

The extent of these clays is so great that the supply will probably last for generations to come. They are found along an almost unbroken line of outcroppings from near Butler in Taylor County to Augusta, a distance of more than 150 miles. There is probably no place in this country where high-grade sedimentary kaolin occurs in such a great abundance as in the locality here referred to.

In summing up the above statements, which are intended only as a partial review of the mineral resources of Georgia, the fact seems to be established without question that the Empire State of the South has not only a great variety of

mineral wealth, but that this mineral wealth is so abundant that it will amply supply all demands for years to come. But I would here add in conclusion in the name of conservation that, although Georgia's mineral resources in many respects appear to be well nigh inexhaustible, nevertheless, this fact, even though it be literally true, should not by any means license the useless and prodigal waste of these resources.



SECTION OF GROUNDS, NATIONAL CONSERVATION EXPOSITION.

POSSIBLE DANGERS FROM OIL AND GAS WELLS IN COAL MEASURES

BY EDWARD BARRETT.*

It is only within the last ninety days that the State of Indiana has been brought face to face with the problem set forth in the above heading. Prior to that time oil and gas exploitations had been in areas in Indiana far removed from her coal measures.

The old Trenton Rock field of the State, now all but a memory, is at least forty miles east of the easternmost margin of the productive coal area of the State.

Shallow, small producing, and short lived oil and gas wells have been drilled in the Niagara Rocks of Southeastern Indiana, and the Genessee and Corniferous nearby, but these are farther removed from the coal measures than the old Trenton Field. A small field known in Indiana as the Oakland City field lying well on the southeastern margin of the coal fields, and covering an area of about 35 or 40 square miles has been developed in the past five years, but as few coal seams were punctured in drilling, the problem of danger has never demanded public attention.

Again the great Phoenix oil well located in the centre of the City of Terre Haute, Ind., and the greatest producing well ever struck in Indiana, penetrated the coal measures, but as subsequent drillings in the vicinity resulted in dry holes, the attending dangers of drillings in the carboniferous never attracted public attention.

But within the last ninety days oil and gas development in Sullivan County, Indiana, comprising an area of some four or five hundred square miles, and lying wholly within the coal measures both areally, and in the matter of the reservoir for the oil and gas, public attention is now fixed on the possible dangers to mine operations from the presence of drill holes. The anxiety, if I may use the term, is intensified by the fact that the laws of the State hitherto made concerning the plugging or sealing of wells related almost entirely to the question of the waste of gas from abandoned wells—that is, wells from which the owner expected to draw the pipe to use elsewhere, or to sell. Incidentally, the law protects the fresh-water supply of a community from contamination by the salt-water from oil and gas wells.

*State Geologist of Indiana.

The law in Indiana relating to the sealing of oil and gas wells and based wholly on the propositions of waste and contamination is not adequate to meet the present contingency. The section of the law relating to these two results reads as follows:

Approved March 5, 1909. Acts 1909, p. 234.

NATURAL GAS SUPERVISOR-PLUGGING WELLS.

Section 1. Be it enacted by the General Assembly of the State of Indiana. That before the casing shall be drawn from any well drilled into gas or oil-bearing rock for the purpose of abandoning the same, it shall be the duty of any person, firm or corporation having the custody of such well, or having charge of removing the casing therefrom for the purpose of abandoning the same, at the time of such abandonment, to properly and securely stop and plug each of said wells so abandoned in the following manner: Such hole shall first be solidly filled from the bottom thereof to a point at least twenty-five (25) feet above such gas or oil bearing rock with sand, gravel or pulverized rock, on the top of which filling shall be seated a dry pine wood plug not less than two (2) feet long and having a diameter of one-fourth of an inch less than the inside diameter of the casing in such well; above such wooden plug such well shall be solidly filled for at least twenty-five (25) feet with the above mentioned filling material, immediately above this shall be seated another wooden plug of the same kind and size as above provided, and such well shall again be solidly filled for at least twenty-five (25) feet above said second plug with such filling material. After the casing has been drawn from such well there shall immediately be seated at the point in said well where such casing was seated a cast-iron ball, the diameter of which ball shall be greater than that of the hole below the point where such casing was seated, and above such ball such well shall again be solidly filled with the above mentioned filling material for a distance of fifty (50) feet.

In addition to the two questions mentioned above another of far greater importance now presents itself, namely, that of the danger of escaping gas, into mine workings. This question is not a theory. It is a condition that confronts us and this condition should be met before loss of human life shall entail to miners from explosion or suffocation and loss of property to mine owners and operators ensues.

As yet no such losses have occurred in Indiana, but at the present rate of bringing in two wells a week in the very heart of the coal measures, there is no telling when such a calamity may occur.



WINNER OF GOLD MEDAL, NATIONAL CONSERVATION EXPOSITION.

Another danger from wells abandoned and improperly sealed is the influx of water, either fresh or salt, from the well itself, or surface water through such well. Results from such influx would be:

1. Damage to mine property.
2. Damage to the bottom of the working.
3. Damage to coal.
4. Possible loss of life.

From all this it is clear that the sealing law of Indiana read above will have to be amended to meet the present exigencies. It is not within the scope of the subject assigned me to suggest remedies for the conditions enumerated above, but I will venture a few words on this phase of the matter. There is no law in Indiana compelling the mapping of oil and gas wells anywhere. However, when re-surveys or reviews of the oil and gas wells of the state are made and published by the Department of Geology, the exact geographical location is given as to township, section and part of section, and many wells are located with regard to their distance from each other. There is a law in Indiana compelling the mapping of coal mines, but this law relates primarily to three objects:

1. To protect owners and operators as to their leases.
2. To protect private ownership of coal lands.
3. To protect miners against the possibility of working into an abandoned mine, containing water, damps, or gases.

The subject under discussion had not been thought of at the time the mapping law was formulated, but someone may ask, "What are you going to do about it;" I would suggest the following:

1. More exact and inclusive mine maps by coal operators.
2. Exact and complete maps of oil and gas fields.
3. More careful and complete geological record of wells by drillers.
4. Plug exhausted and abandoned oil and gas wells from bottom to top, tightly with cement.

THE REGULATION OF OIL AND GAS WELLS, ESPECIALLY WHEN DRILLED THROUGH WORKABLE COAL BEDS

BY RICHARD R. HICE.*

The proper regulation of the locating, drilling, operating and abandonment of oil and gas wells is a conservation proposition of the highest order, for it means not only the saving for the future of oil and gas now needlessly lost, but in mining regions, and more especially in coal mining regions, means the elimination of certain dangers, the saving of mine property, and the prevention of the loss of human life. At first sight it seems rather strange that with the progress which has been made in the regulation of mining in other lines, nothing has been done with this industry, but this is not so strange when one considers the conditions attending it in the past, and especially the want of knowledge of the conditions which must attend the accumulation of these hydrocarbons into paying quantities. In the absence of this knowledge the industry was merely a game of chance, and like other gamblers, the oil operator strenuously objected to any and all regulation, or interference, with what he claimed as his "rights," and the public gave but little attention to the matter.

The early attempts to regulate in any way the control of wells was some weak legislation regarding the plugging of abandoned wells, but in the absence of any authority to enforce the laws, they have been absolutely "dead letters." We have in Pennsylvania, for example, three or four laws relating to the plugging of wells, but with many operators opposed, for purely selfish reasons, to their enforcement, it were better they had not been enacted. They have also been so weakly drawn that when interpreted in the courts the best of them was practically wiped out of existence. With some knowledge of the conditions governing accumulation, the continued decline in production of oil in the Appalachian fields, and no prospect of relief by increased output elsewhere of the same grade of oils, it must be said the disposition of oil and gas operators to oppose all laws regulating their work, to prevent waste and conserve the supply, is fast disappearing, although still to be found—more especially in the older fields.

For a number of years it has not been uncommon to find men who saw the necessity for laws regulating the business, and this necessity has been emphasized

*State Geologist of Pennsylvania.

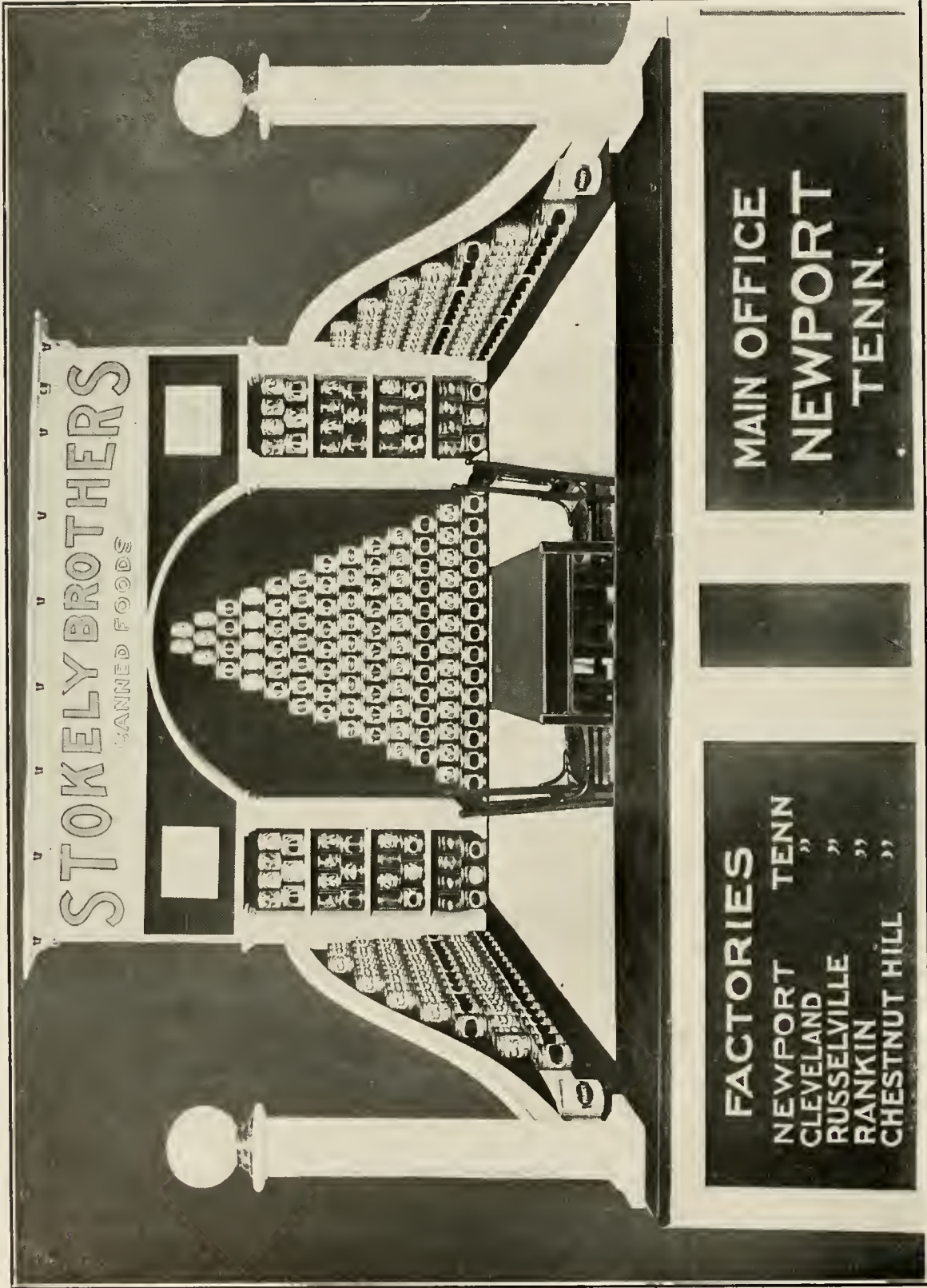
during the past few years by certain mining accidents which have been directly due to the improper operation or plugging of wells, but all attempts to enact even the mildest of laws have failed. It would seem that a great mine disaster, directly due to some improperly operated or protected well, is needed to cause the enactment of laws, which will probably be more drastic than is demanded, and this fact is recognized by some of the more advanced and broader operators.

At the meeting of the Association of State Geologists, held in New Haven in December, 1912, some discussion was had as to whether or not it was feasible to have laws, practically uniform in their provisions, enacted in each of the states producing oil and gas, believing that if such laws were uniform they would have a better support from the oil and gas interests, and a committee consisting of Dr. J. C. White of West Virginia, Mr. F. W. DeWolf of Illinois and Richard R. Hice, of Pennsylvania, was appointed to study the problem, confer with the Director of the Bureau of Mines, and call such special meeting of those state geologists interested in the subject as might be thought advisable. Owing to mine accidents and conflicts between coal and oil operators the Bureau of Mines had also been approached in reference to the same question from other directions, and as a result several informal conferences were held during January last, and a general conference of those interested, including coal operators, oil and gas operators, coal mine inspectors and state geologists was held in Pittsburg, February 7, 1913, to consider the formation of a law regulating the locating, drilling, operating and abandonment of oil and gas wells, especially those passing through workable beds of coal.

It is not necessary to enumerate the mine accidents reported at this conference, due directly or indirectly to wells. It does not seem probable all such accidents were reported. The greatest reported loss of life due to a well was 29. It seems evident that the danger to operating mines must increase under existing conditions attending well operations.

A few figures will make the situation clearer, but I must take these figures mainly from Pennsylvania, for others are not available.

On December 31, 1911, we had in Pennsylvania a total of reported wells to the number of 63,352. Knowing the conditions attending the oil industry it is certain many wells are not included in the reports as received. We have no record of the number of abandoned wells, except for a few of the later years. Of this total of 63,352 wells, over one-half are located in bituminous coal producing counties, and of the 10,807 gas wells included in the list, almost two-thirds are in the bituminous coal region. In 1911 there were 3,672 new wells reported, of which 426 were "dry holes." Of old wells 1,647 were reported abandoned, or a total of 2,073 holes



STOKELY BROTHERS
CANNED FOODS

FACTORIES
NEWPORT TENN
CLEVELAND ”
RUSSELVILLE ”
RANKIN ”
CHESTNUT HILL ”

MAIN OFFICE
NEWPORT
TENN.

GOLD MEDAL WINNER, SOUTHERN STATES BUILDING, NATIONAL CONSERVATION EXPOSITION.

abandoned during the year. How many of these were properly plugged, in the total absence of any inspection, one can only imagine.

With the increased demand for oil the drilling of wells continues. In June of this year, according to the Oil City Derrick, East of the Mississippi, in the Mid Continent and Texas and Louisiana fields 2,327 wells, in July 2,342 wells and in August 2,381 wells were completed. East of the Mississippi in July 1,067 and in August 1,109 wells were finished and at the end of August 1,513 wells were in process of drilling. The actual number will exceed these figures. When we consider that we have no record of the location of any of these wells now drilling, of those in operation, or of the many thousands which have been abandoned, we must all agree that the business is one which has been allowed to take care of itself. In no other mining operation is there such a want of system, or disregard of the rights and interests of others. Under such conditions it is not necessary to say anything regarding the necessity of regulation and inspection, if we are to prevent the needless waste of oil and gas from drilled wells; to prevent the reckless destruction of producing territory by irresponsible operators; to prevent damage to mines and loss of life through improper locating and wrong methods of drilling and casing new wells and improper plugging of old ones, and to prevent the unnecessary pollution of surface waters. This is important not only in Pennsylvania, but in most phases in every region where oil or gas is being produced, and it is equally right and proper in those states where the search for oil may reveal its presence in the future.

At the conference there was naturally some differences in opinion as to how far such laws should reach. Some coal men seemed to think that absolutely no well should be allowed to be drilled through any bed of coal which might at any time be mineable, while on the other hand some oil operators seemed to think any regulation whatever was an interference with their right to carry on their own business. Naturally these extreme ideas were not urged to any extent in the meetings, but they existed. It was generally recognized, however, that the coal and oil and gas represented distinct and separate estates, each of which was possessed of certain rights, and each under the burden of certain restrictions as regards the other. It was generally conceded that any law to be effective must provide for adequate inspection, not only of the closing of abandoned wells, but also of the locating and drilling of new ones.

A number of suggestions had been formulated by the Bureau of Mines as a result of the preliminary conferences, which were discussed very fully, and a committee was appointed to prepare the substance of a law which would be acceptable to all interests and report at a later meeting. At this later meeting, held March eleventh, a few amendments were made to the report of the committee and the

essential features prescribed in the suggestions have been summarized in a recent publication by the Bureau of Mines as follows:

1. Accurate and formal location and recording of wells.
2. Co-operation of the several parties interested to obtain a safe location.
3. Designation of efficacious methods of casing and protecting wells through coal beds.
4. Formal abandonment of wells.
5. Safe methods of plugging wells.
6. Adequate inspection.

It is not practicable at this time to go into all the details mentioned in the proposed law. Perhaps the most important feature is that of adequate inspection. It is evident the qualifications of a well inspector should be very different from those of a coal mine inspector, yet he should be familiar with the various coal beds which may be encountered in a well, but not necessarily familiar with the details of mining methods, he must have a good knowledge of the methods of drilling wells and of the use of the various appliances used in such work. Again he must have knowledge of the geology of the oil and gas sands and the various strata penetrated by a well. His work again differs from that of a coal mine inspector, for the latter's judgment is subject to change if a mistake is made, or when further data is available, while the work of a well inspector when a well is being plugged is buried, and cannot be again revised or examined by himself or others.

It is at least doubtful if a mine inspector would have the necessary qualifications—a knowledge of the geology of the oil sands and oil operations, which is absolutely essential if a satisfactory inspection of wells be had. Again, at least in most cases, the oil and gas operator will be absolutely opposed to a mine inspector passing on the questions involved when a well is passing through a workable coal bed, believing him to be by training, and long association, prejudiced in favor of the coal interests. It would seem therefore that a proper inspection can only be had, at least in most cases, under some other control than the present coal mine inspection, which fact was fully recognized at the conference, and in the suggested law it was provided that a separate department or bureau should be created. It was suggested that the head of the inspection, called the Chief Inspector, should be appointed by the Governor, or by a Commission in charge of the work, the Chief Inspector to have the authority to appoint all necessary assistants. The required number of assistants would probably vary from time to time, and I believe it would be wise to have them moved from one portion of the field to another at irregular intervals.

It was suggested by some that the inspection should be under the general direction of the state geological survey, which organization being interested in the

development of both coal and oil and gas would be impartial, would have the necessary geological information, and also a workable knowledge of mining methods. I do not think any of the state geologists took very kindly to the suggestion, although it must be said that much valuable geological data would be obtained from the knowledge of the underground structure secured by the inspectors in the performance of their duties. I think this matter of the appointment of inspectors, and the department under which they work, must be determined in each state according to local conditions. The expense would be practically the same whether placed under some present organization or under some new department of state government created for the purpose.

The accurate and formal location of new wells and the recording of the same, that they can be relocated at any future time, is an essential. How this was to be accomplished was thoroughly discussed and it was agreed by the conference that reference by course and distance from two fixed points on the boundary of the tract of land on which the proposed well was located, together with the name of the tract, township, etc., should be required, and no well should be drilled until a license to do so was obtained, issued after application for the same made to the Chief Inspector, accompanied with description and plat of the location. Provision was also made for a change in the location of a proposed well under certain conditions. No well should be drilled within 300 feet of any hoisting or air shaft, slope or drift into an artificially ventilated mine, or of any mine shaft house, engine house, power house, mine fan or mine tipple, nor within 15 feet of any underground haulage way, drainage way, traveling way or air way. Due provision was made for the hearing and settlement of any disputes regarding a proposed location before the issuance of the license to drill.

There was much difference of opinion shown at the conference as to what should be the requirements for drilling and casing through coal beds. It was generally agreed that the methods now in general use were adequate to prevent the loss of oil and gas in any large quantity, and therefore sufficient where other interests were not affected. Of course it must be admitted, at least in most cases, that special protection is only needed where coal beds are workable, or where the bed is workable within a reasonably short distance, and there was considerable discussion as to what constituted a workable bed of coal. It was suggested this be left to the several state geologists, but this was not approved, at least in the absence of definite descriptions of what such a bed would be, and it must be said a definition can hardly be given which will be satisfactory. In the final draft of the suggested regulations a coal bed was defined as "A workable bed or seam of coal that may be mined during the reasonable life of the well proposed to be drilled through it." To myself, and to others, this is not a satisfactory definition.

It is not clear whether the bed is one which may be workable on a commercial basis, or one workable only for personal or local use, and the two present quite distinct questions, although in both cases the danger to life will exist and in some respects greater danger in the smaller mines. Nor is the expression "reasonable life of a well" satisfactory. We have wells which have been in operation over 30 years which are still producing oil in paying quantities, while in other places the life of a well is ten years, or even less, and we have no data from which we can determine to which class, or to what intermediate class, a new well, especially one in new territory, may belong. It is also evident that the depth of coal beds, their thickness, proximity to other thicker beds, and the quality of the coal are all factors which must be considered in the determination of what constitutes a workable coal, as also the character and cost of production of coals with which it would come in competition when mined on a commercial scale, as also the possible changes in the lines of transportation which may suddenly make the coals of a district available for use in some market at present entirely out of reach. It seems evident that this phase of the question is one in which the Chief Inspector must have considerable latitude and which cannot be determined by hard and fast legislative enactments. Where there would be any question in the matter it would seem the ruling should be in favor of the additional protection required when passing through a recognized workable bed of coal.

Having determined that a well will pass through a workable bed of coal we are confronted with two conditions, (1) where the coal is in place, and (2) where the coal has been removed, which latter may in turn be divided into the case (a) where the workings are accessible and (b) where the workings are inaccessible.

Where a coal is in place it was agreed at the conference that any well should be drilled at least six inches larger in diameter than the diameter of the outside casing, to a depth of at least 30 feet below the bottom of the coal bed. The casing should then be set centrally in the hole and the annular space between the casing and the wall of the well filled with cement mortar or puddled clay to a height at least 30 feet above the roof of the coal bed. The object being to prevent failure of the well casing through the corroding action of the mine waters. The space between the casing thus set and the next inner pipe or casing must in all cases remain open, with suitable provision for the escape of gas, and so protected as to prevent filling from dirt being thrown in at the top. Where a well passes through an inaccessible mine excavation there should be a liner introduced outside of the casing, reaching at least 30 feet below the bottom of the coal and a similar distance above the roof of the coal, and the space between the liner and the casing filled with cement mortar or puddled clay. The liner in such case acting as an outside form for the cement or clay. Above the liner cement or clay should be placed

to prevent the introduction of surface waters into the mine workings. Where the workings are accessible either of said methods could be employed. If the first, the well operator is to build a suitable wall in the mine around the casing to retain the cement mortar or clay filling, and when the working of any mine exposes a well formerly drilled through the solid coal, the coal operator shall build a similar wall around the casing of the well.

It was believed these precautions would prevent the access of acid charged mine waters to the regular casing of the well. The cementing of the casing for a distance of 30 feet below the coal would prevent the escape of gas from the space between the outer casing and the next inner string of pipe or casing into the mine workings, especially so when there must be maintained a free vent at all times for any gases that may find their way into the space between the casings. It is obvious to all that circulating mine waters will rapidly corrode pipe and this is one of the chief sources of danger in mines. The failure of casing or pipe from other causes is rare. There are a few cases known where the falling of the roof has bent the pipe, but perhaps none where it is known to have caused a rupture. One case is known but not in a mine where electrolysis has caused a failure of the casing and perhaps another failure may be attributed to the same cause. Such cases are only possible under special conditions, as where wells are situated in a city, or may be near a trolley line, or some similar condition exists.

It must be recognized by all, the chief danger arises from wells which have been abandoned, and on this phase of the matter much difference of opinion arose. It will be recognized that a great many different conditions must arise regarding the plugging of wells, and each well presents its own problems. The accidents which have occurred in mines from abandoned wells have not been due to any large flow of gas, but to the unexpected striking of a well and the release of the gas stored up in the hole—it may be under very high pressure—into the mine. At present there is no record of old wells and in many cases there are no surface indications that a well ever existed, hence they have been found without any knowledge of their presence. It is realized the danger from such old abandoned wells cannot be eliminated, but there is no reason wells now in operation or hereafter drilled should at some future time be a menace.

In the suggested regulations it is provided no well shall be abandoned without notice to the Chief Inspector of the intention so to do that he may have a representative present during the plugging. Where a well to be abandoned was drilled prior to the time the proposed regulations should go into effect, a description and plat of the location should be filed with the Chief Inspector, with the notice of the intended abandonment. It should be noted that no provision was made for the case where the well owner should simply quit operating the well,

leaving the old casing in it. It would seem that a failure to operate a well for some specified time should be construed an abandonment, and where an operator thus leaves a well the owner of the land should be responsible for the proper closing and plugging of the well.

It was provided in the suggestions that "every well upon abandonment must be plugged and filled solidly and tightly from the bottom to the top." This is that no cavity be left in which there may be an accumulation of gas. The slight flow from abandoned wells is not dangerous. The first filling should be rock sediment, sand, clay or other suitable material, which should reach from the bottom of the well to a hard, firm stratum below the last string of casing set in the well above the producing sand. In this hard, firm stratum 3 seasoned wooden plugs, each at least 3 feet in length, should be driven. Above the wooden plugs so placed 10 feet of clay must be thoroughly tamped down to prevent the passage of oil, gas or water. Below the seat of each string of casing an additional wooden plug shall be driven, and the intermediate space filled solidly with rock sediment, sand, clay or other suitable material, as the casing is withdrawn, length by length. All plugs are to be driven in place with drilling tools, the use of a string of pipe not being deemed sufficient.

Provision is made for proper reports showing the date of completion of a well, and some data regarding the formations passed through. This is essential that the information be at hand in the office of the Chief Inspector when the same well is abandoned. Similar data is required on the abandonment of a well.

Such in brief are the regulations suggested by the conference. There are objections made by both parties interested. The well operator naturally objects to delays that may be occasioned in the drilling or in the abandonment of a well. It must be said that in cases such delays might occur, but if all parties approach the question raised in the right spirit, such as was manifest at the meetings of the conference, these delays should not be oppressive. Again there is the question of expense. First, the expense in accurately securing the location of wells, and again, that of the extra casing and placing of the same in passing through coal beds, and, finally, the cost of the proposed plugging. In the final analysis, however, these additional expenses, except that occasioned by passing through coals, must enure to the benefit of the oil and gas interests. If we had a record of the location of the wells drilled in the past many unproductive wells now drilled would have been located elsewhere, and the proper plugging of wells, which will prevent the passage of water into oil and gas producing sands, is believed will more than repay to the industry all the expense attending the proper closing of wells abandoned. The cost attending passing through coals seems an additional expense, often characterized as useless by the well operator, but the fact there is a recog-

nized method of casing and protecting coal beds, thus ending many long drawn out disputes with coal operators regarding the location of wells and methods of protection, accompanied often by protracted legal proceedings, will more than repay all the added cost.

An additional provision, and one of great importance, is that the Chief Inspector shall cause the location of each well drilled and of those abandoned, to be entered of record in each county, where they will be available for use by all interested parties. An old well on a tract of land is an incumbrance, especially if coal underlies the tract, but this incumbrance will be very much less if there is an accurate location of the well available that the coal operator may know where to look for it as his operations approach it.

The final action of the conference in March was too late to permit the passage of a law along the lines suggested by any of the legislatures in session the past winter. It is certain that changes will be made in the suggested regulations before enacted into a law in any state, but that it is important, and of increasing importance, to every state where oil or gas is or may be produced is without question. It will entail a very considerable expense upon the industry, but less relatively than is forced upon the coal interests by the laws regulating the mining of coal, and it will also entail a very considerable expense upon the state. This is where objection will be made by many legislators, but just the same arguments that stand for the inspection of coal mines apply in this case. The industry is a large one and the necessity for conserving it is becoming daily more apparent, and the expense to the state will be many times returned in the taxes paid by the business. It will be due, however, to the friends of conservation, to those who want to see our resources used, but used intelligently, and desire to prevent the present waste and loss of life, to see that some such legislation is passed. It will be their duty to reconcile the divergent views of the opposed interests, to point out to them that such regulations means not loss, but gain, that will secure the passage of the required laws by the several legislative bodies in the states concerned.

THE DEVELOPMENT OF THE MINERAL RESOURCES OF THE NATIONAL FORESTS

BY DON CARLOS ELLIS.*

A general discussion of the mineral wealth of the United States cannot be complete without a consideration of the minerals within the National Forests and the Government's policy concerning their development. A few words on this subject, would, I feel, be particularly appropriate at a convention so well represented by men from National Forest states. The National Forests comprise a net area of about 165,000,000 acres, not including the forest areas now being acquired in the Southern Appalachian and White Mountains. The National Forests contain hundreds of millions of dollars worth of actual and potential wealth. The Government is handling this area with a view to the highest development and wisest use of all the resources it contains, use which will avoid, as far as possible, waste, destructive exploitation, monopoly, and every other kind of misuse, use which will make these areas permanent sources of wealth for all the people of the land, supplying their needs in such a far-seeing and economical manner that future generations will find the land and its products improved instead of devastated by that use. In other words, the Government is applying the same principles to these public domains as a wise business man applies to his own affairs. He does not remove the capital from his business but rather increases it, while living upon the yearly increment.

The National Forests were created primarily for the protection of the timber and of the streams which take their rise in the forest covered slopes. Timber and water are the greatest resources of these Forests. Many other resources, however, are contained within them. Small stretches of agricultural land occur here and there, large areas of grazing range are intermingled with the forest, and a great variety of minerals is found. National Forest administration favors and encourages the use and development of all these forms of wealth, to the end that the country in which these Forests lie may be built up with prosperous homes. The Government wants every bit of land within these National Forests put to its best use, whatever that use may be, whether for forest growth, grazing, water power development, agriculture, mining or any other use, and thereby to establish permanent homes built around permanent industries, contributing to the well-being of the

*In charge of Educational Co-operation, U. S. Forest Service.

entire body of citizens, rather than to the wealth of a favored few. Hence, in its development policy, every safeguard is erected against monopolization; and where preference is given in the use of the resources, the small local settler is the one to whom preference is shown. This fact stands out conspicuously in the handling of grazing stock on the National Forests, where, during the last fiscal year, about 27,000 permits were issued for the grazing of about 10,000,000 head.

These same principles apply in prospecting and mining upon the Forests. It is as easy to locate and obtain patent to a valid mining claim upon a National Forest as elsewhere upon the public lands. One of the objects of the National Forests is provision for mining, for it is recognized that upon this industry largely depends the prosperity of the West. No obstacles lie in the path of the prospector, and title can be secured to a claim upon proof of fulfillment of the same requirements laid down by the law for unreserved public lands.

Because of the ease with which mineral claims may be established, however, more misuse has been made of the mineral laws than others, and they have been more frequently used as a cloak for fraud. Many mineral claims have been made upon the National Forests to obtain title to land valuable as townsites, to land for scenic value, to land controlling timber sales negotiated by the Forest Service, to sites for recreation resorts, to watering places for sheep or cattle, to mineral and medicinal springs, to agricultural land, power sites, power and irrigation reservoir sites, rights of way for power transmission lines, and for saloons and other enterprises forbidden on the National Forests. A very small portion of these uses are unlawful and undesirable in themselves. In many other cases, recourse is had to the mining laws where the rights of the claimant to use the land for the purpose he intends has been exhausted under the law. In still other cases, mineral claims are made for purposes other than mining where a permit for the specific use intended could be obtained if applied for directly.

The safeguards which the Government has attempted to build up to prevent fraudulent use of the mineral lands of the National Forests have occasioned the assertion often to be made that the Forest Service stands in the way of legitimate mining development. This statement, however, is contradicted by the true facts and actual figures. As an instance, an investigation made in Colorado last year showed more activity in prospecting on the National Forests than on the public land outside. As a matter of fact, the safeguards against fraud have proven safeguards to miners themselves. The mining laws and their application are in the interest of miners and the special requirements of their business are continually kept in mind by those who administer these laws. It is upon "wildcatters" and unlawful speculators that these laws exert a hardship, and it must be said in justice to the mining industry that it is at the door of this class of men, who have no

connection whatever with the mining industry, that the overwhelming majority of fraudulent mining schemes must be laid. By discouraging these illegitimate operations, National Forest lands have been kept open to legitimate prospectors, and the mining industry itself has been greatly benefited. Far from being an incubus upon this industry, it is becoming increasingly more apparent and more widely recognized by men engaged in it that the National Forests are great factors in its upbuilding. Not only are obstacles not placed in the way of lawful mining development, but the needs of the miners are definitely provided for. One of the purposes for which the timber resources of the Forests are held in public ownership is to maintain and make available for miners at a reasonable cost the material which they cannot do without. Timber from the Forests is furnished free for use in connection with the development of claims, and in other ways material service is afforded.

The Forest Service wants to go still further in aiding true mineral development and all other proper uses of the Forests and to reduce to a minimum all friction and routine burdensome to the public in the use of the National Forests. For these purposes, co-operation of the thinking people of the country, and particularly of leaders of sentiment as state officers should be, to whom the people of the various commonwealths look for guidance in these matters, is needed. Your work is closely allied in many lines with ours. You have many problems in your work similar to those with which we have to cope. In some cases the state forest work falls under the state geological surveys. In these cases and in others you and we are working along parallel lines. We want to assist you and want you to assist us in developing the highest possible efficiency in our respective fields. While the Government has been striving for a long time to make the Forests under its jurisdiction serve the people to the utmost of their capacity, it is fully realized that their usefulness is only in its infant stages. We ask that you work with us shoulder to shoulder to make this usefulness grow to make the National Forests, to the greatest extent possible, highly efficient factors in the upbuilding of the country, in the establishment of permanent homes and the perpetuation and increase of the country's prosperity.

CONSERVATION OF OUR FUEL RESOURCES

BY W. H. BLAUVELT*

The conservation of the coal deposits of the United States is a subject which is occupying some of the best minds of the country. The consumption of our bituminous coal has increased over 5-fold in the last 30 years, and it has doubled in the last 12 years. Much study has been given both by Government engineers and mining companies to economy in mining and the production in saleable form of the largest possible percentage of the coal in the ground, and much still remains to be done. Increasing costs of coal have directed attention to economy in the combustion of coal under boilers, and the average results measured by the pounds of water evaporated per pound of fuel are much better than they were even a few years ago. The wastes of coal in the manufacture of coke have long been a reproach to this country, as compared with some of the European countries, and long after Germany had practically forgotten the wasteful bee-hive oven a very large percentage of the coke has continued to be made in the United States by this wasteful process. The following table shows the quantities of bee-hive and by-product coke produced annually in the United States during recent years:

Year	Bee-Hive Coke Short Tons	By-Product Coke Short Tons	By-Product Coke % of Total Production
1893	9,464,730	12,850	.14
1901	20,615,983	1,179,900	5.41
1907	35,171,665	5,607,899	13.75
1908	21,832,292	4,201,226	16.14
1909	33,060,421	6,254,644	15.91
1910	34,570,076	7,138,734	17.12
1911	27,703,644	7,847,845	22.07
1912	32,868,435	11,115,164	25.27

The total production of bee-hive coke in the last six years of this table was 185,206,533 tons, and of by-product coke 42,165,512. The loss in value to the country from the wasteful bee-hive process, was due not only to the destruction of all the by-products,—gas, tar, ammonia, etc., in the bee-hive oven but also to the

*Consulting Engineer, Semet-Solvay Company.

COKE
TAR
LIGHT OIL
SOLVENT NAPHTHA
MOTOR BENZOL

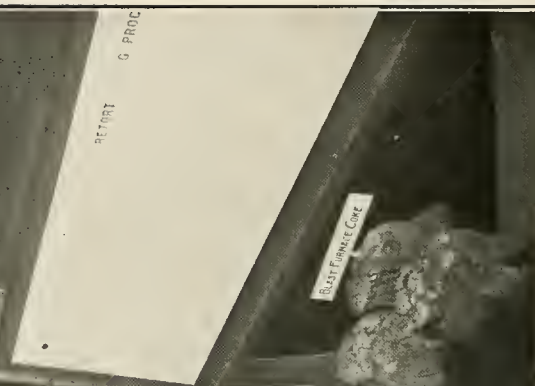
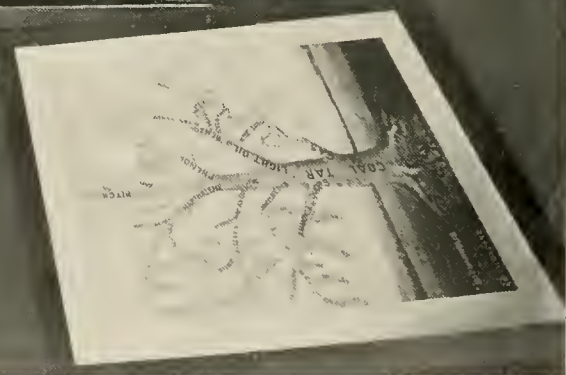
90% BENZOL
100% BENZOL
TOLUOL
NAPHTHALENE SOLVENT
WATER OF AMMONIA

R. & H. LIQUOR
CRUDE AMMOJIA LIQUOR
AMMONIUM CHLORIDE
AMMONIUM CARBONATE
AMMONIUM SULPHATE

XYLOL
NITRO BENZOL
ANILINE OIL
ANILINE SALT

BY-PRODUCTS
OF
COAL

MANUFACTURED
BY US



BLAST-FURNACE COKE

RETRY
G PROC

EXHIBIT SEMET-SOLVAY COMPANY NATIONAL CONSERVATION EXPOSITION

fact that the bee-hive oven produces a smaller yield of coke. Taking the average value per ton of the coal coked in the bee-hive oven, as given by the United States Geological Survey for the year 1912, \$1.01 per ton, the loss of coal that may be said to have been destroyed in the bee-hive oven during these six years amounted to \$42,110,000. Using the United States Geological Survey figures again for the value of the by-products, the total returns from the by-products that would have been recovered if this coke had been made in by-products instead of bee-hive ovens would be \$266,700,000. This makes a total waste in the six years of \$308,810,000, or an average waste per year of over \$50,000,000 of the country's mineral wealth.

While the amount of this waste is a most serious matter to any one interested in the conservation of our country's resources yet it is gratifying to note that it bids fair to be eliminated before many years. The year 1913 marked the coming of age of the by-product oven in the United States. The first plant was built in Syracuse, New York, in 1892, and although the industry moved slowly at first, largely on account of the difficulty in convincing the users of coke that by-product coke could replace the bee-hive coke, with which they were all familiar, yet in the last few years the percentage of the total coke produced in by-product ovens has increased rapidly. In 1912 the tonnage had grown to 11,115,000 tons, or over 25% of the total coke produced in the country. The figures for 1913 are not yet available. Still it is probably not far from the truth to say that by the close of 1914 the production will be at the rate of 14,000,000 tons, which is practically twice that of 1910. On the other hand, the production of bee-hive coke in 1912 was exceeded in the years 1907, 1909 and 1910.

The Southern coke producing states are Alabama, Georgia, Kentucky, Tennessee and Virginia. These states produced in 1912 3,198,428 tons of bee-hive and 1,349,797 tons of by-product coke. The by-product coke was about 30% of the total, showing that the Southern states have progressed farther than the country as a whole in this means of conserving our fuel resources.

Until the latter part of 1913 all the Southern by-product coke was made in Alabama. The first by-product ovens in Alabama were a plant of Semet-Solvay ovens built at Ensley in 1898. These were followed by a plant of Semet-Solvay ovens in Tuscaloosa built in 1906, and then by two plants of Koppers ovens built in the Birmingham district in 1911 and 1912. In the latter part of 1913 a plant of 54 Semet-Solvay ovens was started in Kentucky. Since 1910 no new bee-hive ovens have been built in Alabama, Georgia or Tennessee; 650 bee-hives have been built in Kentucky and Virginia.

The by-product oven has already effected material conservation of the coal resources of the south. In the 6-year period above referred to, an application of the above method of calculation shows a saving of coal and by-products amounting

to about \$5,340,000 for this period. If all the bee-hive coke produced in the Southern States in 1912 had been produced in by-product ovens there would have been a saving of the fuel resources of the South of about \$5,500,000 for the year.

The Semet-Solvay Company founded the by-product coke oven industry in the United States for the conservation of coal in the making of coke by building in 1892 the first by-product coke ovens erected in this country. The first ovens were built at Syracuse, New York and consisted of one block of twelve ovens having a capacity of 4½ tons of coal for each oven per charge. Since that time sixteen Semet-Solvay plants have been built in ten states. These plants have a combined coking capacity of about six and one-half million tons of coal per annum and their latest oven has a capacity of 16½ tons of coal per charge, or over 20 tons per day.

During the progress of the industry they have developed an operating organization along scientific lines, which has enabled them to manufacture the highest grade of products and operate their plants to their highest efficiency. The value of an efficient operating organization cannot be exaggerated in an art so complex in its nature and covering so many functions as the manufacture of by-product coke. The perfection of this organization has enabled them to produce the largest amount and the best quality of the several products obtained in the coking of coal, and the recovery of its by-products.

PRODUCTS MANUFACTURED.

Foundry coke	Chloride of Ammonia
Blast Furnace Coke	Bicarbonate of Ammonia
Domestic Coke	Benzol
Coal Tar	Toluol
Pitch	Nylol
Creosote Oil	Solvent Naphtha
Naphthalene	Naphthalene Solvent
Solvay Crysolite Paint	Solvay Motor Benzol
Special Paints	Fuel Gas
Ammonia Liquor	Illuminating Gas
Sulphate of Ammonia	

At the National Conservation Exposition held at Knoxville, Tennessee, September and October, 1913, the Semet-Solvay Company was awarded a gold medal for the most appropriate conservation exhibit, a cut of the exhibit being shown on page 208.

SOIL SURVEY, THE FIRST STEP IN SOIL CONSERVATION

BENEFITS TO BE DERIVED BY FARMER AND BUSINESS MAN FROM A CAREFUL ANALYSIS AND MAPPING OF SOILS AND A STUDY OF THEIR CROP ADAPTABILITY,—INVESTIGATION OF WATER SUPPLY, ROAD MATERIALS AND OTHER GEOLOGIC RESOURCES.—METHOD OF SOIL SAMPLING AND MAPPING.

BY HERBERT A. HAND*.

Soil Conservation is Imperative. In this day when true economists are demanding the conservation of all our supplies of wood, water, mineral and other natural resources, it is but logical that we should turn to the economical use, preservation and replenishment of our most valuable national asset—our soils.

Our wealth of soils must be protected from their present improvident waste if we would meet the demands of production which the increasing millions of population will make. The farmer must cease to mine the soil and learn how to only draw upon its minerals in a legitimate way. We must retrench in the using of our phosphorus nitrogen, potassium, and other soil foods, begin to dole them out more judiciously, and replenish them when we may, else our richest heritage will be lost.

We need not have "worn-out" soils. European and Chinese soils which have been tilled many more centuries than ours, have been tilled decades, are still virgin in their fertility due to right tillage and the return of depleted richness.

Our soils are as rich as those of any land and may be made to effectively meet the future demands if scientifically treated.

Need of a Survey of Soils. The work to logically precede right tillage, cropping and fertilizing is the accurate determination of the kinds and exact extent of each soil type within the area under examination, along with any essential climatic or other conditions.

Thus the survey of soils is the first step in the practical and scientific attack on the problems of the Experiment Station, Agricultural College, and demonstration farms.

Truly the first step in the treatment of the patient soil is to know exactly what it is—what its essential compositional properties are.

This knowledge carefully ascertained by the soil specialist should speedily be placed in the hands of the Station director and his staff as well as the farmer, in

*State Geologist of North Dakota.

order that all may co-operate to the quickest possible solution of soil and crop problems. Only with its intelligent treatment will the vital properties of the soil be preserved.

The Director is often asked, "What are the practical benefits to be derived from a soil and geological survey?" This question is very naturally asked by county commissioners and others before appropriating funds to apply on such work.

Value of the Work. To be of real value to the farmer and business man a soil survey must show in map and report the true agricultural value of that soil. It must show clearly and briefly the character of the soil and its crop requirements. The man making this survey must have a pretty thorough understanding of practical scientific agriculture. Especially is this true since the very nature of the work brings him personally or by correspondence in contact with many who require this knowledge gained of the land. Again if speed and great accuracy are required in this survey, and if the water or other mineral resources are to be properly taken into account the survey should be in the care of one well versed in geologic science.

One may, in a mechanical sort of way even learn to fairly distinguish by feeling and examination in the hand, the principal textural differences in soils, which separate them into loams, sandy loams, fine sandy loams, etc.; but without a knowledge of the relation of soil type to topography and its geological origin he will make but slow headway in mapping soils; nor will his work be accurate or complete. Therefore the legislature of 1901 very logically placed the direction of the soil survey with the professor of geology in the Agricultural College.

The large expense necessary in maintaining a soil survey party makes it imperative that the work be done speedily but at the same time correctly. When the survey parties have sampled each quarter section and studied the water table, native plants, and crop relationship, the last word should have been said in this connection. The map and report now become the basis for the soil and agricultural experts to aid the farmer in developing practical agriculture. One could not think of a more logical starting point in the successful development of an agricultural state. The industry of a state almost wholly agricultural—raising seven-ninths of its taxes from its farms—is thus almost exclusively dependent upon its soils.

During the last twelve years, the period of the existence of the survey, the development of the state—largely an agricultural development—has been little short of marvelous. For some years previous the eastern margin of the state comprised by the Red River Valley had become known, world-wide, for its fabulous production of wheat. However, the rest of the state had long been mapped in eastern geographies as a part of the Arid Great Plains, and as such was still considered of little or no value. Since that time scientific methods of investigation of

our natural resources have, in effect, had the revolutionary result of bringing into existence fertility and productiveness in an area greater than all New England. As the state further develops, the importance of such investigation will become even greater.

Not the least of these research problems is that included in the soil survey. Upon it can be based land values to a very great extent. This is true since the character of the work of field parties is so intensive. It is the duty of these field parties to carefully examine each quarter section of land surveyed, determining the class of soil and subsoil by learning the physical properties of texture and structure, alkaline content, drainage, height of water table, crop adaptability, productivity, and numerous other facts relating to climate, topography, etc. All soil types are sampled by boring to a depth of five feet, or more if the soil is very light, with an auger. These are mapped on a large scale by suitable colors. Countless number of samples are examined in the field, wherein 6 inches of soil or subsoil are removed at a time until a complete 5-foot section is tested. Careful notes of these are recorded and a sufficient number of samples typical of each type are collected for a complete laboratory analysis.

This survey carefully distinguishes the best soil from that less valuable and locates *every* ten acre strip of *any* particular kind. Thus any extensive hill, slough or an alkaline spot is mapped and treatment applicable to every soil type is explained.

The soil map is a geologic map; properly worked out, it indicates within a few dollars the land values and with the report, points to the correct cropping system. Valuable on the extensive farming system of the prairies it is even more so in eastern and mountainous regions of intensive farming. In many special soil provinces notably in California and in the Appalachian states, the Soil Bureau has often been able not only to determine the species of plant for a given soil type, but also the definite variety peculiarly fitted to it. Often the balance of soil composition and the altitude is so delicate that a varietal difference in grain or fruit spells crop success or failure. For example, on one California type of a given altitude and origin, grow all the table grapes, on another grow all the raisin grapes, while to the close boundaries of another soil type the wine grape is restricted.

Thus the Soil Bureau, mapping the soils, is of inestimable value in the agricultural development of all sections, as it points to the true nature of the soil and its crop adaptability.

It is found that there is comparatively little North Dakota soil with so much alkali that it could not be neutralized with well established methods of treatment. However, a large area is moderately affected and the most progressive farmers are seeking the method for its removal or neutralization and the kind of crop most resistant and best adapted to such land. Several farmers within the state, work-

ing in co-operation with the survey, are demonstrating in a convincing way the fact that alkali in moderate quantity can be neutralized and resistant crops developed according to methods advocated by this survey and by the Bureau of Plant Industry. Several good bulletins on treatment of alkaline land may now be had for the asking from the federal government.

Large areas require that the alkali be neutralized just as much as that plant parasites be rendered innocuous and again that alkali resistant as well as wilt resistant crops be developed. The pest and the poison may work to the same end that the plant be killed. The alkali may reduce the plant vitality to such an extent as to make it a ready victim of the parasite. Neutralization of the one, sterilization of the other and cultivation for immunity from both demands our attention. Much of value is being done in each line.

Diseases.—The growing understanding of the true significance of the action of soil bacteria has led us, for the first time in the history of the survey, to attack this problem. Soil samplers expressed fresh samples in sterile tubes from field to laboratory where Prof. Beckwith immediately investigated their contents.

The large interest taken by the farmers in alfalfa and clovers has immediately raised the question as to what soils are already inoculated with root bacteria or how they may easily be made so in order that these crops may be successfully grown. It is recognized that these nitrogen fixing organisms thrive better in some soil types and conditions than in others.

Many native plants, notably the wild legumes, sweet clover and others, nearly always possess these root tubercles and are thus capable of preparing the soil for cultivated clovers without recourse being made to spreading of manure compost, soil from old alfalfa field, or bacteria culture.

The Survey Biologists are determining the presence or absence of these plants, including the bacteria, in not only the different parts of the state but also in the different soil types and conditions of drainage, food content, etc.

The entire survey staff, including seven men, is gathering thorough information relative to the types of farm crops most suited to the particular areas and soil types for which maps are made.

The inroads of flax wilt, wheat root and other diseases have aroused a vigorous interest in finding means for their eradication. The Survey is fortunate in having men able in a large measure to cope with these. Efforts are being made to ascertain the particular soil type and soil conditions which are most liable to damage from these crop diseases, and which most resistant. Methods of seed, crop, and soil treatment are rapidly being worked out to combat the disease and increase our crop yields.

Irrigation.—Another phase of the survey which is of special value to the west half of the state arises from our confidence in the possibilities of irrigation in the valleys of the Missouri River tributaries. Here hundreds of thousands of acres of the choicest land in North Dakota outside of the Red River Valley have lain largely unused because first, most men have been skeptical of the possible success of irrigating but chiefly because of the expense, although very moderate, needed to put the valley land under water. The flats are very remarkably easily and cheaply made irrigable land. It is unfortunate to encourage the farmer in some arid areas to try to till the upland simply because there are miles of it level and easily tilled, but which will give uncertain yields. With but a moderate outlay a few acres of irrigated land will yield many fold more than the adjacent upland acres.

A hundred acres of irrigated Apple Creek bottoms near Bismarck yielded 175 tons of alfalfa for a first crop in 1911 and two later crops made five tons to the acre yield. Others are seeing the success and seeding to alfalfa on Apple and Burnt Creeks. Burleigh, Morton, Stark, and other counties have a great future in irrigation along a dozen streams.

Practical pioneer irrigators are making it win as shown by actual bushel records. Thousands of acres of the most productive North Dakota land, now neglected, lie within easy access of water which, if used jointly with dry farming methods, would bring, to judge by actual tests in the past, two or three fold the average yield of the state. Most of this land could be flooded with a minimum cost of preparation but a small fraction of that on lands considered in other states practicable.

The Work Appreciated.—The high estimation in which the work is held by the public is evidenced in the many calls for the reports and maps and for specific information relative to soils, alkali, irrigation, well and other water supply. These calls come from farmers, real estate men and others within the state and from those outside the state who anticipate the purchase of our lands. The quality of the land being made known, prospective settlers feel safe in investing.

Prominent business men have expressed themselves to the writer that, on the basis of the map and report thus disinterestedly made, and with this definite knowledge of land values in the county, investors will feel safer in loaning money on the land. This will naturally lead to a lower rate of interest. The following is but a sample of the many letters which farmers and real estate men write in similar vein:

"I am anxious to find out at the earliest date possible the townships or counties of which I can get soil survey maps. I am about to locate agencies in the state to put out money in farm loans and would much prefer localities where I can get accurate information as to the quality of the land through soil survey maps. Can you give me the exact description of the localities in which surveys have been made and

also of the localities in which surveys have been decided on with the dates you expect the maps to be ready for distribution?"

So carefully is the value of the lands determined that Richland County Commissioners expressed themselves as requiring the survey as a means of getting at valuation for tax assessments.

Getting Results to the Farmer.—At present over one-ninth of the state has been covered by this survey, giving the basis for better farming in a definite knowledge of predetermined soil types. The work is carried on in co-operation with the A. C. experiment station and demonstration farms of the state so that the needs of the different soils as to treatment and crop management are understood. The land on which are located the North Dakota State Experiment Station, five sub-stations and twenty-four demonstration farms, naturally contains many of the types mapped in the various larger areas of the state. Thus the information obtained on the plats is largely the same applicable to vast areas of the same or similar soils which are being cultivated by the average farmer. Thus the farmer has but to inform himself and apply the results directly to his difficulties, aided by the director of the Survey and the Experiment Station. The survey maintains consultation by correspondence and personal visits with farmers and others needing information on soils, alkali and crop treatment. Again, as the plans are realized placing consulting soil and agricultural superintendents in each county or smaller district, the rapid extension of the soil survey will become more imperative. The superintendent's work should go hand in hand with a survey of soils. Inevitably there will arise the necessity for more frequent analysis, both physical and chemical, of soil, minerals, and alkali crusts within each district. The survey maintains laboratories complete for all such analysis above referred to and any citizen wanting such work done has but to send it to the director of the Soil Survey at the Agricultural College.

Farmers are coming more and more to realize the benefits to be derived from consultation with those men at the College who have special information on dry farming, crop adaptability, soil management, alkali treatment, and the various agricultural problems with which their experience peculiarly fits them to cope.

WATER-POWER EXHIBIT AT THE NATIONAL CONSERVATION EXPOSITION

THE UTILIZATION OF SMALL POWER ON THE FARM.

BY JOHN A. SWITZER*.

The Department of Waters of the Exposition had planned a variety of attractive exhibits but, due to emphasizing the value of conservation of water powers, the prevention of flood damage, the improvement of navigation and allied subjects, the appropriation placed at its disposal being inadequate to carry out so ambitious a program, the effort was concentrated upon a small water power exhibit which was designed to show the farmers of the country how simple and easy a matter it is—where a moderate stream of water is available under a suitable head—to utilize the same for developing water-power and from the water-power to generate electricity to do all manner of work upon the farm.

The exhibit consisted of a building open on one side for inspection by visitors, located on the shore of the lake near the main building. In this building was installed an 8-inch turbine, made by the Allis-Chalmers Machinery Co., and directly connected to it a direct current electric generator, made by Robbins & Myers. The turbine was supplied with water from an artificial spring located on the terrace just at the north of the Administration Building. From this spring the water was led through a small wooden flume, across the roadway to a tank built upon a scaffold on the top of the building, and from this tank the water was conveyed through a vertical metal pen-stock to the turbine. The amount of water used was about 2 cubic feet per second and the head thus rendered available was 25 feet. The flume was of open construction, purposely so built in order that visitors might inspect the entire plant and judge for themselves the amount of water which it utilized. The turbine was a horizontal machine and operated with great smoothness.

The current from the electric generator was led by wires under the floor to a switchboard designed and built for the exhibit by the Acme Electric Company. From this switchboard wires led to the various motors which were connected to the farm machinery making up the bulk of the exhibit, each motor being under the control of its own switch. Wires also led from the switchboard to the electric lights by which the exhibit was illuminated.

The motor-driven machinery consisted of a cream separator (furnished by the De Laval Cream Separator Company), a barrel churn (loaned by the Woodruff

*Associate Professor of Experimental Engineering, University of Tennessee, and Chairman Department of Waters, National Conservation Exposition.

Hardware Company), a corn crusher (furnished by the Beck-Farver Company), a pea and bean thresher (furnished by the Koger Pea and Bean Thresher Company, at Morristown, Tenn.) All of this machinery was in operation during the period of the Exposition, all being driven by electricity generated by the water-power plant.

A great deal of interest in this exhibit was manifested by visitors and the attendants were solicitous to explain to all inquirers the operation of the plant and particularly to point out the ease with which electricity may be generated and handled on the ordinary farm. No mechanical training is required for this and the machinery is easily installed and cared for by a man of intelligence.

It is believed that very much good was accomplished by the exhibit, as it showed in a definite, concrete form how easy it is to develop and utilize electricity in farming operations. The Department would have been glad if the exhibit could have been very much more extensive and that it could have included some of the household apparatus capable of being electrically operated.

It seems desirable to call attention here to the possible utilization of the great number of small powers in Tennessee and other states for the needs of the home, the farm, and the small factory, or even for the development of light and power for towns and villages. Before the introduction of the electrical transmission of power, water power could be used only at the point of the stream where the power existed. It was then necessary to carry the work to be done to the power site; so that the work that could be done was limited to the grinding of grain, the sawing of wood and some similar lines of work, and very often where the job was small it was found to be less work to do it by hand where the materials then were, than to carry them to the mill and the finished products back again. But when it became possible to obtain the power on the stream, where the water had its fall, transmit that power over a wire with relatively little loss to any point where it is desired to use the power, the whole matter assumed a new aspect.

The number of operations about the house and farm to which power derived from small private plants is being actually applied, includes not alone the lighting of the house or barn, the first thing thought of, but the cutting of wood, the milking of cows, the raising of hay to the mow, the heating or cooking in the house, the driving of churns, separators, washing machines, the heating of electric irons, the driving of ice cream freezers, of tools in the machine shop, the charging of storage batteries for automobiles, the pumping of water, the drying of clothes, the grinding of feed, the shearing of sheep, the clipping of horses, and many other things, even to the playing of the piano.

The little water powers are of no interest to the cities; they bear no relation to the dwellers in cities; they do not attract capitalists. But potentially they are of

very great interest to farmers. They will in the future vitally affect our rural communities. It is fortunate indeed that their utilization is not and will not be dependent upon capitalists.

Every one knows or remembers some little grist mill, run by a water-wheel. The wheels are still running where they did and just about as efficiently as they did when installed years ago, by the grandfathers of the present owners. To find a water-wheel in the country that is utilized for any purpose more extensive than the grinding of grain is still quite exceptional. A certain man, prominent in the public life of our day, while driving in an unaccustomed section of country, came upon a farmhouse which was lighted by electricity, supplied with running water in kitchen and bathroom, and in which the sewing machine was run by an electric motor, while in the electric lighted barn he found that the churn, the separator, the feed cutter and even the grindstone were electrically driven. Turning to the proprietor he said: "How can you afford it?" The farmer replied: "I cannot afford not to."

The answer was characteristic of the modern enlightened farmer. He can not afford to let the power which his farm brook is capable of developing longer run to waste.

The problem of keeping the boy upon the farm has recently assumed the prominence and dignity of a national issue. It is not alone the question of keeping "the boy;" it is the problem of securing farm help—efficient help or inefficient help; and there appears to be no indications pointing toward an easement of the problem for the farmers in the future. Consequently the development of cheap power on farms where water power is at all available begins to assume an economic importance, the magnitude of which is certain to grow in geometrical ratio with the advancing years.

The little water powers, those the individual farmer might develop; those slightly larger powers which country towns and villages might utilize for street lighting and other purposes, these are too small to be regarded when estimating the water power resources of a great State. Yet who can estimate the value to the citizenship of the State of the development of an aggregate say of 10,000 horse power in a thousand diminutive power plants scattered throughout the country.

EXAMPLES OF UTILIZATION AND SERVICE OF WATER POWER FOR FARMERS*.

On a dairy farm near Greeneville, Tenn., belonging to Dr. F. P. Robinson, a water wheel runs the following machinery: a feed grinder, grist mill, ensilage cutter, separator, churn, circular saw, and grindstone; it also pumps spring water to

*See Bulletin on the Resources of Tennessee, issued by the State Geological Survey, July, 1911.

supply the house. The owner expects shortly to install an electric generator to light his house. The wheel develops about one horse power, but could be made to yield two or three. The power comes from a very small creek, (called Holly Creek), the outflow of a spring. The creek is five miles long and has a total fall from source to mouth of about 340 feet. This is an average of 68 feet per mile. The dairy farm utilizes 20 feet of this total fall. Lower down are other farms which could as easily utilize a part of the remaining fall. All told the creek could be made to develop approximately 20 horse power.

In a letter from Mr. Felix Grundy Ewing, of Cedar Hill, Tenn., he says, in regard to his plant at Glenraven: "I will say in the first place that it is estimated that my horse power will furnish, normally, about 70-horse power. The dam is 100 feet long, 11 feet high, but realizing changed conditions in low waters, I put in a 35-horse power generator and a 30-horse power motor a mile away. This installation consists of the Leffel water wheel, Woodward governor, with a motor control, which is a thoroughly satisfactory device, enabling me to close off the entire water power by the push of a button. I operate a 25-horse power grain mill in the day time, and it furnishes electric light for my home at night. In addition, by the use of an additional motor, we pump water, and could, as a matter of course, do quite a number of things with the power. . . . I regard the water power as almost indispensable to the enterprise of the magnitude of this one of mine, and if all farmers could avail themselves of some such water power within the limit of their necessities, I should say that it would prove a very profitable investment to them, as everything may be done with it from the shearing of the sheep to the threshing of the wheat."

On the outskirts of Oriskany Falls, Oneida County, New York, Mr. E. Burdett Miner utilizes a slight fall of Oriskany Creek. With the power transmitted to his house, 1,700 feet from the creek, he lights every part of the house and barn, runs a circular saw, runs the machines and tools in a considerable machine shop, built by one of his boys; a 2-h. p. motor is belted to a vacuum pump, that cleans the house in a most modern, sanitary and thorough manner, and milks from 20 to 25 cows twice a day. In the dairy room a one-half-h. p. motor runs the separator, the churn, the ice cream freezer in summer, the grindstone, and about everything else run by a crank is belted to an electric motor. Five electric heaters in the house raise the temperature to over 75 degrees inside, when it is zero outside. The electric fans in summer reverse the operation. The kitchen cooking for a family of five or ten is run by electricity, as well as the egg beater, cream whipper and sewing machine. Electricity pumps water into a tank in the attic and heats the water needed for the bath and kitchen. This is not a dream, but a single actual case described

with photographs of his installation and appliances in a recent bulletin issued by the State Water Supply Commission of New York.

At Chazy, New York, Mr. W. H. Minor, a raiser of live stock, develops water power, which he uses through electricity, to run about 25 motors installed in the various buildings, running numerous machines and labor saving devices. A 10-horse power motor will lift an entire load of hay and store it in the mow; a 2-horse power motor operates a root-cutting machine; a one and a half horse power motor drives a vacuum pump, which operates five milking machines, each of which will milk two cows simultaneously; a one and a half horse power motor runs a cream separator, and a 3-horse power motor drives the big churn. Motors are used for driving the water pumps, as well as the brine circulating pumps of the ice-making plant. One motor drives a grist mill, and a 4-horse power motor drives a sausage-chopping and mixing machine. Roots for sheep are chopped by a 1½-horse power motor, and feed for the fish in the fishpond created by the dam is prepared by a grinding machine driven by a 2-horse power motor. Wood-working machines and machine tools are driven by motors in the carpenter and machine shops, and the electric power is used to pump water, shear sheep, clip horses, wash, dry and iron clothes, heat the house, cook the food, freeze the ice cream, cool the house in the summer, curl the ladies' hair and play the piano.

To get some idea of the cost of such installations, the following is taken from the New York report previously quoted, pages 164 to 166. The description is of a small plant, developed by Mr. Jared Van Wagenen, Jr., at Lawyersville, Schoharie County, New York:

"There is a small stream which runs through the farm and flows into the Cobleskill. This stream is so small that one may easily step across it in the summer time. About half a mile from the farmhouse is an old milldam which forms a pond with an area of more than an acre. The dam was built long ago when small saw mills dotted that section of the State. The timber having been practically all cut off, this mill, along with hundreds of others, was abandoned. Mr. Van Wagenen conceived the idea of harnessing its wasting energy and making it do some of his farm work for him. The story of how he accomplished this is best given in his own words, as follows:

"About eight years ago I began to figure on how to get this power to the house where it could do a little work. My first thought was to carry it there by belt cables, but figures proved that the friction would eat up the five horse power available. Electric power, easily transmitted with little loss, was the only solution. I talked with many who understood electricity and its engineering features, and most of them laughed at the idea of such a small installation. Had I wanted to construct a million dollar plant there would have been whole libraries of advice; but a small plant to run entirely alone and be controlled by a seven-hundred-foot wire was evi-

dently a novelty. After a good deal of studying and feeling my way the plans were made and the work begun.

"The stream being so small, the most rigid economy of water had to be observed, so I installed a nine-inch upright turbine in an upright wooden case, building the case myself, where it would get the most benefit of the fifteen-foot head. This turbine, furnishing about five-horse power, I belted to a three-kilowatt, or four-horse power, 125 volt direct current generator, which would easily take care of 75 metal filament incandescent lamps. I next installed a water wheel governor to insure a steady flow of electricity. It took about 7,400 feet of weather proof copper wire, strung on wooden poles which were cut on the farm, to carry the electricity to my home and the farm buildings and to the house of a neighbor. As it is more than half a mile from the house to the plant it is out of the question to go there every night and morning to stop and start the machinery. Of course it is possible to let this plant run night and day during the wet season, but in dry times it is best to save the water when the power is not needed. A neighbor living about 700 feet from the power station kindly starts and stops the machinery with a wire stationed at his bedroom window. This wire controls a valve and counterweight. At five o'clock in the morning he pulls the wire and the lights come on, and at a certain hour of the night he releases the wire and they go out. In payment for this service I light his house and barns free of charge.

"Our maintenance charges are very small; almost negligible. I think our water wheel behaves better every year. Carbon brushes for the generator last a long while, and oil is a very small item. Each year I am improving the plant, and very soon I expect to install a motor-driven washing machine and wringer to prepare the clothes for the electric iron, and to put a vacuum cleaning outfit in the house.

"Although I consider the cost of our plant about \$500, it was installed under the most rigid economy in every respect, and mainly by my own hands. The dam was already built and needed only some trifling repairs. The gate control is my own get-up, and while the cost is trifling it took considerable study to get it to work right. I did most of the house wiring, using concealed knob and tube for the living rooms of the house, moulding and open wiring for the other rooms and for the barns. This material cost me about \$40. Of course I do not in any instance figure in my own labor as the work was all done at odd times.'

"This small power development using the dam already built cost Mr. Van Wagenen about \$500 as follows:

Dynamo, 3 k. w. (second hand).....	\$ 50.00
Waterwheel, 9 k. w. (naked wheel)	55.00
Governor (new)	75.00
Wire (7,400 feet)	210.00
Labor (installing water wheel).....	40.00
Fixtures (lamps and the like).....	38.00
One small motor, 2 h. p. (new).....	50.00
	<hr/>
Total	\$ 518.00

"The plant furnishes power sufficient to light the farmhouse and all the buildings with electricity, as well as those of the neighbor who turns the water on and off. In the dairy a small electric motor of about three-horse power, actuated by the electric current, drives the cream separator, and also furnishes power for running the grindstone, feed cutters, hay fork, and fanning mill, in addition to which the power is also used to milk the cows and cut the ensilage and to do numerous bits of work about the place. Mr. Van Wagenen states that his water power does work equivalent to that of a hired man the year round, and does away with the numerous chores and laborious duties about the place."

DEVELOPING A SMALL WATER POWER.

While it may be a pleasing exercise of the imagination to picture the country as dotted over with tiny hydro-electric plants, and to think of the farmhouses as blazing forth with all the brilliance of innumerable electric lights, yet to the average farmer the contemplation can not seem to be related to the practical workings of every day life.

And the reason for this is not that the water power is not there awaiting development. Neither is it because the farmer can not afford the necessary expense of effecting this development. On the contrary there are hundreds of farms in the State, probably thousands, where power enough could be developed to do the work year in and year out of two hired men, and at an expense less than their wages, for a single year.

The reason is rather that the farmers generally feel that they lack the knowledge necessary to buy, install and operate the requisite equipment.

If this were a necessary bar to the development of the water powers, there would be little to point to this article. The manufacture of hydraulic and of electrical machinery has reached such a degree of perfection that self-oiling machines can be had which, when properly installed, will operate for long periods at a time with practically no attention. The first cost of such plants as are here contemplated is almost the only cost, and the life time of the equipment should be nearly or quite a generation. This last statement is not intended to cover electric lamps of course; but the average life of the recently perfected tungsten lamps is about 1,000 hours of burning, and the expense of the renewal of lamps would be but a fraction of the present cost of kerosene in the average farmhouse.

The prime requisites for a small water power are, first, a stream of water of an appreciable volume, and second, a water fall, rapid, or gradient of appreciable amount. In round numbers a stream having a flow of one cubic foot per second will generate one theoretical horse power for every ten feet of fall it has. Thus, a stream flowing four cubic feet a second, and having a fall of 30 feet, could generate 12

theoretical horse power. The fall may be in the nature of a water fall, with more or less nearly vertical drop, or a rapid with a fall of one foot in ten to one foot in two, or of only a few score feet per mile. In some cases the fall may be obtained by building an impounding dam at the foot or lower end of the fall or rapid. In other cases the fall is utilized by building a dam at the upper end and carrying the water by pipe or canal to a point below the foot of the fall where the power plant is located. In the latter case the water may be diverted at the head of the fall or rapid, or at the highest point of the stream on the land in question and carried along the hillside in a canal with just sufficient grade to insure a flow to a suitable point, then turned into penstocks and carried down to the power plant or out onto an overshoot wheel; or the water may be carried in a strong, tight pipe following down the grade of the stream to where it is to be used. With some streams only a diverting dam of small cost will be necessary; in other cases it may be necessary to build impounding dams, so that a small amount of water accumulating through the 24 hours will furnish the desired amount of power through a relatively few hours. Those questions all require judgment. The diverting dam has the advantage of small initial cost, but the open canal is liable to freeze in winter. On the other hand, there are many streams which, while yielding an abundance of power through certain months of the year are apt to go nearly dry at times in the summer. For such streams storage dams are necessary if they are to run all of the year. Such dams may be only large enough to store a sufficient supply for a day's use, depending on accumulating enough during the 24 hours to run their motors the few hours that are often necessary; or they may be built large enough to store up water during the wet season of the year for use in the dry seasons.

It is decidedly of advantage to know, if possible, the net horse power obtainable at all seasons of the year through measurements. Suppose that it be found that at a certain point 20-horse power could be obtained during three months of the year, 12-horse power during six months, and an average of 3-horse power during the remaining three months without storage. It is evident that a 3-horse power plant could run throughout the year, and if that power be sufficient for the purpose desired, it would be a matter of economy to put in a plant of that size. Experience has shown, however, that having the power available has led to its being used in ways not contemplated at first. There is also the conservation factor of making the largest possible use of the power available. Under these circumstances it would be wise to consider, if it be not possible to tide over the three dry months, either by reducing the demand on the power at that time, or by increasing the power by water storage, or to supplement the power by the use of storage batteries, or a gasoline engine or both, or in some other way. It may then become possible to install a 12-horse power plant, which, if not all needed on the farm, can often be used

to supply adjoining farms at a fixed meter rate, and thus help to return the original cost. By the use of storage batteries for the storage of electricity made during hours of small demand it may be possible to maintain a limited service as by the storing of water during hours when the demand does not equal the supply. In the case of a small stream that practically dries up in the summer, some primary motor must be used, such as a gasoline or kerosene engine. In many such cases it will be possible to return to the old practice for some or all of the power required during the dry seasons, or the putting off of the doing of unnecessary things until rains have made the power available again. Streams having only one or two square miles of drainage frequently dry up in summer.

There are various ways of developing the power of falling water for practical purposes. For large streams, with small fall, the hydraulic ram is sometimes used. This is a device by which the fall of a large volume of water is used to raise a small volume of water to a much greater height. The efficiency varies with the fall and other factors. Thus with a 2-foot fall, the smallest that can be effectively used, one-thirteenth of the water supply can be elevated to a height of 20 feet. Under favorable conditions water may be elevated to as much as 120 feet. When so elevated the water may be used either as a water supply, or as a source of power by allowing the elevated water to fall again and utilizing its fall. The old method of utilizing falling water was by water wheels. The undershot, overshot and breast wheels were much used in the early days, being easily manufactured of wood at home. The undershot is used where the fall is very small, the water being gathered into a flume, and the wheel arranged so that the paddles on the lower side of its circuit dip into the rapid current of the flume and the pressure on them turns the wheel. If the fall is several feet, a breast wheel may be installed in which the flume has the form of a quarter of a circle inclosing the paddle for a quarter of its circuit, and in this case, not only the impact of the water, but its weight as well, help to turn the wheel. In the overshot wheel the fall is great enough to be carried out to the top of the wheel, where it flows into buckets or against enclosed paddles, and its weight alone turns the wheel. Another style of wheel of more recent origin makes use of the impact of water escaping from a nozzle or small orifice under high head against the paddles or vanes of the wheel. This will be an orifice opening from the base of a dam, or it may be the end of a pipe extending down from the source of supply. In later wheels the paddles were replaced with cups into which the impulse of the jet of water is carried, making a wheel revolve. The turbine wheel is a modification of the impulse wheel, in which a series of curved vanes or runners, with an arrangement similar to a screw, are so placed in a tube as to receive the impulse of water escaping from that tube, the escape of the water being guided so as to pro-

duce the greatest impact against the vanes, and these being solidly connected to a shaft either horizontal or vertical, transmit the revolutions to the machinery.

In mountain water power flour mills, it is often the practice to use a crude impulse wheel, turning on a vertical shaft to the top of which is attached the under millstone. But in most cases, especially those here considered, some other method of transmitting the power will have to be sought. If the work is all to be done at the power site the power may usually be transmitted by belting running on pulleys attached to the water wheel and to the machine to be run. If more than one machine is to be run, or at more than one speed, it will be necessary to use an intermediate shaft with pulleys of different sizes.

When the power is to be used at some distance from the power site it will usually be found that it can best be transmitted by electricity. That means the use of a dynamo at the power plant, wires to carry the current and a motor at the points where the power is to be applied. In this process there are a series of losses which sum up just about one half of the power available. In other words, where ten theoretical horse power are available, only about 5-horse power can be obtained at the house or barn.

Hand in hand with development along the line here indicated should go, and would do, an improvement in the living conditions on the farms. Specifically is meant by this the installation of running water in farm houses, general introduction of bath rooms, etc. On many farms where no water can be had a hydraulic ram can be used to pump water for the house.

In connection with the small water powers which are too large for development by individual farmers solely for their own use, some extended State action may be necessary. A law somewhat analogous to the drainage law should be framed, providing for the formation of water power districts and making provisions for legalizing the necessary condemnation and assessments for supplying the funds through the use of bonds by the county, and for the refunding of such moneys by the individuals and communities benefitted, and for the necessary surveying and engineering control, etc., of such developments as shall be made under the provision of the law.

Ultimately the changing economic conditions of life in America will compel the complete utilization and conservation of all of our water powers, large and small. To use coal is to destroy it; but water power is indestructible. Its use, therefore, means the conservation of the destructible source of power.

THE HEALTH DEPARTMENT AND EXHIBIT

BY GARDNER T. SWARTS, JR.

The Health Exhibit at the National Conservation Exposition was engineered by the Health Committee of this exposition with Dr. Thomas ap R. Jones as Chairman. The other members of the committee were Dr. Herbert Acuff, Dr. C. J. Carmichael, Dr. S. H. Hodge, Dr. A. G. Kern, Dr. H. H. McCampbell, Dr. R. P. Patterson, Dr. Robert Patterson, and Dr. E. R. Zemp.

The early plans of the committee suggested so many possibilities that it was decided about August first to ask further financial aid from the Exposition Company, making this health exhibit not only the elaborate one which had already been planned but also one which should be unique in the history of exposition work in this or any other country. To accomplish this purpose the services of the leading health exhibition authorities in this country were obtained. The additional appropriation was at once granted and the Educational Exhibition Company of Providence, R. I., which has designed most of the famous health exhibitions for national and state organizations already existing in this country, was given authorization to proceed with the work of preparing an educational exhibit on the Conservation of Public Health which would be inferior to none shown on this continent and if possible the equal of the famous Dresden Exposition on Hygiene.

Thanks to the preliminary efforts of the committee in securing much admirable material from the American Museum of Natural History American Red Cross, Census Bureau of the U. S. Department of Commerce and Labor, Indiana State Board of Health, Rockefeller Hookworm Commission, State Food and Drugs Commission of Tennessee, and U. S. Public Health Service, it was possible in spite of the limited time available to have this section of the exposition ready promptly on the opening day.

Owing to the extremely limited time available a good deal of thought had to be put into this exhibit so that every part could be constructed and be all ready to go in place on arrival at the grounds. Accordingly plans were drawn up and a system arranged whereby this could be accomplished. The uniform color scheme of grayish-green background with dark green trimmings was selected as being in harmony with the decoration scheme of the Liberal Arts Building and in conformity with the latest exhibition practice from both psychological and artistic standpoints. The site selected for this exhibit covered an area about 25' wide and nearly 300' long on the front gallery of the Liberal Arts Building.

Rather than dilute the strength of the lesson taught by the exhibit by spreading it over too many subjects it was decided to treat thoroughly and carefully the main preventable diseases or causes of disease, leaving for further expositions the carrying out of more detailed educational measures toward the establishment of private and public machinery necessary for the accomplishment of the object sought. The subjects treated in this exhibit were Statistics of Death Rate (showing the extent of the principal diseases), Tuberculosis, Mental Hygiene or the Prevention of Insanity, Water Supply, Care and Preparation of Clean Milk, and the House-fly and Mosquito considered as disease carriers. In addition to this material designed by those in charge there was shown in the Government and State material, exhibits on Hookworm, Communicable Diseases, Bubonic Plague, Food and Drugs, and First Aid to the Injured.

All of this material was prepared in such a way as to be easily understood by even persons entirely unacquainted with matters of Hygiene and so each visitor to the exposition could, if he desired, carry away with him, not a complete working knowledge of Hygiene and Sanitation but some definite idea as to the first principals and precepts of Health Conservation. Throughout the exhibition free use was made of models and moving displays to show graphically the facts to be brought out. Conforming with the spirit of the entire exposition on the opening day there was unveiled a sign of over forty feet in length hung above the central part of the exhibition bearing the words in letters two feet high "PUBLIC HEALTH IS OUR GREATEST NATIONAL RESOURCE."

As the visitor entered the exhibit, he was confronted by some very valuable and interesting charts prepared by the Census Bureau of the United States Department of Commerce and Labor showing mortality statistics of various states as well as a map showing the states which require by law the registration of births, marriages, and deaths. A notable feature of this map was the addition of the state of Tennessee to the list of those states which may now be counted on as capable of giving reliable statistics in regard to the advent, progress and decline of human life.

The "Wheel of Misfortune," one of the most striking models, was one especially prepared for this exposition. This model was built like a huge roulette wheel, five feet in diameter, which the visitor was invited to rotate. On the rim of this wheel were 103 little graves and stones. These 103 graves represent the number of deaths from the five principal preventable diseases for every 50,000 people in the United States, as computed from Census figures, namely:—Tuberculosis, Typhoid Fever, Diphtheria and Croup, Scarlet Fever and Malaria. Each headstone was colored in an appropriate color and bore an inscription as to which disease it represented. It was a noticeable fact that out of these 103 deaths from the

five principal preventable diseases. Tuberculosis claimed a toll of 79, or nearly three in every four. The index pointer on this wheel was formed of the three figures "Indifference," "Ignorance," and "Idle Neglect," the chief causes of this tremendous and unnecessary loss of life which is annually occurring in these United States.

Passing on into the Tuberculosis section, the visitor looked into an opening at the further end of which he could see a beautiful little doll which suddenly and without warning every 30 seconds was replaced by a grinning skeleton. This apparatus was used to illustrate the fact that every 30 seconds in the civilized world some person is dying of Tuberculosis. Toward this million of lives every year which Tuberculosis claims from the inhabitants of the civilized world the United States contributes annually its quota of 200,000 deaths. These 200,000 deaths mean a rate of one person on an average of every two and one-half minutes, and an electrically-operated tolling bell on an adjacent panel marked each sacrifice to these gods, "Indifference," "Ignorance," and "Idle Neglect."

A notable photograph shown was a row of gravestones, all in one Maine family. Out of thirteen of this family, nine are known to have died from Tuberculosis and two others from resulting causes. The fact that sunlight and fresh air is the most powerful and the only free germicide was brought out strongly, together with a few hints for the housewife on the right and wrong way to sweep and dust. The important part that public drinking cups play in distributing germs of Tuberculosis and other diseases was thoroughly dwelt upon and the modern substitutes for the old style and unsanitary public cup,—the bubbling fountain, was depicted. The fact that the only real cures for Tuberculosis are fresh air, good food and rest and that no medicine sold by the bottle has ever been found that would cure consumption was graphically displayed. A huge bottle bearing the words "Dr. Fako's Consumption Cure—Guaranteed," and the benign countenance of the doctor himself was seen mounted on a stand. Suddenly, and periodically the traditional emblem of poison, the skull and cross bones, with the word "Poison" beneath, could be seen shining through Dr. Fako's face. Methods of home care and the value of sanatorium care were also shown by means of models and copious illustrations. This section of the exhibit closed with an electrical device showing alternately by means of small models "The wrong kind of a room; dirty, dark and dangerous to health" and its counterpart, "The same room cleaned; cheerful, comfortable and sanitary."

Next to the Tuberculosis section, the visitor had an opportunity to see what little is known about the cause and prevention of Mental Disease. The prescription for eternal youth was also given. The United States Public Health Service exhibit on Trachoma and on the Transmission of the Bubonic Plague by rodents

was also shown as well as a most striking exhibit on communicable diseases by the Health Department of the American Museum of Natural History.

The beautiful exhibit on Hookworm, designed for the most part by Dr. Olin West of the Rockefeller Sanitary Commission, brought out strongly the prevalence of this disease in the South and the only method of prevention.

The exhibit on Water Supply showed two interesting models illustrating how a very deep well containing water which the farmer may consider very safe may receive contamination through crevices in rocks and by seepage through the sand, if located too near or in the wrong position with respect to the family privy vault. A striking illustration of the purification of the Knoxville Filter System was illustrated by means of two glass jars, one of which contained 12,000 beans representing the 12,000 bacteria found ordinarily in a half teaspoonful of the Tennessee River water. The other jar contained but 30 beans showing the average number of bacteria remaining after the water has passed through the Knoxville Municipal Filters. Another striking model was that showing the principal of an artesian well and illustrating at a glance, the reason why wells of this type are usually safe sources of drinking water.

The House-Fly section was probably one of the most interesting shown as it demonstrated how this tiny but ubiquitous pest by means of his body, bristling with hairs and by his fuzzy feet, faithfully gathers from the spittoon and privy vault, germs for free distribution to the milk bottle and the family cream pitcher. Hung over the center of this section was a huge fly with human skeleton astride him. This fly, labelled "Death's Messenger," was loaned the Exposition by the Indiana State Board of Health.

One of the most striking moving models shown in the exhibit was the model showing the flies arising from the manure pile where they are born, flying through the air into the privy vault and out again into the open and unscreened kitchen window. Few persons having seen this model went without screens last summer. Means of exterminating flies were also shown but the chief principal of "no filth, no flies" was brought out again and again. The fact that nearly all house-flies breed in horse manure which has been allowed to accumulate for fully ten days was fully emphasized.

That whining, winged wisp of an insect, the mosquito, was for the first time to many exposition visitors shown in his true light.

The difference between clean and ordinary milk was shown and many persons for the first time reviewed the processes through which this most nutritious of foods is prepared for their consumption. The final suggestion "Did you ever see your milkman's place?" was taken in earnest by many and some of these consumers either changed their milkman or his methods.

Dr. Lucius F. Brown of the State Department of Food and Drugs prepared a striking popular exhibit on some of the fake varieties of foods and remedies which if not absolutely injurious are at least highly unprofitable to the consumer. This striking exhibit of the Department of Food and Drugs was made uniform with the rest of the health exhibit and showed up highly to the credit of this Department.

A large section of the exhibit of the American Red Cross showing methods of Flood Prevention, Rural Nursing Work, hints on First Aid to the Injured and Care in Time of Catastrophes concluded the Health Exhibit in a most substantial manner.

The exhibit was open during the entire exposition and by actual count over 88,000 people attended it. Among the notable visitors were Mabel Boardman of the American Red Cross, Secretary of State, William Jennings Bryan, Gifford Pinchot, the forefront of the movement of conservation in this country, and Booker T. Washington, President of Tuskegee Institute.

Of this exhibit Gifford Pinchot said in the *Knoxville Journal and Tribune*, September 13, 1913:

"If there were to be any criticism of the exposition to be made by me, it would be this: That it was a mistake to put that wonderful health exhibit on the second floor of a building. I believe I would have had it placed on the ground floor, and in one of the most prominent places imaginable, for in all my experience I have never seen anything like it. It is superb; it is great. The exhibit surpasses anything of the kind I ever have seen before. It contains not only one lesson, but many, many lessons for every man, woman or child who sees it, and I wish that every person in the South and every person in the country might see it.

"The conservation of the public health is a great work and this exhibit tells what has been done and what will be done along these lines better than anything else could."

The exhibit was conceived and designed by Gardner T. Swarts, Jr., and erected and assembled by Robert F. Gowen, both of the Educational Exhibition Company of Providence, R. I. Mr. Gordon B. Ewing of the same firm acted as demonstrator of the exhibit during its progress.

The concensus of opinion in regard to Public Health Exhibitions of this character which are shown for the benefit of all the people through the courtesy of a few is particularly appropriately expressed in regard to this exhibit by the words—

"The hour of dreams is passed,
The gibbering ghosts depart;
And man is unafraid at last,
To have a human heart."

CONSERVATION OF LIFE

BY HARVEY W. WILEY, M. D.*

If I should ask this audience, assembled here in this amphitheater devoted to the propaganda of conservation, what each one of its components considered to be his greatest wealth, I would get, I am sure, a variety of answers. The farmer would point to his field and flocks, the manufacturer to his factory and stock of goods, the merchant to his loaded shelves and the good will of his customers, the lawyer to his clients, the minister of the gospel to his church, and each one of them would say "This is my greatest wealth." No one of these answers, however, is correct.

Life is the greatest wealth. It is the only kind of wealth which, when lost, can never be regained, and yet it is the one form of wealth about which we care the least. The thing that interests the people of this country less than anything else is the preservation of human life. We study the conservation of everything else, but rarely do we pay any attention to the conservation of human life. We are interested in the high cost of living, but not in the low cost of dying. Every year of so-called progress makes living more difficult and every neglect of the principles of health and hygiene makes dying more easy.

We seem to have a mania in this country for being killed. Annually nine thousand people are murdered, and twelve thousand are killed in railroad accidents and one hundred thousand wounded. Sometime ago we celebrated the anniversary of the famous battle of Gettysburg, and yet only eight thousand were killed in that battle, four thousand on each side, and forty thousand wounded. The railroads every year kill and wound a great many more people than were hit at Gettysburg. We are not content, however with accidents by land and by sea and with the number of murders and other violent deaths, but we seek to aid these efforts to desolate humanity by courting all kinds of contagious and infectious diseases. We are spending a great deal of money on our navy, and I would not withhold a dollar of it; a great deal on the army, and this I would not curtail. We are spending twenty-five millions a year for agriculture, which is none too much, and in all we are running up an annual expense account of about one billion dollars in this country for various purposes, all apparently connected with the public good.

Yet how much are we spending to protect human life and health? Aside from the money which is given for the inspection of meat animals, and this amounts to

*Address delivered at the National Conservation Exposition, October 25, 1913.



DR. HARVEY W. WILEY

a little over three million dollars a year, we are not giving over a million and a half dollars for all of the forms of public service in connection with the human health. A few years ago the State of New York voted a hundred millions of dollars for the widening and deepening of the Erie Canal. The money is all spent now. What citizens of New York will live one second longer as the result of this great expenditure? Not one. What disease in New York which kills men, women and children, will be restricted in the least degree by this expenditure? Not one. In so far as the life, efficiency and happiness of the citizens of New York are concerned, the money might just as well have been thrown into the Hudson River. But should I go to Albany today and ask for one hundred million dollars to exterminate tuberculosis in that State, that dreadful disease that kills eleven people of every hundred who die in the State, how much would I get? Not a cent. And yet with half that sum I could eradicate tuberculosis from the State of New York. I could put every citizen suffering with this disease in the Adirondacks and build a fence around them and keep them there until they were no longer capable of spreading the disease. I could exterminate every tuberculosis milk cow in the State, thus protecting the children from acquiring tuberculosis. I could add ten years to the average life of every citizen of the State by wisely spending one hundred million dollars for the protection of the public health.

The most difficult thing to get out of the legislatures and the congresses in this country is money to protect human welfare in the way of safeguarding us against infectious and epidemic diseases. The fact of the case is, the reason we are not protected against diseases is because we don't want to be. Perhaps not a person in this audience has ever asked a member of the State legislature, or the congress of the United States, to do something to protect his health. You have asked for almost everything else from your legislatures. You have asked for good roads and buildings to adorn the State capital; you have asked the federal government for buildings at Knoxville and all other parts of Tennessee; you are willing to take the money of the public to improve the Cumberland and the Tennessee rivers; but the citizens of Tennessee may continue to die as they have done in the past and nobody cares. The fault, therefore, is not with the member of the legislature, nor with the member of congress; the fault is with the people themselves. They prefer to die. And what are some of the ways in which they exercise their preference?

What are the diseases which are most active in causing the death of our people?

In the registration area of 1910, 154,373 infants under one year of age died, in round numbers one-fifth of all the deaths. Assuming the total deaths to be 1,500,000, the number of children dying in the United States every year under the age of one year is 300,000. A striking illustration of the danger of the hot months

for children under two years of age is shown by the fact that the number of deaths from diarrhœa and enteritis for July and August were 12,535 and 12,565 respectively, while in February the deaths from the same causes were 1,373. From these data it is evident that during the hot months over 1,000 infants under the age of one year die every day in the United States.

The report of the division of vital statistics shows that beginning with the second month of life, diarrhœa is the most serious cause of infant mortality. While infantile diarrhœa, and its allied disease enteritis, is the most frequent cause of death among infants, the greatest destroyer of the human race, without respect to age, is tuberculosis, which caused 10.7 per cent. of the deaths from all causes in 1910. Next in importance in destructiveness is found organic disease of the heart, causing 9.5 per cent. of all the deaths. For all ages diarrhœa and enteritis comes third in fatality, with 7.8 per cent. Close after this comes pneumonia, with 6.7 per cent. Kidney disease causes a mortality of 6.6 per cent.

Deaths from Tuberculosis: The number of deaths from tuberculosis during the year 1910 was 160.3 per hundred thousand, or for 100,000,000 people 160,300. The death rate from tuberculosis from 1900 to 1909, inclusive, was 183 per hundred thousand. Apparently the death rate from tuberculosis is decreasing.

Cancer: The number of deaths from cancer in 1910 was 76.2 per hundred thousand, or a total of 76,200—the highest death rate ever recorded for cancer. Evidently the deaths from cancer are increasing in proportion to the population.

Organic disease of the heart: The number of deaths in 1910 was 141.5 per hundred thousand, which is a very large increase over that of the preceding year, of 129.7 per hundred thousand. The total number of deaths from heart disease was 141,500.

Pneumonia: The death rate from pneumonia for 1910 was 147.7 per hundred thousand, making a total of 147,700 deaths from this disease. The death rate from this disease increased considerably over that of the preceding year.

Kidney Disease: The total number of deaths from kidney disease in 1910 was 99 per hundred thousand, making a total of 99,000, for an estimated population of one hundred millions. This includes all forms of kidney trouble, nephritis and Bright's Disease.

Typhoid fever: The death rate from typhoid fever was 23.5 per hundred thousand a total of 23,500 for the estimated mid-year population of one hundred million.

One of the curious features in connection with typhoid fever is that some of the most sparsely settled states show the highest rates of fatality,—for instance, the number of people dying in Colorado of typhoid fever is 41.9 per hundred thousand; in Montana, 39.9; and Utah, 37 per hundred thousand. Only one of the

thickly populated states equals this—Maryland, 40.7 per hundred thousand. Some of the lowest death rates of typhoid fever were found in New Hampshire (10.7); Massachusetts (12.4); Rhode Island (13.6); Vermont (14); New Jersey (14.5); and Connecticut (14.7). Of cities of one hundred thousand population or over in 1910, Omaha, Nebraska, showed the highest rate, namely 86.7; Minneapolis, Minn., 58.7; Kansas City, Mo., 54.5; Atlanta, Ga., 50.1; Birmingham, Ala., 49.5; Nashville, Tenn., 48.9; Milwaukee, Wis., 45.7; Spokane, Wash., 45.4; and Baltimore, Md., 42. The lowest rates shown for some of the large cities were those of Bridgeport, Conn., (4.9); Paterson, N. J., (7.1); Cincinnati, Ohio, (8.8); and Cambridge, Mass., (9.5). These cities seemingly are as well protected against typhoid fever as some of the cities of Europe, where death rates are as follows: London, 4 per hundred thousand; Edinburgh, 2; Dublin, 10; Paris, 7; Brussels, 19; Amsterdam, 7; Copenhagen, 3; Stockholm, 4; Christiania, 2; Berlin, 4; and Vienna, 4. Thus, evidently in such cities as Cincinnati, Berlin and London, death from typhoid fever is no longer a terror.

Measles, which is supposed to be almost a harmless disease, produced a large number of deaths, the death rate for 1910 being 12.3 per hundred thousand of population, or a total of 12,300 for the estimated population. In some cities the number of deaths by measles was almost as high as that by typhoid fever, notably in Pittsburgh, Pennsylvania, 33.1; Providence, R. I., 31.9; Kansas City, Mo., 28.4; Lowell, Massachusetts, 28.1; Albany, N. Y., 23.9; Columbus, Ohio, 23.6; Buffalo, N. Y., 22.1; and Richmond, Va., 21.1.

Scarlet fever is not so deadly a disease as measles, since the fatalities per hundred thousand for 1910 were 11.6. Death rates from this disease were high in the following cities of one hundred thousand population or over: Buffalo, N. Y., 53.6; Lowell, Mass., 41.2; St. Paul, Minn., 30.2; St. Louis, Mo., 27.1; Kansas City, Mo., 23.2; Milwaukee, Wis., 22.3; Pittsburgh, Pa., 22.2; Rochester, N. Y., 21.4; and New York, N. Y., 20.

Whooping cough produced as many deaths as measles and scarlet fever, the death rate for 1910 being 11.4 per hundred thousand population. Diphtheria and croup produced a death rate of 21.4 per hundred thousand population, or a total of 21,400 for the estimated population.

Influenza or "La grippe" caused a death rate of 14.4 per hundred thousand population for 1910. This disease is less prevalent than for the preceding ten years.

The above data are sufficient to show the principal causes of death, old age unfortunately being so small a factor as to be negligible almost in the compilation. It might be interesting to extend these vital statistics to a greater length, but a sufficient number of data have been given to establish some of the fundamental

principles which should guide physicians and the sanitarians of the future in their work.

THE MEANS OF AVOIDING AVOIDABLE DEATH.

The question which is now presented for discussion at this Congress is how can avoidable death be successfully avoided. I have not included in the discussion of this question the deaths by accident, which are lamentably all too frequent in this country. The motor car, the aeroplane, the railway, and the steamboat, still continue their deadly work in increasing violence as our population grows denser. It is easy to understand how the State could do much toward preventing these unfortunate accidents. No doubt concerted action on the part of the States will soon be perfected to prevent so many of the horrible catastrophes whose descriptions form the principal reading matter, after murder and suicide, in the morning journals. And this leads me to say that murder as a means of ending human life is more prevalent in this country than in any other country of the world, and in consideration of the features which relate to the conservation of man the prevention of murder should receive particular attention.

A study of the above data, reviewed in connection with the known etiology of disease, shows clearly where the work of the conservation of man, especially by the prevention of disease, should begin, and on what line it should be prosecuted. To this end it is sufficient to call attention to the fact that diseases are naturally divided into two classes: those which are communicated and those which are produced by the conditions of personal environment. Physicians are pretty well agreed at the present time that disease is rarely inherited. Therefore, most of the causes which produce death are those which come from without, or those which are developed from within by improper habits of life. But one may inherit deficient vitality and thus fall an easy victim to an infectious disease. The point for us to consider most particularly in this connection is to what extent we can prevent these diseases, that is, those which are contracted from without.

EDUCATION OF FUNDAMENTAL IMPORTANCE.

It would be well to classify the efforts which we are making for the prevention of disease in some systematic order. I will begin, therefore, with the one which is the most important of all, and that is education.

In order to secure proper protection for the citizen, he must be made to understand that he needs it. Further than this, it must be made plain that the protection of the individual from communicable disease is not by any means wholly within his own power. Unless the State acts, the individual in many cases is powerless. Hence, education beginning in the family, continued in the public school, and illustrated in practical adult life, is the most important feature of prophylaxis. Into the

details of education I cannot go, but one thing I do wish to insist upon, namely, that the child should be taught early, frequently and constantly, that most of the diseases he has to fear are met like enemies in the dark. I need not refer again by detail to the statistics of mortality, but simply would say that if the diseases which produce some of the most deadly inroads into humanity, such as tuberculosis, measles, whooping cough, scarlet fever, diphtheria, croup and typhoid fever, are solely communicated to the individual from without, then these are the diseases which the State must help the individual to avoid. On the other hand, organic diseases of the heart, nephritis and Bright's disease, are apparently more of a personal character, due to inherited weak qualities or to errors of diet or faults of metabolism. These are diseases which we should be taught to avoid by strict attention to personal hygiene. They are not, as far as I know, communicable, and therefore the State can do little, aside from educational work, towards their prevention. Another disease which may be communicated partly and which is partly the result of improper nutrition is enteritis, and especially infantile diarrhoea, diseases which by proper education might be almost wholly avoided.

DISEASES OF UNKNOWN GENESIS.

There remain two great causes for human death, namely, cancer and pneumonia, which are still practically beyond control, because of our ignorance of their etiology or our powerlessness to prevent their progress. These diseases are considered communicable that is, they are induced by specific infection, but the methods and the exact nature of the infecting germs are still subjects of investigation. It is true that we are told of the organism which produces pneumonia, and it is said to be constantly in the mouth of even healthy people, and we read almost monthly of the discovery of the real cause of cancer; but in spite of all this, these diseases remain, as a rule, unknown in character, and are gigantic and terrible enemies which we have to fight in the dark.

To one point attention should be called in regard to the increase in such diseases as those of the kidneys and the heart, that are essentially diseases of old age just as tuberculosis and typhoid fever are diseases of early life. In proportion as we save people from tuberculosis and typhoid fever, just in that proportion will we save men and women who subsequently become victims of old age diseases. Therefore, the increase in the number of deaths due to these causes may be an index to the increasing longevity of the people instead of the opposite. It is of course a question which, unfortunately, we are unable to decide for ourselves, as to whether we should be saved from tuberculosis and typhoid fever for the express purpose of being killed by cancer, kidney lesions and diseases of the heart. Upon the whole I think, however that as terrible as these diseases are, especially cancer, most

people would rather die of cancer at 70 than to succumb to tuberculosis at 30. But in the great problem of the conservation of human life we must not lose sight of the fact that many experienced and competent investigators are devoting their whole time to revealing the secret of these dread diseases, which still baffle the skill of the physician. We may hope that in the near future at least pneumonia and cancer may be put upon the same footing as typhoid and tuberculosis, that their actual genesis will be disclosed and thus the road made clear toward their prevention. It is along these lines that education must go, because we cannot develop a public sentiment for the protection of life and health except by the desire of the people to live and be well, and the education of the youth and the adult is the best method of securing that result. When the people are educated, then we can successfully introduce the other methods of saving human life.

PREVENTION OF COMMUNICABLE DISEASES.

It is a self-evident fact, granting a disease to be of communicable origin by a specific germ, that the disease may be prevented if its victim be protected from infection. In other words, such diseases as tuberculosis, typhoid fever and others of the same character, which are undoubtedly communicated from individual to individual, could be wholly exterminated if the opportunities for communication were destroyed. We may assume, therefore, that all specific diseases due to a specific organism are capable of elimination by the simple exclusion of the organism.

Based on this are the great factors of prevention, namely, quarantine and segregation, which are practically one and the same. It stands to reason that an infected center should be removed or so isolated as to be no longer dangerous. For the same reason the infected center should not be allowed to enter a new community. Based upon this principle our systems of quarantine and segregation should be greatly strengthened. It is not a question of the wishes of the individual in this case; if it were, no ship would be detained and quarantined, and few people would go to a smallpox hospital or tuberculosis sanitarium. The principle of the welfare of the race, as superior to the interests of the individual, is dominant in these particulars. Tennyson, who foresaw many of the great truths of science, has beautifully presented this principle in his well-known stanza:

“Are God and nature then at strife,
That nature sends such fearful dreams?
So careful of the type she seems,
So careless of the single life.”

In the protection of the public health it will become as much the duty of each State and nation to provide sanitary and detention camps for infectious diseases

and rigidly enforce residence therein, as it is to watch the border and establish a strict quarantine.

We want health taught in the schools by all means. If we only but realized it, the school child is a fertile field. In school, it learns of health and carries it home and teaches its parents. And then I am a believer in eugenics. Not the theory, but the practical eugenics. Children don't choose their parents—fate decrees who they shall be—but this is wrong. Every community should see that the parents of the coming generations are healthy and fit to be parents, and then they should see that babies live.

Twelve and a half per cent. of all the children born in this country today will be dead by this time next year. But I was asked to come here and talk on "The Relation of Pure Food to Public Health," and you hardly realize how important it is to see that food is pure and properly cooked. Most of those children that I mentioned a few seconds ago die from improperly prepared food, and many diseases are directly traceable to this alone.

AMERICANS WORST COOKS.

The greater part of my life has been given to the study of proper nutrition, and I am prepared to say that a great cause of untimely death is cooking. We are undoubtedly the worst cooks in Christendom. We have the greatest supply of food in the world and we certainly do know how to spoil it in the kitchen.

The preparation of food is of fundamental importance, and a well-fed man has a great deal more resistance against disease than the man who is fed on improperly prepared food.

The insanitary conditions of dwelling houses are also a great cause of death. It seems that houses are built solely for the purpose of being looked at, but if I could have my own kind of a house, it would all be outside and no inside. I often wish that some one would start from the Atlantic coast and go all the way to the Pacific coast, burning down every house he came to, for at least this would practically eliminate two deadly diseases, cancer and tuberculosis, which are distinctly house diseases.

I have a friend up in Pennsylvania who had two very delicate looking children, and I told him to make the little ones sleep out of doors. One cold night I called at the home of this family and I said: "Well, I suppose the children are not sleeping out tonight, are they?" And he replied: "Come and see for yourself." And so we went out onto the sleeping porch, and there they both were. The cover was piled on them in heaps, and over all was an oilcloth which was covered with about half an inch of snow. That was the making of those two children, and today I

know of none who is healthier and more robust than these two originally delicate children.

But going back to the question of food. The blood of a healthy individual is practically free from germs, yet it is full of organisms whose purposes are to attract and destroy any germs that may enter the blood. But if the food eaten by a man is improperly cooked, these sentries go to sleep, as it were, and outside organisms are allowed to enter the system; then we are sick; we die.

DUTY OF THE STATE.

It is the duty of the State to see that all food is pure, and in order to do this, we must give our public health departments more power and more money to be used in the campaign against impure and adulterated food.

Then we should teach our girls while at school how to prepare the food properly. My mission is to preach, not as the preacher who tries to get you into heaven, but my mission is to try to keep you out of heaven for as long as possible, and we can double the span of life as easily as not. We need old men and women. Think how much they can do for the world, for when a man dies at the age of forty, he has not had time to accomplish but a very little, while a man seventy years old is just in the prime of life, I might say. There is plenty of room in the world for the old and we need them bad. And I believe the time will sometime come when the standard of life will be raised from forty-four years to eighty-eight, and pure food and good cooking will be the prime factor in this great increase in years.

My message therefore, today is to the effect that the primary purposes of conservation should be the promotion of human health, efficiency and happiness. This can be done only by protecting the public from avoidable diseases and thus prolonging life to a green old age. And I do not mean an old age of senility and helplessness. I mean an old age of activity and helpfulness. The most fruitful period of the labor of a man or a woman is after his years are mature. He has by this time learned how to work and every stroke counts. The man can accomplish three times as much from fifty to eighty as he can from twenty to fifty, if he only keeps his faculties and is strong and well.

The average length of human life today in this country is about forty-four years; when my gospel of good health is embraced by the people of the United States and put into practical form, the length of life will be increased to eighty-eight years, and these additional forty-four years will be years of fruitful endeavor. Each citizen will be attended along his course of life by two maidens, named "pure food" and "good cooking." These will guard him from the "arrow that flieth by

night and the pestilence that walketh in the darkness, and the destruction that wasteth at noon-day." Thus attended he will safely follow the path of life, and meet death at its end, in the glorious twilight of existence, where death alone should be found, and when he is met in these conditions he will no longer be an enemy, but a friend, and the passing to another world will be simply euthanasia.



EXHIBIT OF THE TRAVELERS INSURANCE CO., NATIONAL CONSERVATION EXPOSITION.

CO-OPERATION OF INSURANCE COMPANIES IN THE WARFARE AGAINST DISEASE

The principle of conservation, whether of natural resources, business efficiency or racial vitality is rapidly becoming recognized, because it rests upon the bed-rock of common sense.

It was for this reason that the management of the National Conservation Exposition found it an easy matter to procure conservation exhibits from large manufacturing establishments and life-insurance companies as well as from departments of the Federal Government, from the States and from educational and philanthropic institutions.

It was found that leaders of business everywhere are beginning to realize that it is stupid to waste anything; that it is the part of wisdom to prevent waste—to make the most out of everything produced or handled; to secure the maximum of efficiency in all departments; to increase the health, producing and earning power of all classes of employees—and that many were prepared to demonstrate by means of exhibits how conservation as a business policy could be applied.

EXHIBIT OF THE POSTAL LIFE INSURANCE COMPANY

Among the most interesting and instructive exhibits was that of the Postal Life Insurance Company, which added much to the value of the general health displays of the exposition. This Company, by carrying on a complete and systematic plan of health-conservation, not only accomplishes a vast amount of good, but illustrates the growing tendency to concede the value of such activities and an awakening realization of the enormous power for conserving the public health which is lying dormant in the vast business and professional organizations controlled by the life companies of this country.

This is clearly set out in the following extracts from a pamphlet issued by the exhibitor referred to:

“This new, or rather, neglected source of power for human betterment, is found in a business, the magnitude of which may well appeal even to the scientific imagination. More than 25,000,000 old-line policyholders, paying over \$600,000,000 in premiums, have intrusted to the life companies of this country \$4,000,000,000 in assets, to protect \$18,000,000,000 of insurance in force. An army of 20,000 agents and 80,000 medical examiners, in addition to home-office and branch-office employees, banks of collection and deposit, widely distributed investments, and more than \$400,000,000 annually distributed to policyholders in claims, endowments, etc., show how closely interwoven with the social structure is this wonder-

ful system of less than 75 years' growth in America. If we grant, as has been estimated, that in reaching one policyholder we reach a group of at least three individuals, it becomes evident that the life-insurance companies have available and constantly open channels of communication with three-fourths of the population. They can almost literally feel the pulse of the nation.

"Now it is just as obvious that this aggregation of men, money and machinery can render a much broader service to society than the collection of premiums, the investment of assets, and the payment of death-claims as it is that the earth is spherical, a long unrecognized though obvious fact. If the theory of evolution could lie quivering in solution in human thought from the time of the early Ionic philosophers until Spencer and Darwin administered the shock that crystallized it, and Huxley said: 'Why didn't we think of it before,' it is not strange that the theory of health-conservation in life insurance should have lain dormant during the brief period of life-insurance development. Unfortunately it is still dormant in all but a very few companies.

"There are three main reasons why a life-insurance company should practice health-conservation among its policyholders:

"1. The machinery is available.

"2. It can be utilized, certainly without loss, and probably with substantial gain, both to policyholder and company.

"3. Granting these premises, the vast extent of the life-insurance business imposes a public obligation to exercise this power for social betterment.

"The seventy-five million points of contact with the public have already been referred to, and it should be remembered that the channels of communication are continuously open, and that this contact, through premium notices or collectors, is repeated weekly in the industrial, and quarterly, semi-annually or annually in the ordinary branch. Messages regarding the wonderful merits of the Company have repeatedly been conveyed through such channels; why not messages of good health and happiness? A life-insurance company is a veritable treasury of sociological material, enabling its medical and scientific staff to give greater precision and force to ordinary instruction in personal hygiene. The policyholder will often accept the advice of his life-insurance office, because he reasons that behind the science there is the cold, calculating force of business judgment. It is one of those rare moments in modern life when the producer and the consumer meet on common ground and shake hands; the profit of one increasing the profit of the other. It is almost like finding the fourth dimension.

"In addition to health-hints and instructions, distributed with premium notices and by collectors, agents, etc., periodical bulletins may be issued covering the fundamental principles of healthful living, many of them well-known, but forgotten or disregarded in the hurry of existence. Such bulletins, if properly edited, would prove antidotal to the mind-poisons and sensational pseudo-science that now circulate so freely. Fashion, imitation, suggestion—all have their value in this work. The life-insurance company, by persistent education, can help to make temperate

and hygienic living fashionable. Some people dread bad form more than bad morals or bad health.

"Life-insurance companies can render a valuable public service by upholding the health-officer in the performance of his duty, and by urging policyholders and

DEATHS FROM SPECIAL CAUSES IN 1910
UNITED STATES REG. AREA PERCENTAGE OF POPULATION 58.3

APOPLEXY KIDNEYS HEART BLOOD VESSELS	194856
CONSUMPTION TYPHOID	98982
PNEUMONIA	79524
NERVOUS DISEASES EXCEPT MENINGITIS	28906
CANCER	41039
INFLUENZA	7774

POSTAL LIFE INSURANCE COMPANY

WALL CHART, HEALTH EXHIBIT.

the public to require a high grade of ability in such officials, to properly equip them with laboratories, etc., and to pay salaries that will command the right kind of service. In communities where the companies are sustaining a high mortality because of backward civilization and gross sanitary neglect, their experience may serve as a lesson to the agents, medical examiners and prominent policyholders in such sections, and swing them into line for sanitary reform. The passage of laws for the proper registration of births and deaths in the non-registration states could be materially expedited by vigorous work on the part of the life-insurance companies. Even now the Association of Life Insurance Presidents is moving in this particular matter.

"Under the stimulus of this conservation-work, a life-insurance office would naturally develop a bureau of research for the collection of extrinsic evidence from the laboratory, the clinic, the bedside and from the various sources of vital statistics, and for the interpretation of such evidence in the light of the intrinsic knowledge gained from the constant study of large masses of insured lives. Such a

bureau would serve, not only as a valuable source of information for policyholders, but as a feeder for educational and social-reform agencies, which are eagerly seeking this kind of material.

“A life-insurance company should also encourage the formation of health leagues throughout the country, to serve as foci of education and of active effort for sanitary reform, and for the encouragement of higher standards of personal hygiene. Co-operation with such leagues, by furnishing material, information, suggestions, etc., would bring the public and the company closer together, and in every way prove mutually beneficial.

“It is needless to go into further detail. When this work is once commenced, a natural process of evolution will bring new opportunities and new ideas.

“The most positive and direct way to reach the policyholder is by extending to him annually the privilege of a free medical examination. This principle of periodic examination or inspection is applied by business or government to the life-insurance company itself, to banks, elevators, steam-boilers, steam-vessels, life-preservers, garbage-cans, almost every institution or machine employed by man that can possibly go wrong except the most delicately adjusted and wonderful machine of all—the one that he lives in all the time—his body. It is true that we inspect our school-children—most of whom are leading healthful, happy lives—but why neglect their parents, many of whom are seriously out of touch with nature, and heading for physical break-down, without the slightest consciousness of their danger? What is the use of inspecting and condemning poisoned food, if we keep on unconsciously manufacturing poisons within our bodies? The smug, egotistical confidence in his physical soundness of the average careless liver is, in a measure, a physiological protection against neurasthenia, but it is not a protection against arteriosclerosis, Bright’s disease or heart-disease, conditions that often do not warn of their presence until it is too late to check them.

“The medical profession is now remoulding itself along the lines of prevention rather than cure. If the 80,000 physicians employed in examining become stimulated and trained by these periodic examinations to more skillfully detect incipient disease or disease-tendencies, an immense impetus will be given to medical science. The public and the profession will be brought closer together, and another rare moment in life will arrive when greater prosperity to the doctor means less disease in the population.

“Many insurance-men doubt whether the present favorable mortality among selected insured lives can be lowered at a cost that will be covered by the mortality-savings. There is a feeling that the death-rate among insured lives follows a sort of fixed law. Certainly it does, if the conditions remain unchanged. But the conditions are neither ideal nor unchanging. My own researches in 1907, recently confirmed by the medico-actuarial investigation of the experience of American companies, showed a remarkable improvement at the younger ages but decided deterioration in vitality among those over sixty during the past 30 years.

"That the death-rate in the average company, indeed in all companies, is too high, and can surely be lowered, is illustrated by the experience of a British company, the United Kingdom Temperance and General Provident Institution.

"In this company the total abstainers are placed in a class separate from the balance of the risks, about equal in number, all supposedly moderate drinkers; and carefully selected lives. This company has a very favorable general mortality, but the death-rate among its abstainers for the past forty-four years was 27% lower than among the general class, which, however, exhibits a favorable mortality, 91% of the British Om Table. We have here an illustration of how the death-rate, even in a group of carefully selected lives may be lowered by correct living habits. It is reasonable to contend that if the general class in the company referred to had followed the same careful habit of living as did the abstainers, their mortality would have been 27% lower. These figures are fully supported by recent British and American experiences.

"Now, by conservation methods along educational lines, a company could probably create among at least 10% of its policy-holders a sense of responsibility for the custody of their bodies. Such a group would be comparable in vitality to the abstainers, even though they did not wholly abstain from alcohol, as they would practice many other conservation-methods that were not practiced by the general class in the British company referred to.

"Inasmuch as the net premium or annual mortality cost of carrying a \$1,000 policy at age 35 on an abstainer is \$3.03 less than for a non-abstainer, this difference obviously represents the annual saving on each \$1,000 at risk on the lives of abstainers or of individuals comparable to them in vitality in companies where the average age is 35.

"Applying this factor to the insurance at risk in five leading companies during 1910, which amounted to \$5,585,794.093, the results, assuming that 10% of the business was favorably influenced by health-conservation, would be as follows:

Mortality Savings from Conservation	\$1,692,496
Deduct Cost of Educational Health Bureau	150,000
	\$1,542,496
Conservation Savings	\$1,542,496

"This method has the merit of being derived from an actual ground of experience.

"Applied to the whole amount of old line insurance in force the annual saving would exceed \$5,000,000 and 9,000 lives.

"The general effect on a company's mortality over a period of years is better expressed as follows:

"The net annual death-payments in the five companies above referred to, was in 1910, \$44,364,142. A reduction of these payments by \$1,692,496, the conservation-savings on 10% of the amount at risk, would equal 3.81%."

WHAT THE HEALTH EXHIBIT SHOWED

As shown by the accompanying illustration of a section of the exhibit made at the National Conservation Exposition, wall charts formed the principal features of the display.

These charts, designed to assist in the general warfare against needless suffering and loss of life from preventable disease, were highly interesting and instructive. By this means the following facts were presented in a form to be understood at a glance.

A chart, showing a reduction in the death-rate from consumption since 1880, revealed what had been accomplished on the part of physicians and laymen in the eradication of an unnecessary malady. Methods of prevention were suggested. Another directed attention to the ravages of typhoid fever, and to convincing evidence of effective work in checking the disease. Preventive measures were referred to, but such methods of protection as vaccination against typhoid was said to be unnecessary if there is a thorough enforcement of sanitary precautions, especially in rural districts. It was shown that water, milk, and food must be protected from contamination by typhoid bacilli, and especially from that pestiferous germ-carrier, the house-fly. The house-fly breeds in filth, particularly manure-heaps. Ignorant and stubborn neglect is responsible for the existence of this menace. In many sections of the country the present methods of sewage disposal are little in advance of those of our remote cave-dwelling ancestors. Attention was called to the fact that the Health Officer in small towns and rural districts should be supported in his efforts by every loyal citizen.

A chart showing the death-rate from diphtheria was an illuminating example of how science can control mortality. Those who look upon the death rate as a fixed quantity ignore such facts as a reduction in the mortality from diphtheria and croup of 80% in 28 years, the rate per 10,000 falling from 11.2 in 1880 to 2.2 in 1908. Much of this tremendous gain, chiefly in child-life, is due to the curative effects of diphtheria antitoxin, which was first employed in 1895, but general preventive measures and the energetic work of local health authorities must also receive a due share of credit.

Notwithstanding the progress in hygiene, and the lowered mortality from other communicable diseases, pneumonia still contributes an enormous proportion of the general death-rate. The death-rate from pneumonia fluctuates widely, owing to the varying severity of epidemics, but the average rate for recent years in the registration area shows little improvement over that of thirty years ago, and in some cities there has been a decided increase.

Although there is a very heavy mortality from pneumonia in early infancy, owing to the feeble resisting power at that age, a chart was exhibited which showed that fully 50% of the deaths occur after 40 years of age, when the disease is most likely to be complicated by maladies of the degenerative class.

A chart showing a very heavy increase in the mortality from degenerative diseases during the most productive years of life, amounting to 60% between ages 40 and 50, was another illustration of the degree of life-strain that affects our people.

FIVE YEARS IN THE CANAL ZONE

ESTIMATED DEATHS ALL CAUSES UNDER OLD CONDITIONS

ACTUAL DEATHS ALL CAUSES UNDER UNITED STATES SANITARY CONTROL

YELLOW FEVER ESTIMATED UNDER FRENCH CONTROL

ACTUAL DEATHS YELLOW FEVER UNDER UNITED STATES CONTROL

POSTAL LIFE INSURANCE COMPANY

WALL CHART, HEALTH EXHIBIT.

As to the methods of prevention, it was stated that the business, social, and domestic conditions which make such heavy demands upon brain, nerve and artery, must be corrected, or a greater degree of bodily resistance must be built up in order to offset such influences. Just as in business life we draw largely upon modern invention and the resources of science to increase efficiency and reduce waste, so must we avail ourselves of such knowledge as science now affords us in the care of our bodies and in the systematizing of our lives, to the end that economy of bodily resources shall be considered just as important as the conservation of natural resources and political institutions.

Charts referring to other preventable diseases were on display, and many pamphlets, offered for distribution, formed one of the best educational exhibits ever made in the interest of public health.

The following is copied from one of the pamphlets distributed at the Exposition as showing the views of the Company with reference to disease-prevention:

WHAT THE PUBLIC IS DOING

"The volunteer campaign against public indifference which has been waged by a number of medical men, by public-spirited citizens in official and unofficial life, and by organizations of scientific men, has aroused much interest and won the moral support of many agencies which have the power to carry the gospel of disease-prevention directly to millions of people.

"But no popular war has been inaugurated against preventable disease, except that of consumption, and the anti-tuberculosis organizations have accomplished wonders in their field.

"We have many very useful and worthy societies for the prevention of vice and crime and cruelty to children and animals, and to prevent the waste of our forests, and the defacement of our scenery; but none for the prevention of suffering and death from ordinary, preventable maladies.

"The conservation of health has received the moral support of the two great political parties, which have made cautious declarations in their platforms to this effect.

"It has the moral support of the great federations of labor representing millions of working men, but that is all.

"It has the moral support of the great life-insurance companies and fraternal insurance orders which are interested in the longevity of twenty-two million policyholders, but only two or three life companies and two or three fraternal orders have so far undertaken directly to aid policyholders in prolonging their lives.

"Our great corporations and business enterprises employ a vast multitude of men and women. Nearly every city and town in the country has a Chamber of Commerce, or other organization, to promote the commercial interests of the community. In fact we have innumerable popular societies, associations and fraternal orders, and religious bodies, to promote our material, social and moral welfare.

"These are powerful agencies for spreading knowledge of sanitation, hygiene and disease-prevention, and they doubtless all are in favor of a movement for this purpose. In fact, every well meaning citizen must believe in a movement to prevent avoidable suffering and death.

"But merely hoping for a lower death-rate will not reduce it.

"Something should be done to set these agencies at work. It is time the agitation upon this subject bore more substantial fruit than moral support."

A FOUNDATION FUND FOR DISEASE PREVENTION

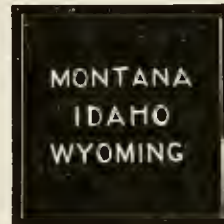
"Our public Health Bureaus—Municipal, State and National—should be gradually enlarged and the scope of their activities extended to a point consistent with the magnitude and importance of the work in hand.

"A corps of experts and lecturers on sanitation and the science of disease-prevention should be maintained.

600,000 PEOPLE

**SIX HUNDRED THOUSAND PEOPLE DIE ANNUALLY IN
THE UNITED STATES FROM PREVENTABLE DISEASES**

**THESE DEATHS ARE
EQUIVALENT TO THE
DESTRUCTION OF THE
ENTIRE POPULATION
IN THE LOCALITIES
INDICATED IN THE
SQUARES**



POSTAL LIFE INSURANCE COMPANY

WALL CHART, HEALTH EXHIBIT.

"Health Bulletins should be issued and distributed and an official manual on sanitation and disease-prevention should be placed within reach of every home and of our schools, where our children should be taught, within proper limitations, the nature, at least, of the more dangerous maladies, and how to guard against them.

"The time is sure to come when the work of our public health-departments will be enlarged, but in such matters our law-makers advance slowly, and only in response to the pressure of public opinion. Efforts are being made to educate and stimulate the public mind upon this question, but this, too, is a slow and expensive process.

"For early relief upon an adequate scale we must depend upon the generosity and public spirit of those whose wealth will permit them to contribute to such a

cause. The need of the hour is the foundation by our philanthropists of a disease-prevention fund.

“With such a fund a central institution, with local health-bureaus and dispensaries, could be established for the study of preventive medicine, and the promotion of the public health generally. Its work should be confined solely to prevention, leaving treatment and cures to the physicians and hospitals. However the various cults and schools of medicine may contend for the supremacy of their theories and methods, the great work of reducing *the necessity for* treatment and cure should have the support of every right thinking man. A dollar for prevention is worth a thousand for cure.

“Through the channels suggested the educational campaign could be conducted, and free diagnosis and examination could be given to those who desired them, for the purpose of detecting disease in time to arrest or cure it.

“While an orderly and systematic educational campaign would benefit all of our people, the requests for free medical examinations would naturally come from the poor and helpless—the very people who know the least about avoiding and detecting disease, and who are the most exposed to it. By the use of sanitary experts, lecturers, health exhibits and other practical methods, the benefits of the science of disease-prevention could be carried, at a reasonable cost, to tens of thousands of endangered lives, especially in our large cities.

“Such an institution would supply a new and valuable source of scientific data and general information upon the subject of health-conservation, which, if properly used, would not only arouse the interest of the individual, but serve to inspire the large employers of labor, the various social, fraternal, commercial and religious bodies to assist in the work of protecting their people from the ravages of avoidable disease. It could also be of great service in stimulating the growing sentiment in favor of sound health-legislation, and assist in crystallizing it and directing it into practical lines.

“To those who desire to make a permanent and valuable contribution to human happiness, this neglected field of disease-prevention should prove most attractive, for to fight disease is to fight ignorance, misery and crime.

“Human sympathy and love of humanity, the same noble sentiments which prompt our generous countrymen to donate so liberally to prevent illiteracy and to relieve distress in all its forms, should also enlist them in the work of protecting the hundreds of thousands of people whose health and lives are in constant jeopardy through ignorance of the most common and easily-applied preventive measures

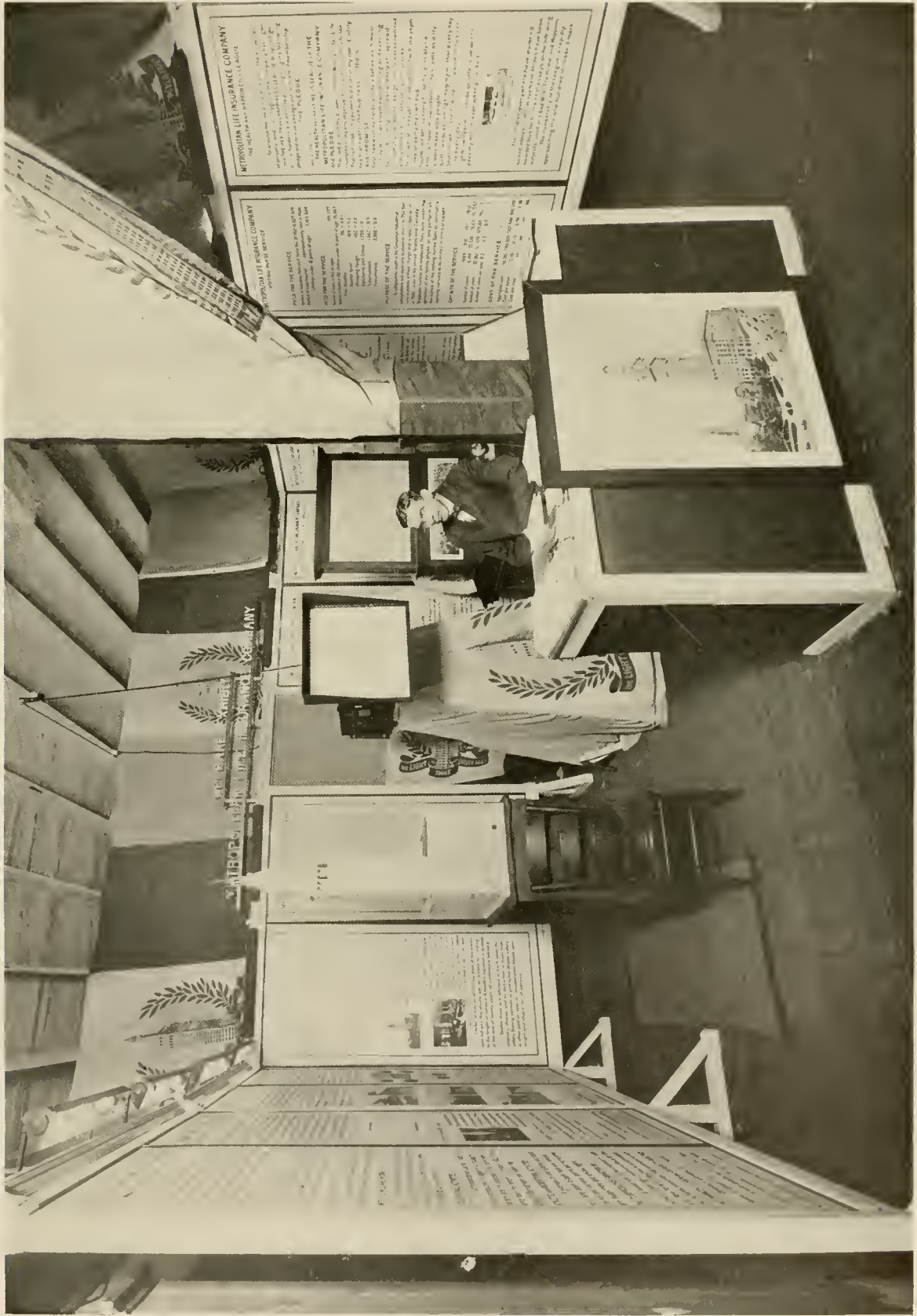
“Surely our philanthropists should find as much joy in preventing misery as they do in relieving it.”

THE LIFE EXTENSION WORK AND EXHIBIT OF THE METROPOLITAN LIFE INSURANCE COMPANY

The participation of life insurance companies in movements for the conservation of human life is a natural consequence of their activity as insurance organizations. This idea has been most strikingly carried out in European countries and especially in Germany, where systems of insurance against sickness, accident and invalidity have been developed to include the great mass of the industrial population. In these countries, the key-note of the work of the insurance institutions has been prevention. They have not been content merely with considerations of solvency nor with paying claims, but have in addition addressed themselves earnestly to an analysis of the causes of human disability with which they are concerned. Large sums of money have been spent continuously and in increasing amounts to educate the insured in the prevention of accidents, in the elements of personal hygiene and also to put at their disposal the very best facilities for discovering early impairments and to treat disability in accordance with the most advanced medical methods. The results have been a source of the greatest encouragement to those who have inaugurated these plans.

In the United States, it is the system of life insurance which has been most thoroughly developed and to which we must turn for conservation work similar to that in operation in European countries. This thought has been in the minds of American life insurance executives for a number of years. It took active form after an address by Professor Irving Fisher of Yale, delivered before a meeting of the Association of Life Insurance Presidents in 1909. Since that time, the Life Extension and Health Committee of the Association has been actively engaged in furthering a number of plans. The improvement of the registration of vital statistics has received their attention and they have also directed their energies to a sanitary survey of the States. The problem of obtaining adequate appropriations for health work in the several States has also received their active interest. At the present time, American life insurance companies are eager to co-operate with other organized agencies whose purpose is to prevent sickness and accident and to conserve human life.

The Metropolitan Life Insurance Company was among the very first to realize its opportunity in life conservation work. In fact, its conservation campaign was begun even before the address of Professor Fisher above referred to. It is the



HEALTH EXHIBIT AT NATIONAL CONSERVATION EXPOSITION.

leading Industrial Insurance Company in America and has over thirteen million policies in force on the lives of about ten million men, women and children of the industrial classes. Those insured in the industrial companies are engaged in more hazardous occupations and suffer from a higher death rate than the more favorably situated classes in the community. Nor are these people always familiar with the movements which are at work in the community to further personal hygiene. The Company considered this a vantage point for the development of special forms of conservation. Active work was begun in 1909 when the Visiting Nurse Service was put into operation. Later, the Company's publications, including its magazine called "The Metropolitan" and its pamphlets on hygiene, were given a new impetus. A plan of co-operation was also inaugurated with health officers and other social agencies. Finally, the Health and Happiness League of child policyholders was organized.

The exhibit of the Metropolitan, at the National Conservation Exposition in Knoxville, portrayed the several phases of the company's welfare work for its industrial policyholders. In addition a portion of the exhibit was given over to a treatment of the welfare work instituted by the company for the benefit of its employees. It should be remembered that the Metropolitan, because of its large field organization, is one of the largest employers in America. Fully fifteen thousand employees are on the pay-roll. The company has felt that here too, it had an obligation which extended beyond the contractual relation of employer and employee, and that it should do certain things that would be of mutual benefit to the company and to the employees, and at the same time, serve as a model to other employers.

The exhibit was advantageously placed in the Liberal Arts Building. It consisted of a series of charts $3\frac{1}{2} \times 7$ feet in dimension and a number of cabinets containing charts, diagrams and photographs. An automatic stereopticon threw on a screen a series of colored photographs descriptive of the several phases of the company's work. Representatives of the company were present to answer questions and to point out particular aspects of the exhibit to those interested. A large quantity of literature on personal and civic hygiene prepared by the company was distributed.

In addition, the Company maintained an emergency hospital under the direction of two physicians and a staff of nurses of the Knoxville General Hospital. This emergency hospital proved to be a most useful institution. During the period of two months when the Conservation Exposition was open, a considerable number of patients was received and treated. Many letters of appreciation have reached the Company for the very excellent service which this auxiliary to the exhibit was able to extend. The Company desires to acknowledge its thanks to Dr. Thomas

ap. R. Jones of Knoxville, who supervised the establishment of the hospital and arranged the details of management throughout the period.



EMERGENCY HOSPITAL AT THE NATIONAL CONSERVATION EXPOSITION

A few words are now in order on some of the more intimate phases of the company's welfare work which made material for the exhibit:

I. *The Visiting Nurse Service.*

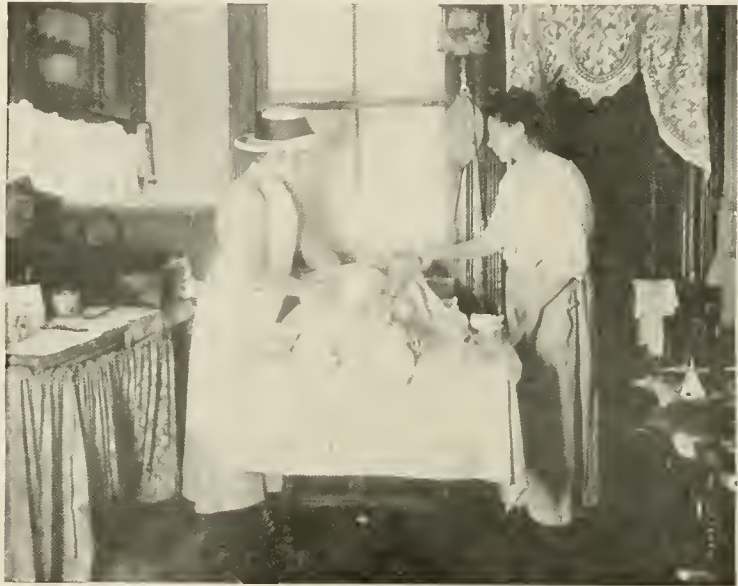
This is by far the most interesting feature of the Company's welfare work. In the few years of its operation, it has been extended to all the sections where the Company operates and is open to its many millions of policyholders. The work is carried on through the agency of visiting nurse associations, wherever such agencies are well established, or through graduate nurses directly employed by the Company. In 1913, no less than 1,128,953 visits were made to 178,399 patients at a cost of \$527,926.49. This service was extended without any cost to the policyholders.

While the work of the Company's visiting nurses is largely curative in its nature, much of the work is also necessarily educational. From this standpoint the nurses' work is of the greatest value in bringing home to the policyholders the elements of personal hygiene. From the large number of letters that the Company

has received, there can be little doubt that large numbers of individuals have been restored to health who probably would have died had it not been for the care of the Company's nurses. Yet the experiment has been conducted for too short a time to warrant any safe conclusions on the score of life saving. It is expected that the records of the next few years will show distinct evidences of reduction in mortality in a number of causes of death to which nursing treatment is especially directed.

II. *Co-operation with Social Agencies.*

The Company through its extensive field force co-operates with various health and social agencies for the improvement of local sanitary conditions. Active support is given to movements directed against tuberculosis, bad housing, infant mortality and occupational diseases. The agents distribute literature printed by the Company as well as other material supplied by Boards of Health, charitable and other institutions. In many instances the agents of the Company have played a very active part in arousing public interest for measures of health which require the approval of the citizens. At the present time a very active campaign is being carried on by the Company's field force in co-operation with health and registration officers to improve the registration of births.



THE VISITING NURSE SERVICE WORK



THE VISITING NURSE SERVICE WORK

III. *Publications.*

The company issues, quarterly, a magazine called "The Metropolitan" of which three and one-half million copies are regularly distributed. This publication is distributed to the homes of the policyholders by the agents while making their weekly collections. It has been the aim of the Company in this magazine to adapt it to the educational attainments of its readers. The articles are purposely short and written in popular style. Each number treats of some health problem of interest to the family and appropriate to the season, such as:

"Summer Clothing for Children"

"Alcoholism and Public Health"

"Hot Weather Hints"

"Dirty and Clean Milk"

"The Metropolitan" is largely a children's magazine. The illustrations which it contains and many of the articles especially prepared for it have been published with the children in mind.

Supplementing the magazine, the Company has issued a series of booklets on various phases of hygiene. Perhaps the most important of this series is one entitled "The Child." The booklet deals with domestic hygiene and the care of children in general. It treats of the mother in her relation to her infant and other children and instructs her in hygiene with particular reference to maternity, and diseases of children. It calls her attention to the necessity of carefully watching physical defects and describes the symptoms of children's diseases, making it possible for the average mother to know which conditions are serious and which are not. Two million copies of "The Child" have already been distributed in six languages.

A booklet entitled "Teeth, Tonsils and Adenoids" has done considerable service by directing the attention of parents to look for defects resulting from the presence of adenoids and diseased tonsils in their children. Many parents have written to the Company that they have improved the health of their children by following the directions indicated in this booklet.

The Company, as would be expected, suffers a heavy loss from deaths due to tuberculosis. In the year 1913 approximately 16.9% of all the deaths on which claims were paid resulted from the several forms of tuberculosis. A reduction in mortality from this dread disease is, therefore, of vital importance to the Company. An effort has been made to educate policyholders regarding the cause of the disease, its cure and its prevention. Over four and a half million copies of a pamphlet entitled "A War On Consumption," printed in ten languages, have been distributed to policyholders. Copies have been sent to schools in certain cities at the request of the authorities, and in one of the high schools in Kansas City, Missouri, the pam-

pamphlet has been used as the text for compositions and essays written by the pupils.

Another pamphlet entitled "The Health of the Worker" has been distributed widely among industrial establishments and serves to point out the dangers involved in working in shops and factories. It emphasizes the necessity for improved lighting, pure air, sufficient lavatories, etc., and shows the employer and employee what they can both accomplish, in preventing accidents and in maintaining sanitary conditions.

The Company has also published a series of shorter tracts on the communicable diseases, such as typhoid fever, smallpox and scarlet fever.

IV. *The Health and Happiness League.*

This is an organization of about one hundred thousand young policyholders, children of school age. Membership is awarded to all those who sign a Pledge in which they subscribe to a number of rules of personal and civic hygiene. Interest is stimulated regularly by means of prize contests in essay writing on health topics. These include such subjects as "Plans for a Safe and Sane Fourth," "How to Prevent Fire," "Out-door Sports," "Flower Growing," "The Right Attitude in Home Life," "Good and Bad Milk," "How to Avoid Accidents," etc. The essays presented by the children show, in many instances, considerable knowledge and much interest in the tasks assigned.

The work of the Health and Happiness League has recently been greatly augmented. An agreement was made with the Boy Scouts of America and the Camp Fire Girls, whereby members of the League are encouraged as far as possible to become Boy Scouts or Camp Fire Girls respectively. To boys who become Scouts the Company offers free a copy of the Scout Handbook and a service badge after one year's satisfactory membership in both organizations. Other inducements are held out for proficiency in scout craft on the part of Health and Happiness League members. It is hoped, through this organization, that the boys and girls, who constitute nearly one-third of the company's policyholders, shall benefit in mind and body through having been associated with these organizations.



HEALTH AND HAPPINESS LEAGUE, LENOIR CITY, TENN.

The Metropolitan has had in mind also the development of a comprehensive welfare programme among its 15,000 employees in the Home Office and in the Field. In the Home Office the conservation work includes the following:

A well organized dispensary for the relief of ailments which arise during office hours is maintained under the direction of a physician and two graduate nurses. During the year 1913, fifteen thousand, two hundred three (15,203) visits were made by four thousand and two (4,002) different patients. This dispensary service averaged over fifty-five (55) visits per working day in the year. An eye clinic is conducted in conjunction with this dispensary work and examinations are made by an oculist who prescribes glasses for the correction of eye defects.

The Company provides luncheon each day without cost to employees. This number includes not only members of the clerical staff, but also the printing, mechanical and commissary departments. The dining rooms are situated on the two upper floors of the main building, one floor for men and the other for women. Each room has a seating capacity of about nine hundred (900), and is admirably lighted and ventilated.

The gymnasium, also located on the upper floor, provides facilities for exercise after office hours. An Athletic Association organizes athletic contests suitable to the season and conducts the annual Field Day which is usually attended by about 4,000 persons.

A library of eleven thousand, four hundred and twenty (11,420) volumes is at the disposal of Home Office employees. Classes in business English, stenography and typewriting and insurance mathematics are also conducted for those clerks who desire to become more proficient in the technical details of Home Office work.

In order to increase the working efficiency of the agency force, a correspondence course of instruction in the principles of life insurance is conducted. This activity has made encouraging progress in the two years since its inception and gives every evidence of fulfilling the purpose for which it was established.

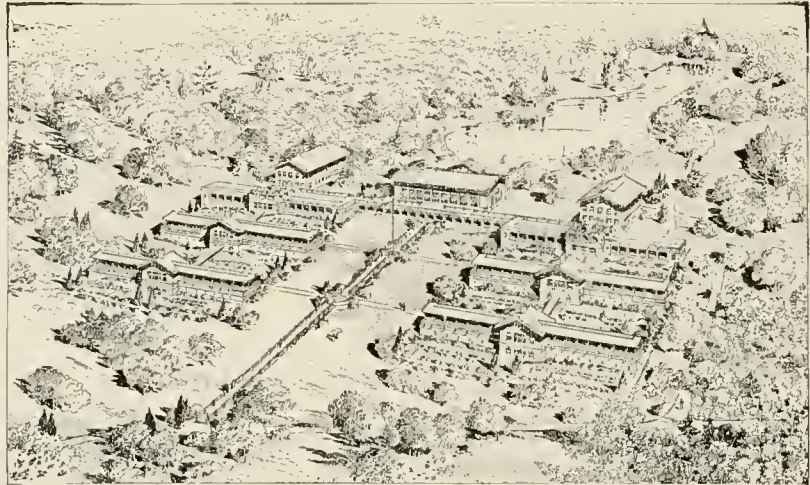
For both the Field and Home Office Staff, the Company organized the "Staff Savings Fund." Deposits from employees in this fund are augmented by the Company's subscription of 50%. The combined fund is invested under the direction of the Fund's Board of Trustees in high grade securities and has to date paid higher rates of interest than could be obtained through savings banks or other provident institutions.

A typical example of how the Staff Savings Fund operates will be of interest. A Home Office clerk whose account was closed by death, deposited between February, 1903 and March, 1912, \$455, and his widow received \$986.08 or

a gain of \$531.08 in nine years. In another instance a depositor who paid in \$1,390 has to his credit the amount of \$2,282.

Employees who become incapacitated through the onset of tuberculosis are given treatment without cost in the Company's new tuberculosis sanatorium at Mount MacGregor, New York. This institution is planned to accommodate as many as 225 persons over prolonged periods. The equipment of the sanatorium is most complete and embodies all modern ideas and improvements in hospital construction.

The Company has also adopted a plan of co-operative Disability Insurance, coupled with Free Life Insurance for the benefit of the Home Office force. The Disability Insurance provides for the weekly payment to employees of a stipulated part of their salary in case they become incapacitated on account of illness or accident. These benefits are continued from the time the employee becomes disabled until he reaches the age of 65. The insurance is offered employees at one-half the regular cost, the Company paying the other half. In addition, each employee has been granted life insurance for an amount equal to his annual salary free of all cost, the Company paying the entire premium.



BIRD'S-EYE VIEW OF SANATORIUM AT MOUNT MacGREGOR, N.Y.



HOME OFFICE.
METROPOLITAN LIFE INSURANCE COMPANY.
NEW YORK

Conservancy of Life and Health Exemplified in Exhibit of Manufacturing Concern



The National Cash Register Company's Exhibit, First National Conservation Exposition, Knoxville, Tenn.



Interior of N. C. R. Hall of Industrial Education at Dayton, Ohio.



Exterior of N. C. R. Hall of Industrial Education

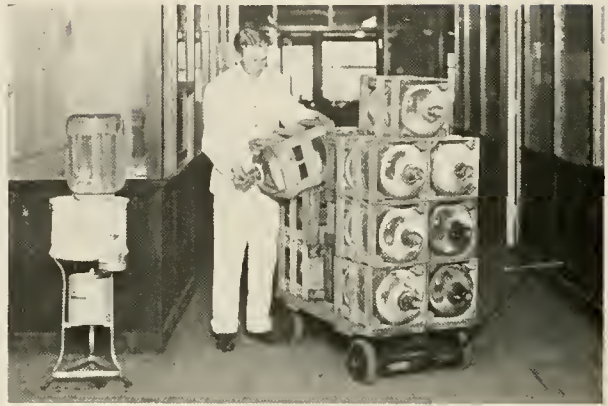
The conservation of life and health is a subject which is growing in importance and which is constantly receiving more and more attention from thinking men and women in all walks of life. The advance which has been made within the past few years along these lines has probably been greater than in any other branch of the conservation movement. This splendid progress is due to the many powerful agencies actively engaged in bringing about better living and working conditions.

Manufacturing Concerns Taking the Lead

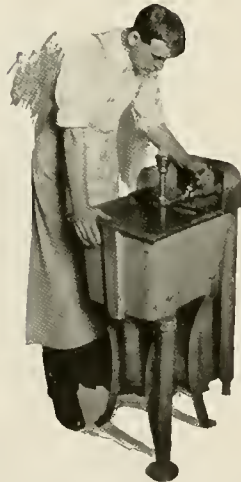
Many of the larger manufacturing and commercial concerns of the country are taking the lead and blazing the way in this respect. Perhaps one of the foremost exponents of the conservation idea as applied to life and health is The National Cash Register Company, of Dayton, Ohio. Its health and welfare exhibits at the First National Conservation Exposition forcibly demonstrated the advanced ground this concern has taken in this work.



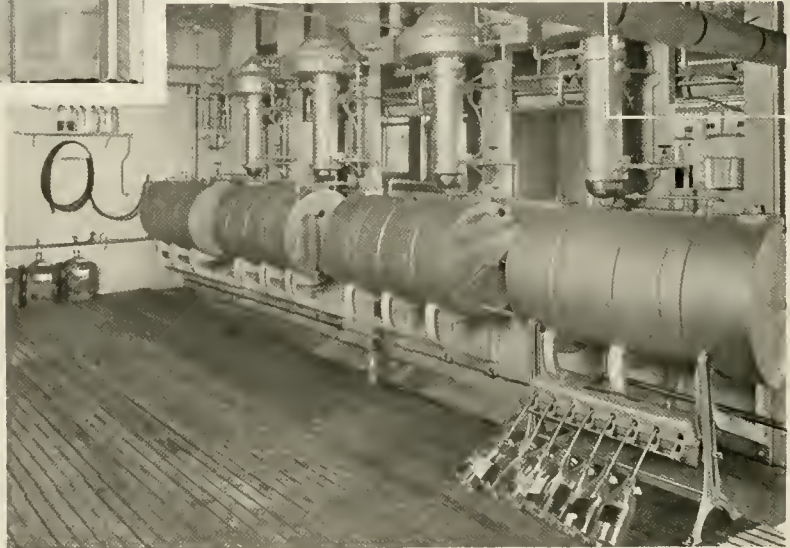
One of the factory windows. Four-fifths of the wall space is glass.



Aerated distilled water is distributed daily to office departments.



Sanitary drinking fountains in factory departments.



The Water distilling plant at the N. C. R. factory.

The Exhibit Described

Its exhibit was neat, unaffected, and a model of simplicity. Not the smallest detail was omitted, yet there was nothing superfluous. White was the color scheme—the signal light of purity and sanitation. Beautifully colored transparencies, lighted with electric lights, bordered the upper part of the three-sided and paneled booth.

Another collection of similar transparencies, with electric lights back of them, was placed in a specially prepared rack and located immediately in front of the booth. These transparencies showed at a glance the diversified activities of the Company in caring for the health and welfare of its employees.

Pictures Show Hygienic and Welfare Activities

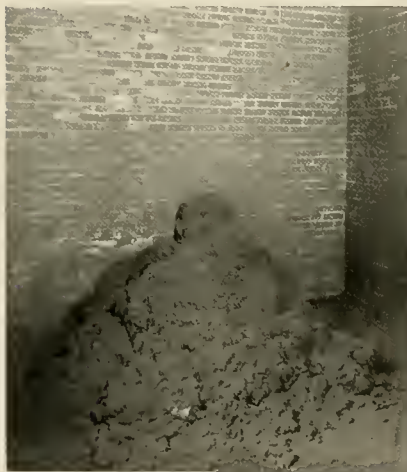
Another novel method of displaying pictures and photographs of the various features of its conservation work, was by means of folding wall cabinets or cases, containing a dozen or more leaves, bound together like a book. The pictures were affixed to these leaves. To display them, all that it was necessary to do was to open the case and fold the leaves back one by one.



Air is drawn in through ventilators at the top of the building where the air is purest



A vista between buildings. Open spaces allow plenty of fresh air and sunlight to enter the factory.



A week's accumulation of metal dust withdrawn from the Polishing room.



The polishing room is kept clean and healthful by an exhaust system which carries away the metal dust.

These transparencies and pictures graphically portrayed the broad field covered by the Company in its welfare and hygiene work. They showed scenes in the office and factory departments; beautiful vistas between the buildings and landscapes in Hills and Dales, a semi-public park owned by the President of the Company and maintained by him for the use of the public.

There were pictures of the hygiene departments, such as showers, gymnasium, nurses' and doctor's offices; scenes in the kitchens and dining rooms; the



Ventilating apparatus which changes air in buildings every fifteen minutes.



Plain, well-cooked meals are served daily in the Officers' Club to 500 officers, foremen and clerks.



A hot lunch is served daily in the women's departments.



Food for the Officers' Club is prepared and cooked in a clean, airy, well-lighted kitchen.



A few minutes each forenoon and afternoon is given the women employes for rest and exercise.



The gymnasium for employes of the Company, where they exercise for health, not strength.

method employed to purify water for the use of the force; rest rooms, athletic fields, and country club; the hospital and improved methods of protecting the workmen's life and health while working around dangerous machinery; and numberless other things that are done for the welfare of the employes.



The Country Club for employes and their families. All employes are eligible for membership.



A baseball game on the Country Club grounds.



Tennis courts for employes near the factory.



A scene in Hills & Dales, an 1,100-acre playground for N. C. R. employes.

Illustrated Lecture Delivered Daily

In addition to these pictures, a commodious lecture hall was fitted up, in which there were shown a number of times each day and evening, stereopticon and Kinemaecolor motion pictures. A lecturer was present at each show and explained more in detail the things illustrated upon the screen. These lectures were free and were attended by practically all who visited the grounds. Among all the pictures displayed, there was not one showing a cash register, unless it might have been a rough casting of one that incidentally might have been noticed in one of the foundry scenes.

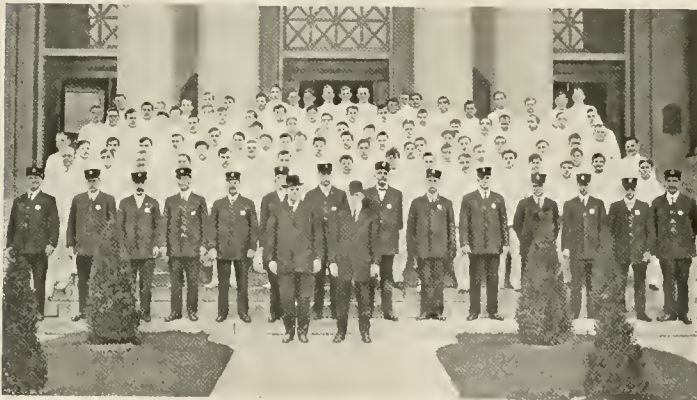
Exhibit Won Three Gold Medals

This exhibit was awarded three gold medals, as follows:

- (1) The most interesting and instructive exhibit at Exposition;
- (2) The best industrial hygiene exhibit;
- (3) The best welfare exhibit.



Prize winners at recent distribution of prizes and diplomas. The progress of the Company is due in a large measure to suggestions received from employes.



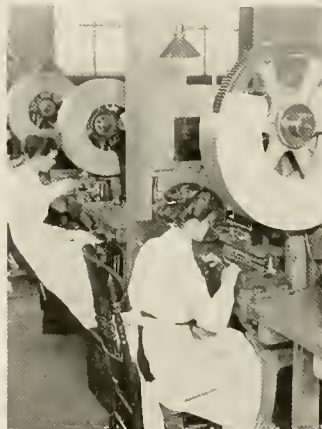
Plant Inspection Department, which keeps the factory clean, looks after fire protection, etc.

**The Same Exhibit at
Washington, D. C.**

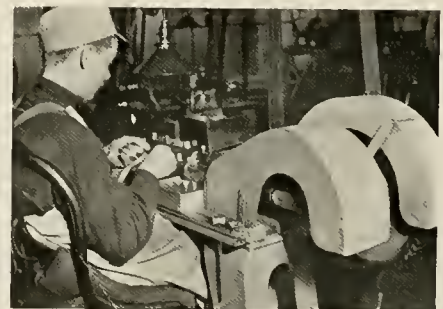
All who saw the exhibit will agree that it was richly entitled to these awards. It was unique and original in every respect. It is the same exhibit which was shown at the International Congress of Hygiene, at Washington, D. C., where it was viewed by hundreds of the leading physicians, surgeons, and welfare workers from all parts of the world, and which created so much favorable comment among them.



Employees may bathe twice a week in summer and once a week in winter on the Company's time.



Gears are protected by metal guards.



Guards over gears on thread rolling machine.

Unusual Work for Industrial Concern

While the exhibit was simple and complete, yet it was one which could not be fully comprehended in a hurried visit. Each group of pictures seemed to open a new avenue of thought and to create a desire to pursue the subject further. The visitor forgot that he was looking at an exhibit of a manufacturing company, as the pictures shown, the literature distributed, and the lecture given, seemed far removed from an industrial institution, whose first concern is usually thought to be the making and selling of goods at a profit and the paying of dividends to stockholders.

New employes must pass a physical examination.

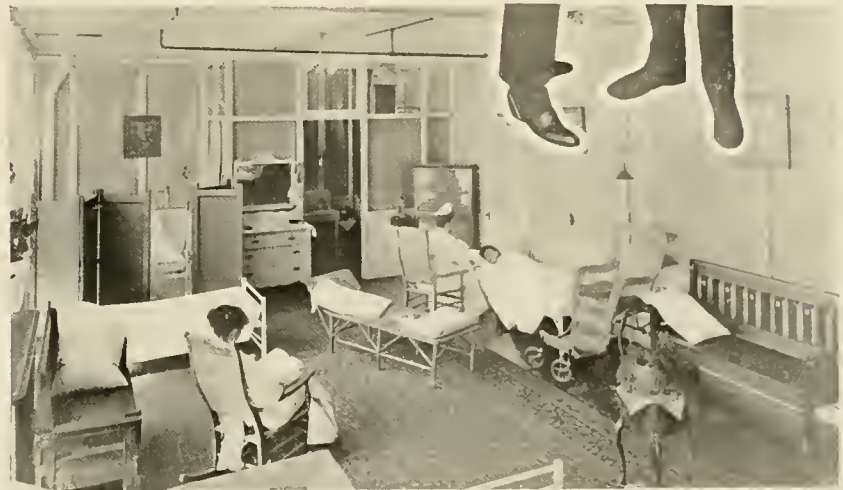


Increased Efficiency

Another point which could hardly fail to be impressed upon the visitor is the fact that all these things make for efficiency—all round, lasting efficiency, planned not for a day



A boy gardener.



Rest room. Here the women employes find rest and enjoyment during the noon hour and recess periods.



Gardens are maintained for neighborhood boys. Ground and seed is furnished free. The boys do the work under the direction of an expert gardener. All they raise is their own, to dispose of as they see fit. These boys have organized a stock Company, under the laws of Ohio.

but for a lifetime; not the efficiency of the tool or the machine—the thing—but of the man and the woman, or the workers themselves.

What the Company is doing in its welfare and hygiene work is the result of long years of investigation and experience. It is a development which started a generation ago, when the idea was new and generally unknown. It is even now in the process of development, as the Company believes that the growth of this branch of the conservation movement will be far greater in the future than it has been in the past.

The Object of the Exhibit

The exhibit was in no way a plan for advertising the product of the Company. Its purpose was to demonstrate what can be done by any commercial, industrial, or educational institution in teaching its employees the principles of hygiene and sanitation; the importance of pure food, fresh air, sun light; and proper rest and recreation. It aimed to show how the keeping of buildings and surroundings clean and attractive, and the guarding of all dangerous machinery, creates a spirit of good will and increases the efficiency of all concerned. All of which results in a better product and in a happier people as well.

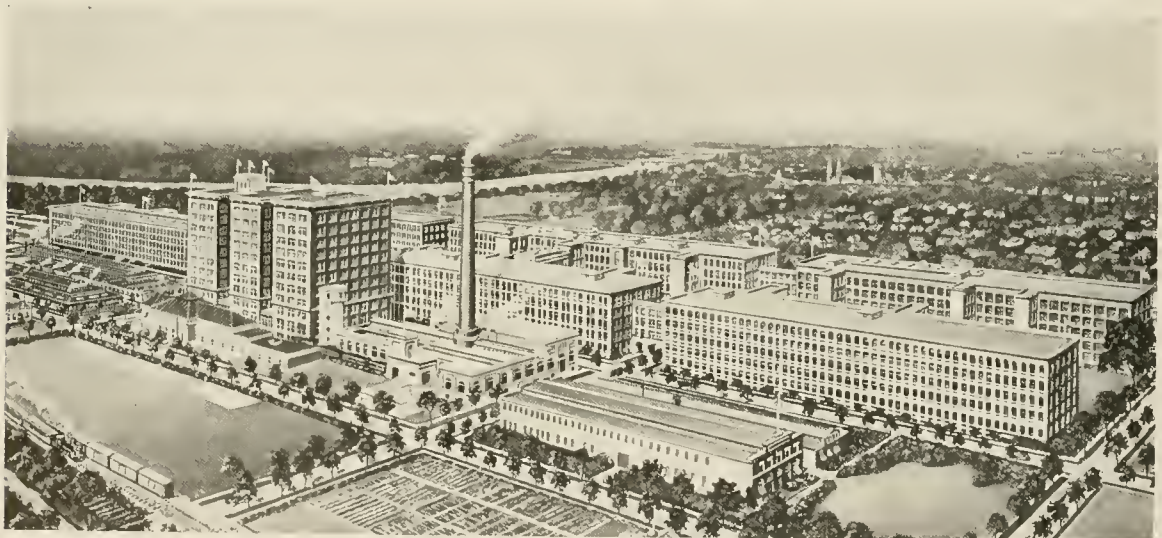
The object of the Company in making this exhibit was purely unselfish and solely in the hope that some individual or concern might be prompted to give more thought and action to the conserving of the health and life of mankind.



A street in the factory neighborhood, one of the results obtained from teaching landscape gardening to the surrounding community.



Grass, trees, vines and flowers, properly arranged, add charm to the factory surroundings.



A bird's eye view of the N. C. R. factory. The buildings are four-fifths glass and contain 38 acres of floor space. Nearly 7,000 people are employed. They make nothing but cash registers.

THE CHILD WELFARE EXHIBIT

BY JULIA C. LATHROP.*

It was appropriate that the National Conservation Exposition should be the first of its kind to include an exhibit of child welfare work. The necessity of conservation of the nation's human resources is being more and more recognized, and surely nowhere can this be made more effective than at the very beginning of life.

The child welfare building assigned by the Exposition authorities was a comfortable, airy building with ample space. Its white-painted interior, adorned by garlands of greenery, made a charming background for the wall charts and living exhibits.

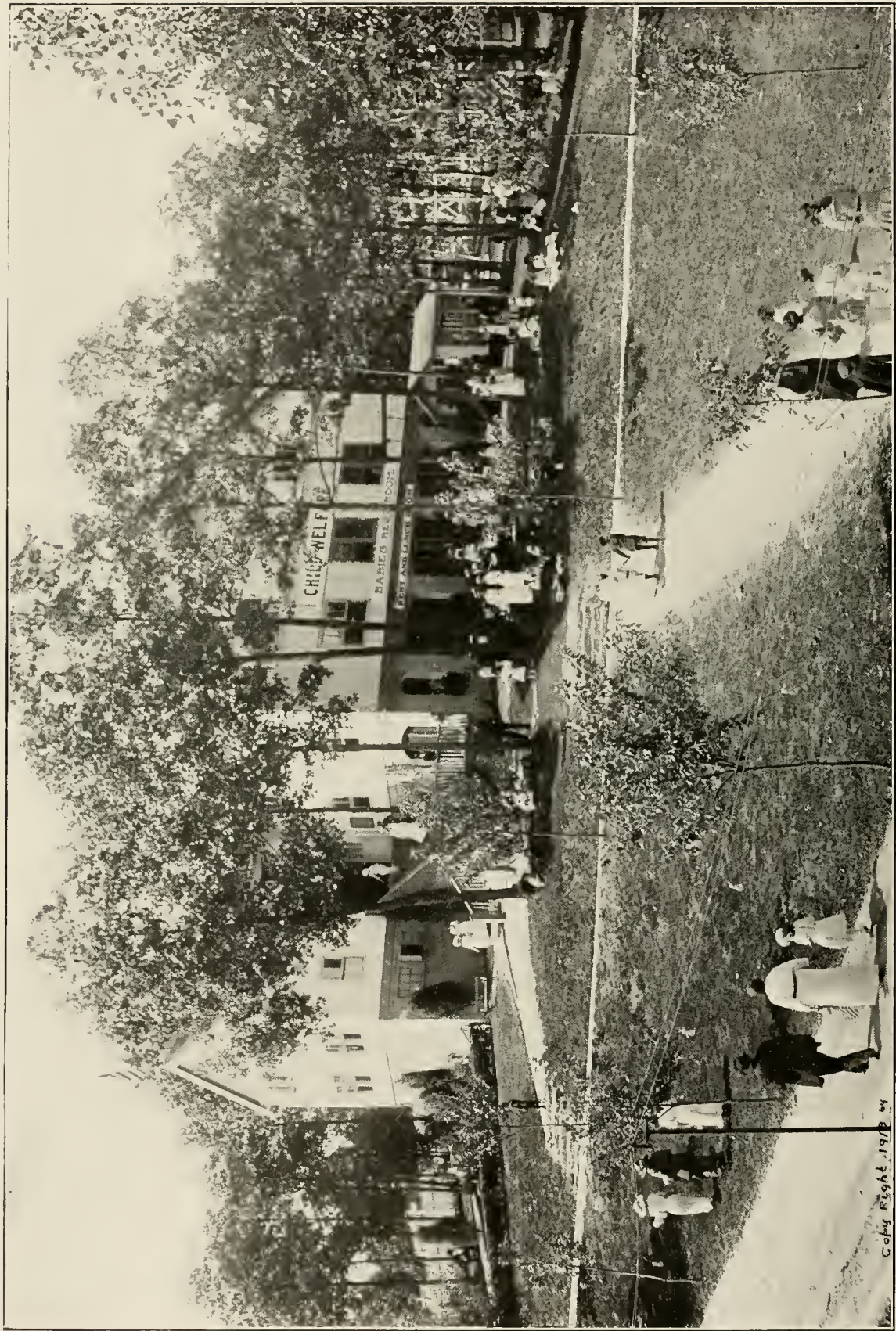
As time went on the exhibit elicited much attention from the press of the country, and the following description is largely quoted from the *Survey* of November 15, 1913:

"The fact that such an exhibit was asked for by the exposition authorities took the exhibit out of the class with which we are more familiar, where the exhibit is the result of local feeling and local effort, and made necessary a more general program which should appeal to all visitors at the exposition. The exhibit at Knoxville had also a further advantage. Its two months' duration made possible a succession of special days to emphasize particular aspects of child welfare, to allow for the physical examination of larger numbers of children, and last but not least, to work up in the surrounding country an interest which would welcome the information thus freely brought to its attention.

"The building included a mothers' rest and lunch room, a rest room for babies, and a moving-picture audience room. Around the gallery of the main floor were displayed screens depicting diseases of children, children's institutions, dependent, delinquent and defective children, child labor, and recreation, giving from the main floor a picture-gallery effect. These screens were as simple and direct as possible, with pictures to tell a large part of the story. They were evidently genuinely interesting to the exposition crowds. At one end of the gallery, also, a dental clinic was held on certain days.

"On the main floor, pictures competed with real life for popular interest. A large open space in the center was assigned at stated hours to exhibitions by Boy Scouts, Campfire Girls, and the city's settlements. But the greater part of the floor was given up to the babies. Here were panels and pictures illustrating their care and a glass-enclosed room for the actual physical examination; here, too, was a demonstration kitchen in charge of a nurse where mothers might watch the preparation of artificial food, an enclosed porch equipped with small beds and baskets,

*Chief of the Federal Children's Bureau at Washington; member of the Advisory Board, National Conservation Exposition.



CHILD WELFARE BUILDING, NATIONAL CONSERVATION EXPOSITION

Copy Right 1918 by

and adjoining this, the rest room proper where babies might be left in charge of nurses on payment of a small fee, while the parents viewed the exposition.

"The Conference Room, particularly, where the physical examination of children was conducted, was from the first surrounded by an eager little group of spectators. One couple from the country had wandered around from screen to screen silent and unresponsive to the efforts of the explainer. Finally they reached the Conference Room where they saw a child being examined. The woman turned to her husband and exclaimed, 'There, pa, I told you we'd orter brought ourn.'

"The aim of this Conference was 'to show the physical condition of children visiting the National Conservation Exposition in Knoxville and to point out any defects which, if uncorrected, might cause lasting injury, giving to the parents a record of the examination.' The record itself provided for a simple, clear statement of the physical condition of the child at the moment of examination and included a summary sheet which gave the examining physician opportunity for emphasizing the special needs in the individual case. In preparing this record the idea was kept steadily in mind that individual help for the mothers was the primary aim, and the collection of statistical data only secondary. For the latter purpose, a supplementary sheet was used showing in tabular form the findings in each case, how many examinations were made, the ages, proportion of children of rural and urban districts, the number of children in evident need of operations for adenoids, etc., and the proportion of under-nourished children.

"Dr. Frances Sage Bradley, of Atlanta, was the examining physician. Dr. Bradley is the Chairman for Georgia of the American Medical Association Committee for Public Health Education among Women and is also a Director of the Georgia Federation of Women's Clubs. Her success at Knoxville may be evidenced by the fact that during the sixth week of the Conference 170 children were examined, as against 39 children during the first week. No medication was given, but where evidence of disease or defects were discovered, parents were referred to their family physician. Emphasis is laid on the nutritive condition of the child and advice given on matters of child hygiene. At the end of the first three weeks of the Conference, Dr. Bradley found that some simple talks on food values and cooking were especially needed, and the Dean of Domestic Science in the University of Tennessee was asked to give a series of demonstrations in the Child Welfare Building for the benefit of the mothers, using the most readily obtainable raw materials.

"Children of all ages were admitted to the Conference. Many children were brought by their fathers. No prizes were offered, and results seem to show that no prizes were necessary in order to interest parents. The examining physician believed that the parents were especially gratified with her appreciation of the fact that they had done the best they knew how for their children and were eager to learn how to do better. Dr. Bradley said 'Every father, every mother, wants good children. They do the best they know how for their children. They do not need the incentive of a cash prize. The unsuccessful mother is not going to sub-

ject herself to the humiliation of a contest in which she is a foregone loser, yet she is agonized over her delicate baby and experiments often at the cost of its life. The Conference seems to be the rational route for reaching the goal of better babies; it is based on a recognition of the fact that ignorance, and not indifference, is responsible for so many sick and dying babies; it welcomes not only the prize winner, but the great rank and file, the ninety-and-nine children, as they come to the exposition.' ”

The Health Departments of Nashville and Memphis contributed to the child welfare exhibit. Nashville sent over a fine collection of photographs illustrating the work of the city visiting nurses and the municipal protection of the milk supply. The Memphis contribution had a peculiar interest in that it represented the work of the now famous Bachelors' Club of Memphis, which furnished funds for the notable baby-saving work carried on in that city. It consisted of a tent stationed just outside the child welfare building, with a nurse in attendance, where the Memphis baby-saving methods were exhibited, topped by a flag bearing the proud title "Memphis Life Saving Station."

Special acknowledgment should be made of the contribution of the Russell Sage Foundation, which was essential to the preparation of the exhibit. The Foundation gave the services for four months of Miss Ellen C. Babbitt, who planned and arranged the baby section and organized the Children's Conference which was later conducted by Dr. Bradley. The Foundation also printed a pamphlet entitled "The Care of The Baby," written by Dr. Bradley, which was distributed free to visitors.

The Knoxville Exposition appealed to a wide audience, and hence it was desirable that the Child Welfare Committee should represent people with experience in similar undertakings in various parts of the country. This Committee as organized consisted of Miss Ellen C. Babbitt, New York City; Miss Adele Brandeis, Louisville, Kentucky; Dr. Wm. R. Cochran, Knoxville, Tennessee; Dr. S. S. Crockett, Nashville, Tennessee; Dr. S. McC. Hamill, Philadelphia, Pa.; Mrs. T. R. Henderson, Greenwood, Mississippi; Dr. Elizabeth C. Kane, Memphis, Tennessee; Mr. Sherman C. Kingsley, Chicago, Illinois; Mr. E. W. Ogden, Knoxville, Tennessee; Mrs. Charles A. Perkins, Knoxville, Tennessee; Mrs. Horace Van Deventer, Knoxville, Tennessee; Miss Julia C. Lathrop, Chief of the Federal Children's Bureau at Washington, Chairman.

It was found necessary, however, to secure a paid executive secretary for this widely scattered committee, and Miss Anna L. Strong was accordingly engaged to outline the general plans of the exhibit, which were later carried through under the supervision of her assistant, Miss Emily C. Coye, both of the National Child Welfare Exhibition Committee.

The recreation of children was not only illustrated by the living demonstrations mentioned above and others, but by wall material showing the activities of Boy Scouts and Campfire Girls and by the gardens which had been laid out and tended by the children for months before the Exposition opened.

The National Child Labor Committee sent its latest collection of material, and the new screens of the Child Welfare Exhibition Committee were shown here for the first time.

The city child welfare exhibit is usually a matter of a few days, and hence the local co-operation is not so heavy a burden as in a case like this where for two months public-spirited citizens co-operated to make the exhibit a going concern, by furnishing living exhibits, lectures, and the like. The Committee is greatly indebted to the co-operation of the Mothers' Association, the Children's Clinic, and many other organizations and individuals, and to the good offices of the public press of Knoxville.

The method of securing public interest through exhibits is now so fully recognized that it was deemed suitable by the Governmental authorities that the Children's Bureau should co-operate in the child welfare exhibit at Knoxville. Although the Bureau is empowered by law only to make and publish reports upon matters pertaining to the welfare of children, it is plain that such an exhibit as was offered here forms a method of publication whose growing importance is more and more realized.

It is proper to note the interest in the exhibit shown by applications from various cities for the material displayed at Knoxville. Immediately after the Exposition closed the exhibit was shown in Atlanta, Georgia, and it has since been taken to other localities, with a prospect that parts of the exhibit will in the near future be combined with local material in a considerable number of towns.

ART DEPARTMENTS

BY LLOYD BRANSON.

Having been requested by the author of this work to write of the history and character of the Art Departments of the three expositions, the writer regrets that he can not do so without continually referring to self, and only wishes that someone else could be found to tell of it. To somewhat relieve this feeling, he has asked Miss Catherine Wiley and Mr. Robert L. Mason to follow with sketches of the character of the paintings and the painters, the influence and the good of it to all who love to see men and women "do things," the writer only noting of how and who got the collections together and ready, each year, *and ready* on opening day.

Soon after the organization of the Appalachian Exposition Company of 1910, the writer was officially notified of his appointment of chairman of the Art Department with full powers to appoint sub-chairmen and committees. The amount of money estimated needed by him was promptly voted by the management and he early in the spring (1910) visited the studios in the large cities and it is with pleasure he finds opportunity is here given to put on record the fact of the polite reception everywhere met with. The artists are universally known, or are thought to be, "absorbed" and unbusinesslike, but it is not so, especially those in New York and the four other big cities of Europe that are art centers. One of the first things the author did was to spend some days with an artist friend, James Henry Moser, of Washington, D. C. Mr. Moser, true to his nature, was soon aroused to help out a friend, and without his valuable advice and work our Exposition of 1910 could not have been such a success. Not only did Mr. Moser collect all the Washington pictures, but he came to Knoxville and worked, without remuneration, all from an enthusiastic love of all things in art and friendship. Mr. Moser, together with Mrs. A. A. Yeager and Mrs. James McDowell, served on the jury of awards this year.

The chairman appointed all the membership of the Nicholson Art League as an art committee, but specialized many of them into proper committees for the work and all did their appointed work, but while there's praise for all, Mrs. L. B. Audigier comes first on the list of valuable help. It is due to Mrs. Audigier's hand work that the beautiful illustrated catalogue of that year was produced. And without pretending to mention names in order of their work of this year in addition to those already mentioned, Miss Mabel Smith, Miss Catherine Wiley, Miss Sophie Ducloux, Mr. C. C. Krutch, Mr. Robert Mason, Mr. Mortimer Thompson, Miss Laura Thornburg, Mrs. A. H. Dailey, Mr. James Wallace, Mrs. J. T. Garrett, Mrs.

Lutz, all deserve due praise. The author has no copy of the catalogue of that year by him, else he might mention names in a more orderly manner.

It was this 1910 Exposition that included a photographic class in the Art Department, and without the activities of Mr. Joseph Knaffl could not have been a success that it was.

The first 1910 exposition developed the fact that there was a recently organized association with headquarters at Washington, named the American Federation of Art Clubs, the object of which is to keep a standard collection of current paintings exhibited at and by any Art Club (member of the Association) applying for the loan, at cost of carriage, insurance, etc. Seeing this opportunity for the next (1911) exposition, the Nicholson Art League went in as member of the American Federation and procured a valuable collection of the best paintings of the day. With this collection the bulk of the show was made. All artists South of the Ohio, of reputation, were solicited to and did exhibit, making up the complete collection in both years.

Of the management of the 1911 Art Department little or no change is to be noted in method or names of those mentioned in that of 1910. The number of works and merit being about the same, but the work was somewhat easier on account of the Federation feature mentioned just now and experience of the 1910 show.

In 1913 came about the National Conservation Exposition. Miss Catherine Wiley was made chairman of the Art Department. Again the Federation responded and a collection sent out. The experiences of this year, the hopes and fears for success, being similar to the two former years.

THE ART EXHIBITS OF THE NATIONAL CONSERVATION EXPOSITION

BY CATHERINE WILEY, *Chairman Art Committee.*

The art exhibitions of the expositions at Knoxville were of exceptional merit, and note. Many of the paintings and other art works shown here were among the best of contemporary production. The catalogues contained names of international fame and it is a matter of just pride to those concerned in arranging the exhibits that through them the many visitors to the expositions were given the pleasure and benefit of the study of these works.

The two displays of the Appalachian Expositions were housed in the Administration Building and necessarily were somewhat limited in size. However, they presented a pleasing effect, being arranged in alcoves and lighted from above.

The first year, among the most interesting paintings were those by Louis Loeb, Chas. Gruppe, R. D. Ganley, Irving R. Wiles, Wm. R. Leigh, Hobart Nichols, Chauncey F. Ryder, Reynolds Beal, S. T. Wolf, Mrs. Rhode Holmes Nichols. Then there was a large exhibit from Washington brought here through the assistance of Mr. J. H. Moser. This group comprised the names of Mr. Moser, Richard N. Brooke, Max Weyl, E. C. Messer, W. H. Holmes, Ellen Day Hale, Mrs. Bush, Brown, Bertha Perrie, Mrs. Leisenring, Clara Weaver Parrish and a number of paintings by Wm. P. Silva. The medal for the most meritorious painting was awarded to Gilbert Gaul for his "Firing Line," the Nicholson Art League medal to Lloyd Branson for best painting in Appalachian territory, and the H. J. Cook medal to Catherine Wiley for most meritorious group in Appalachian territory. There were other prizes and honorable mentions made, most of them being those names previously mentioned. Of others were Robt. C. Childes, Ethel Newman, M. R. McPherson and Mayme Freeman.

The second year the local and Southern art display was augmented by an exhibition collected by the American Federation of Art, and this exhibition though small was representative of the best of contemporary American painting. Names of such painters as John W. Alexander, Childe Hassam, Frank W. Benson, Robt. Reid, Edward W. Redfield, Elmer Schofield, Gardner Symons, Frederic J. Waugh, Ernest Lawson, Chas. H. Woodbury, Henry Golden Dearth, Mary Cassatt, Lillian Geuth, Cecelia Beaux, Jonas Lee, Ben Foster, Wm. Retschel, Birge Harrison, John Carlson, Leonard Achtman, Chauncey Ryder, Sargent Kendall, W. Granville Smith, Chas. W. Hawthorne, Robt. Vonnoh, Wm. Paxton, Augustus Koopman and others attest to the high order of merit of this exhibit. The medal for best group by a Southern

artist went to Miss Ella S. Hergisheimer, of Nashville. Others of this section of especial note who exhibited were Pearl Saunders, Lamira Goodwin, Lloyd Branson, Chas. Krutch, Jas. W. Wallace, and others.

After two years the Appalachian Exposition was followed by the National Conservation Exposition and a separate building was given to the Art Department. This building, located on the top of a hill surrounded by trees, formed a fitting home for an art gallery. The interior, lighted from above, was decorated in soft colors with white woodwork and benches and with the marble pedestals for sculpture, and a beautiful fountain in the center, gave an effect of elegance which set off to fine advantage the splendid exhibition of paintings and bronzes displayed. The exhibition was much larger than heretofore and a standard of excellence of exhibits was maintained, thereby insuring a general degree of merit.

Again an exhibit was secured from the American Federation of Art, and not only oil paintings but water colors, illustrations and sculpture were shown. There were names in the list exhibiting which stand highest in American art, such as Daniel Garber, Ivan G. Olinsky, J. Alder Wier, Eugene E. Speicher, Joseph De Camp, Robt. Henri, Gardner Symons, Arthur B. Davis, Irving R. Wiles, Richard E. Miller, Elmer Schofield, Paul Dougherty, Frederick J. Waugh, H. Bolton Jones, Robt. Vonnoh, Hobart Nichols, Chas. H. Woodbury, Geo. H. Macrum, K. A. Buehr, Ben Foster, Arthur W. Dow, John F. Carlson, Everett Warner, Fred Wagner, L. H. Meakin, Alice Schille, Chas. Warren Eaton, Hobart Nichols, Jos. Davol, Birge Harrison, Herman D. Murphy, Max Bohm and many others.

The gold medal for best oil painting was awarded to Geo. H. Macrum for his painting, "The Pile Driver." Silver medal for second best oil painting to K. A. Buehr, "Dejeuner sur L'Herbe," and bronze medal to Richard E. Miller on his "At the Window."

Among the exhibitors of water colors, the work of Colin Campbell Cooper, Emma Lambert Cooper, Fred Wagner, George Walter Dawson, Blanche Dillage, Katherine Patton, Clara Madeira, and Clara Saunders was especially notable. Of the illustrators, Jos. J. Pennell, Thornton Oakley, Elizabeth Shippen, Green Elliott, Jessie Wilcox Smith, Annie Whelan Betts, and Ethel Franklin Betts Bains all contributed characteristic examples of their art. Medals for first, second and third honors in water colors were awarded respectively to Blanche Dillaye's "Moonlight," Katherine Patton's "In Chagford," and Fred H. Wagner's "Bright Day."

Among the Southern artists the work of Mr. Hugh Tyler which won the Cook medal for best group of paintings by artist in Appalachian section, the landscape by Mr. Robt. Mason which won the Strong prize for best landscape in Appalachian section, the water colors of Mr. Chas. Krutch, one of which won a prize for best

water color from Appalachian section, the work of Miss Elizabeth Gettys which won prize for best portrait in Appalachian section, and the works of Miss Hergesheimer, who assisted in selecting the exhibits, Miss Saunders, Mr. Branson, Mr. Wallace, Mrs. Lutz, Mrs. Garrett, and others was worthy of especial note. The bronzes shown to advantage on the pedestals grouped around the gallery, were a new and very interesting part of the exhibition. Although small, the figures were very fine and the work of Anna Vaughn Hyatt, which won first medal, Isidore Konti, awarded second medal, E. T. Quinn, Karl Bitter, C. C. Ruinsey, A. A. Weinman, R. Aitken, Mrs. G. S. Corbett, which won third medal, and others, added not only a decorative effect to the gallery—the figure of Mrs. Corbett was used in the fountain—but were a valuable and beautiful display.

Necessarily a note of the history of the art exhibitions of the exposition can be scarcely more than a catalogue of names, but these are enough to show the value of the art which was given to the public to see. The display of work such as this cannot help but be of inestimable benefit to the public, and it should be grateful to the men who made it possible for these works to be brought here.

BIRD CONSERVATION

BY B. R. STRONG.

It is pleasing to me to be chosen to write the history of the work done in 1913 by the East Tennessee Audubon Society at the National Conservation Exposition, the world's first great effort to teach the proper value and use of a large part of nature's great wealth. Owing to illness, I was unable to do any of the work of fitting up the ample space and installing the exhibits, or that which was required, subsequently, to make it what it has since become in history.

Whatever I may have done in assisting to lay out its scope and plans would have been of no more real worth to Exposition visitors than "mere castles in the air," had not others been ready and willing to do the actual work which brought order out of confusion. This essential work was done, and well done, by my fellow Audubon members and it gives me great satisfaction to record here a brief history of what they accomplished.

It must be remembered there was nearly everything in the beginning to handicap the success of any kind of a Bird Exhibit except the faithful, wholesome enthusiasm and steady determination of something like half of the members of the Audubon Society present at the last few meetings during the past Summer when the subject was brought up for consideration. In a few short, but somewhat animated, discussions, it became plain that the members present were about equally divided; one section being exceedingly anxious to hold an exhibit at the first National Conservation Exposition ever given anywhere, while the others stoutly opposed the same, and insisted that the Society adjourn until cold weather, as many of the members were then just on the eve of leaving the City for the Summer.

Strange, as it may seem, most of those having had previous experience in the Bird Booth at the Appalachian Exposition, were decidedly opposed to undertaking any kind of a bird exhibit whatever. Some stated that we could not get space from the Exposition management, and that there was not enough time, as Summer had already well begun. It was also stated that we had one hundred and fifty dollars only on hand, fifty dollars of that amount (in bank, drawing four per cent interest) having been given by Mrs. Russell Sage. Some of the conservatives suggested that other organizations would be soliciting money for exposition purposes and it would be very difficult, and require hard work for us to get sufficient funds subscribed to make a creditable display.

We, the Progressives, insisted that we should not fail to do our part in the world's first Conservation Exposition, which fortunately would be given at our



ST TENNESSEE AUDUBON SOCIETY

BIRD COURT

BOSS HORNERS GET THEM 40,000,000 OF THE FARMERS, CROP

DO NOT LET THEM
GUESS YOURS.
PLEASE THE BEST
EVERY HUMAN HAND.

THE TENNESSEE
AUDUBON SOCIETY
MEMBERSHIP

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EXHIBIT BY AUDUBON SOCIETY, NATIONAL CONSERVATION EXPOSITION

very doors. We had, like all Audubons, previously agreed that no kind of conservation was of more importance to humanity than that of birds; that the great opportunity of our lives had arrived to stand up for bird protection, first, last and all the time. It was contended we were unable to see for what purpose the money on hand was to be used, if not for bird conservation. We also expressed a belief that ample space could be obtained, and that thousands of people would attend the Exposition whose opportunities had been very meagre for knowing the truth about birds. It was our plain duty therefore to give them this chance, which could easily be done without one cent of cost to our organization, either for space or advertising. We also felt that money was like gunpowder, of no good until "touched off," and that Mrs. Russell Sage's gift, although drawing two whole dollars in interest every year, could do its best possible work by being used, without delay, for educational purposes. That if the Audubons helped but one average farmer to realize the truth as to the benefit birds were to him, or if we could save from the hunter's slaughter but one pair of quails, the entire fifty dollars would have been well expended. We also thought that the failure of the Audubon Society to make an exhibit at the first Conservation Exposition ever organized would be unworthy of the City of Knoxville. We were exceedingly desirous to show our appreciation of the efforts of others and to do our part in helping forward one of the greatest movements of the 20th Century. Considering bird conservation as at the very head of the list, we felt it would be little short of a disgrace to the community and especially to our bird protecting society, if we refused to act at this time, the most opportune in American History. We felt that a failure to make an Exhibit would, by some, be considered a deliberate stab at the Exposition Management by the Audubon people, which for obvious reasons, we desired to avoid. We believed that to neglect such a vast field, ripe for the work, would be inexcusable. Some asserted it would be simply an act of folly for a body of grown-up men and women, (organized for bird protection), to fold their hands in the presence of such a golden opportunity and positively refuse to uphold the chief aim of our society's existence.

Each side spoke freely and seemed to grow more determined to carry its point. Pushing forward and getting their information from Exposition Headquarters, the Progressives soon learned that all the desirable space needed could be gotten, free of all expense. It surprised many that the proffered space was almost all of the second story front of the Land Building; the great Auditorium, the very center of attraction, adjoining it in the rear. Subscriptions were called for, and quite an encouraging, but not a large sum of money was guaranteed from enthusiastic members. Soon the tide turned wholly in favor of the Progressives. Discouraging conditions began to brighten, and the work immediately moved forward

with desirable dispatch. Cheering indications of coming success were visible in every direction. Good fortune seemed to follow every movement, and while money was not received in large amounts, every dollar seemed to actually stretch out and do double duty. Individuals were induced to offer special premiums for the best bird-houses and for essays on Bird Conservation. As if by magic, a full force was organized of enthusiastic Audubon Members, several of whom pledged themselves to install and carry on the "Bird Court" at the Exposition without one cent of cost to the Society for their services of more than two whole months. This movement, then and there, fully decided the ultimate success of the Audubon enterprise.

These volunteer workers paid their own street-car fares to and from the grounds, and several of them even bought their admission tickets to the Exposition. Cold, rain, or handicaps of many kinds, did not cause their enthusiasm to waver and the immense benefit that their strenuous labors accomplished in helping the people to become better acquainted with the beneficial qualities of birds and their conservation, was a work of which they have a right to be proud. This committee of enthusiastic workers distributed to visitors, in eight weeks, nine large mail-bags of government bird books and other Audubon documents. Most of the government literature was furnished us by Senator Shields and Representative Austin, both of Tennessee. A large supply of reading matter was presented by the Associated Audubon Society of New York, in addition to over twenty thousand pieces of other bird information specially gotten up by the local Audubon Society. For our workers to select, for applicants, the proper reading matter concerning birds, was of itself a herculean task. Then, to explain the particulars, as was often necessary, concerning the subjects treated of in each publication, was no small undertaking. It must be remembered that our "Bird Court," contained over a thousand framed pictures and charts of birds, done in colors, true to nature. They brought forth from visitors innumerable questions. In order to properly carry out the educational idea, which is always a pleasure and one of the chief duties of any good Audubon member, these questions required careful answering.

In addition to those who gave their services regularly, there were others who worked at special times, as they were needed. Still others, who, owing to age, feebleness, or business which could not be left for any considerable time, succeeded in adding to the membership of the Society. In addition, they constantly lightened the duties of the workers in many ways and gave words of encouragement to those who were in charge. Some members with but small means gave most liberal sums to help on the work, and several generous and unsolicited contributions were given by outside bird-lovers.

The Management of the Exposition honored our Society by asking that we dedicate the great Auditorium when that neighboring structure was finished. The Hon. Von A. Huffacre, Judge of the Circuit Court, presided on that occasion, and the leading address was delivered by Judge H. Y. Hughes, one of our Charter Members. He showed in a clear, masterly way the vast importance of Bird Conservation, and that he was fully acquainted with the habits of all kinds of birds, and more especially those to be found in the Southern Appalachian Mountains.

The officials also bestowed upon our organization another great honor in setting aside "Bird Day" at the Exposition, when we had the good fortune to have Dr. George R. Stuart deliver an address. Dr. Stuart is greatly beloved and a very interesting speaker. His reputation for uttering plain truths concisely is Nationwide. The Audubon people on "Bird Day" had delegations at the Exposition gates. They made a special effort to tag each one who entered the grounds with Bird pictures, which were printed on cards on which were brief suggestions, showing the advantages of bird conservation.

There are many people in the world who make but little effort to get at the truth, even about things of the greatest concern, especially where work and careful investigation are required. To this deplorable condition, generally born of laziness, may be charged most of the gross errors passing for truth concerning birds. Too many are controlled by impressions, beliefs or guess work, pure and simple, rather than to investigate, consult the best authorities, or use some other possible means to find the truth. Such people, as a rule, are concerned but little about the reliability of the source from which their beliefs spring. They "just feel so and so" or "have always heard so and so," and on such foundations, less stable than sand itself, they build their rickety structures. In such "castles in the air," they place their reputations for truth and often become greatly enraged when their statements are not promptly accepted. Such beliefs are often founded on some old, foolish saying, a few lines from a silly, ancient ballad or nursery rhyme; a mere superstition, or trick of the imagination. With no better showing of truth on which to build a statement, it is strange that such people, who frequently appear to have common sense in other directions, will become indignant if their declarations are not taken as the whole truth.

Many painstaking efforts have been made to correct the mistaken ideas which exist far and wide about birds. For instance, the Audubon Society does not advocate the protection of all birds, as some suppose. The blue darter-hawk and the horned-owl are man's enemies, but this fact should not injure the reputations of other hawks and owls which are man's friends. In some states where substantial rewards were once offered by legislatures for the heads of these birds,

farmers soon caused the laws to be repealed upon learning that serious damage was being done their crops by ground mice, a favorite food of these friendly hawks and owls. The martin is seen catching bees, and immediately some one cries out against him! Experts tell us that martins are not immune to bee stings any more than men, and are just as much afraid to catch the working-bee, on account of that sharp and ever ready argument, called the sting, the sudden insertion of which must test the belief of him who, in his calmer moments, asserts there is no such thing as pain! Careful investigation informs us that martins fearlessly take into their mouths and stomachs, not the stinging honey-makers, but the lazy, fat stingless drones, who eat the honey made by the workers in the hive. Martins are smart, and distinguish at a glance the drones from the keen, business-pointed workers. Who ever heard of the bee- or human-hive being short on drones? The working bee is ahead of man in this respect, for he seems sometimes to lose his patience at the lazy drones enjoying the fruit of the labor of others. When aroused, the working bees combine and slaughter the non-working drones in large numbers, casting their bodies out of the hive.

We regard the English Sparrow as man's enemy, for he is filthy, piggish and nearly always builds his nest where not wanted. He keeps up a disagreeable chatter, runs off and keeps away many song birds. He is fussy, greedy, unfair, and acts as if the world were made for him and him only; seldom eats insects unless other food is scarce or exhausted. At the Bird Court we sold a very ingenious wire trap, made in Chicago, which, after a fair trial, was found to be a great success, as in it sparrows were caught by the score.

During the Exposition the "Daily Sentinel" and the "Journal and Tribune," of Knoxville, generously gave the Audubon Society many columns of advertising, and without stint published a variety of articles, concerning the mysterious habits of birds and the advantages most of them bestow upon humanity. These most liberal deeds of kindness, coming from papers of such large circulations and influence, added largely to the success of our undertaking. The Weekly "East Tennessee Farmer," also published in Knoxville, as well as other progressive Journals, gave the Bird Cause many similar favors.

When it was definitely decided that we were to have a "Bird Court," at the Exposition, it was also fully understood that the whole affair should be conducted in a broad, practical, business-like way. The Audubon people in charge confidently believed, unless the interest of the farmer was well aroused, that our efforts would largely be but "as sounding brass and a tinkling cymbal!" With this firm conviction uppermost, the society's main efforts were directed toward getting the attention of the farmers by showing them what faithful friends most birds are to agriculture. It was felt that far too many Audubon Societies in the past had

spent entirely too much time upon the sentimental side of the bird question, and while the beauty of birds and the sweetness of their songs were all well enough, that such delicate and poetic food did not furnish a diet strong enough to satisfy and strengthen the one whose special interest we mainly sought to nourish—the average farmer. To help him see the truth of his great loss by the ravages of insects, (largely on account of the supply of birds being too small to destroy these pests), we believed to be our paramount duty. This practical policy was strenuously pursued and proved a wonderful success in getting the attention of thousands of thinking people. Reliable experts tell us that the enormous amount of over three quarters of a billion (not million) of dollars of American Crops are annually destroyed by insects. It was plain that this statement set the minds of many, as well as our agricultural visitors to thinking when they beheld it for the first time as it hung in huge letters on the walls of our "Bird Court," as may be seen in the picture published with this historical sketch. We used our best endeavors to show that from the studies of work done by Governmental and other reliable experts, it was learned that, in the killing and neglecting to properly defend insect-destroying birds, farmers were simply wasting annually much of their valuable time, labor and money in raising crops to feed and fatten worthless bugs and worms. We presented thousands of Government reports to people at the "Bird Court," which showed by actual count that a single "Bobwhite" had been known, in a year, to eat 75,000 insects, in addition to many pounds of noxious weed seeds. We pointed out the advantages to be found in the new migratory bird law passed by the Federal Government which went into effect on the 1st day of October, last. We also showed that the "Bobwhite" is unfortunately not an "interstate traveler" or a tramp, but a home-staying bird, and strange to say, on account of these qualities (generally thought to be commendable), he has been denied the protection of the national law, although he stands at the very head of the list of the many feathered friends of humanity. We endeavored to show that bird protection on various accounts had already been too long neglected, that the progressive nations of the earth had recently become greatly alarmed upon this subject, and that strenuous laws were being freely discussed and passed. We produced the statements of competent and most painstaking people, which claimed that bird protection was of such vital importance that if all the birds were killed, bugs and worms would increase in such large numbers that they would soon destroy all vegetable life, which condition would cause the human race to die of starvation. This statement will seem at first, to those who have not carefully investigated this great problem, a gross exaggeration, but let them take a little time to study the question and they will likely reach a different conclusion. The difficulty all along has been that people, accustomed to birds, which are small and in evidence at

almost every turn, have become indifferent to them, and therefore like prophets in their own country, few honor, or attach any special value to them. It is plain that bird protection has in years past been largely handicapped by ignorance, man's greatest enemy. One of the leading ideas which the Audubon people emphasized, during their work at the National Conservation Exposition, was that they should first get people to thinking seriously about some personal benefits they received from birds and then to investigating on their own account some of the many mysteries of which the subject is full. Properly started, in this way, they would likely become so interested that they would on their own account pursue other bird investigations with earnestness and determination.

There were painted in large, bold letters, dozens of mottoes and statements concerning birds, which were attached to the walls and other places about the "Bird Court," and these succeeded in catching the eye and bringing forth many questions, showing the interest and most generally the approval, of a large per cent of our visitors. One of these cards contained this statement, "It is cheaper to let your hunting friends shoot into your chickens and ducks rather than into your covies of Bobwhites." This one little sentence, from reports we have received, must have saved many a quail from the deadly shot of the hunter, in the Southern Appalachian country, during the past winter, as it started many farmers to viewing the subject in its true light. We fully believe that the work done at the Knoxville Exposition last fall by the Audubon Society will save farmers many thousands of dollars in the value of the crops for the coming season alone on account of the vast number of lives of insect-destroying birds this work saved from slaughter. However, it is most likely that this course augmented greatly the amount of profanity of some of our narrow-minded hunting friends. There are many hair-brained men and "Smart-Alex" boys, whom nature or something else has deprived of the power to do a little common-sense thinking, and "pot-hunting," (or anything else so they are killing something), seems to be their highest ideals of sport and manliness. There are various types of hunters in America and many of the better kind are doing work that will aid greatly in preserving bird and other so-called game. Hunters with human hearts, having education and practical common sense, are studying bird questions more constantly and strenuously than ever before and are using much of their information in ways that will meet the approval of all bird lovers.

The East Tennessee Audubon Society showed many architectural designs, shapes and styles of bird houses at the Exposition. These bird-houses were largely donated by the carpenters and mill-owners of Knoxville and several of them were sold to our bird court visitors. Bird-house makers, favorable to our work, from different parts and desiring to exhibit their wares, loaned us quite an assortment of

their various productions, some of which we disposed of, and they, having been placed with us at wholesale prices, the society made a fair profit, and we are pleased to say that these borrowed goods aided greatly in making our display one of which we were very proud.

Subscriptions were taken for bird magazines at our counters, and a few Audubon books were sold, but our working force was entirely too small to make of this department the success it should have been if we could have gotten sufficient Audubon members to have taken it up in a regular, systematic and business-like way. Recognizing the beauties and utilities of our exhibit, the Board of Commerce of Knoxville, at the close of the Exposition, by unanimous vote, gave the East Tennessee Audubon Society, rent free, the fourth floor of their building on Gay Street, for the purpose of preserving and making there the future home of the "Conservation Bird Court," where all may go to receive entertainment and become better acquainted with the attractions and benefits that bird-life is daily and bountifully bestowing upon humanity. The display, much as it was in the Land Building, is now at its new Gay Street home, and all, more especially school-teachers and their pupils, are cordially invited to visit it free of charge on any week-day of the year. The East Tennessee Audubon Society is delighted with the generous assistance and uniform kindness it received during its week at the world's first National Conservation Exposition, and it has previously expressed the thanks of its members to those to whom it is so largely indebted.

While in the beginning, there was much to discourage, thanks are due to those who were, from the first, determined to have an Audubon Exhibit, and most especially to those enthusiastic members who freely banded themselves together, and pledged their services, free of all charges, for months of hard and faithful work in making that wonderful success possible, the good effects of which will last as long as time itself.

All who were personally identified with this great work of Bird Conservation, as well as those on the outside who were interested enough to have observed it closely, are elated over the results which were obtained. As for myself, I am proud of my connection with a movement of such incalculable worth, and to have been associated with those who know and appreciate good work and are just as ready and willing to accomplish it. While in the limited space allotted me here, I have done my best to state frankly what was undertaken by our society, yet, were I given a thousand pages, I could not enumerate one-half of the work that the Audubon Society did at the Exposition, or estimate more than a small per cent of the practical and permanent good that was there accomplished for Conservation. In looking back, I have found I have been connected during the last two-score years, in various ways,

with many Fairs, Carnivals, Leagues, Associations and Expositions, (some of which were more than national in character), and yet I am more delighted with the success of the Bird Conservation at Knoxville's Exposition last year than over any department of the others.

It is clear to me that Bird Conservation is, in every way, a broader field and more greatly neglected, according to its importance, than any of the rest above mentioned. It offers work to every human being on earth regardless of age, health or any other conditions whatever.

It is a more practical, permanent and important duty to perform for the benefit not only of the present, but for all generations yet to come. Rarely have I seen any people who entered more fully into the spirit of their work and accomplished it better. Especially does this impress me, when I think of the smallness of our financial resources and the unusual disadvantages with which in the beginning, more particularly, we had to contend. I am pleased to say that it now only requires a trifling sum to liquidate the entire indebtedness of the Society. Beyond all question, friends of birds today can be numbered by many additional thousands because of the excellent work and untiring efforts of my associates in the East Tennessee Audubon Society at the National Conservation Exposition of 1913.

Director-General, W. H. Goodman, who first conceived the idea of organizing a National Conservation Exposition, has won a high place in the hearts of Audubon people, for it was through him they received and promptly utilized, by far the best opportunity for doing educational work, ever given to bird lovers in the Southland.

CONSERVATION OF WILD LIFE

BY JOHN H. WALLACE, JR.*

(Author's Note—While this paper was written with special reference to conditions in the State of Alabama, with which the writer is familiar, it will be found applicable to all sections of the country, and the adoption of the principles advocated may be of great advantage to the people of any State).

The American people, once so abundantly blessed with the treasures of nature's storehouse, have drawn thereon so greedily and rapaciously that many of the species of the most valuable assets have been obliterated. The dominant universal idea now prevails that only by the enactment and enforcement of stringent laws can the vestige remaining be saved from utter annihilation. Looking to this end societies have been organized throughout the country, having for their object the crystallation of a sentiment on the part of the people to care for their natural resources and not to continue the career of reckless waste that was prosecuted by the pioneer. It was for this purpose that the National Conservation Exposition was held at Knoxville.

Alabama has taken and has maintained the forefront in the galaxy of states in the enactment of statutes for the conservation of wild life. Since the creation of the Department of Game and Fish, February 27, 1907, splendid progress has been made in the great cause of the protection of game, birds and fish.

The startling decrease in the supply of game is responsible for the theory being devised that the state in its sovereign capacity was possessed of the title to and ownership of the wild life within its borders. Originally, wild game belonged to him who could capture it, hence it is not to be wondered at that laws, restricting the privileges of citizens to take game and birds at will, were considered by some as an invasion of the sovereign and vested rights of American citizenship, his conception of the game law, prevailed only among vandals and market-hunters and those who, through lack of information, were unfamiliar with their real purpose.

It is a notable fact that the great farming class, those who reside in the rural districts, who own and control tracts of land, large and small, who have a real

*State Game and Fish Commissioner, member of the National Advisory Board, National Conservation Exposition. Chairman Exposition Board of Alabama.

interest in keeping their holding well stocked with game, are among the most enthusiastic believers in the statutes for the protection of game, contrary to the opinion formerly held by many legislators that they would be hostile to such laws. Game constitutes an asset to the farmer; its presence causes land values to increase, a fact that those engaged in agriculture in Alabama have come to realize and fully appreciate.

The economic value of the game and birds to the people of Alabama aggregates well into the millions. As a delicate, elegant and desirable article of food game is of inestimable value; as a medium of furnishing healthful recreation and open-air exercise to those pursuing sport in quest of game in field and forests its value has no limitation. Therefore it is the plain duty of the state to conserve this asset for the use of the present generation as well as for those who will come on to enjoy it when we shall be no more. Natural resources are not the property of particular individuals, but belong to the race and should be held in trust by the sovereign state to be enjoyed by its present as well as by its future citizens until the end of time.

After having been tried for centuries the inevitable conclusion, induced by the consummate failure of local laws for the protection of birds, game and fish, is that such statutes are practically of no value. Laws for the conservation of wild life and flesh should at least be state-wide in their operation. The variability in the open and close season of the different counties of the state, under local laws, is perplexing to true sportsmen who wish to abide the provisions of the statutes, but they are openly and notoriously disregarded and violated by vandals and game destructionists who do so without fear of apprehension or conviction.

The model and modern game laws in Alabama, are committed for enforcement to a state department, assisted by county and deputy game and fish wardens. It is essential to the success of any legislative scheme, having for its object the preservation of the fauna, that it be confided to some especially constituted department for enforcement. It is necessary that there be an official-head to appoint and direct the game and fish wardens; to instruct them relative to their responsibilities and duties; to suggest to them how they can be of the best service to the people of the state; to require them to investigate any particular case reported to the department; to remove them for cause or non-enforcement of duty.

The commissioner of the department of game and fish should prepare and issue bulletins directing the attention of the people to the fact that birds, game and fish constitute a resource of inestimable value to the state. If left free to act without direction and on their own initiative, game wardens, on account of local influences, often become careless in the matter of the discharge of their duties. Under the Alabama system, no person, matter not how great his prominence and influ-

ence, can violate the game and fish laws and escape being prosecuted if caught in the act by a game warden or if reported to the state game and fish commissioner.

There are thousands of people who desire directly from an official source information relative to the provisions of conservation statutes, and who wish to have them construed properly. Frequently infractions are reported to the state game and fish commissioner, which result in securing convictions that under no circumstances would have been brought to the attention of local wardens.

The commissioner of this department has endeavored to place a copy of the game and fish laws in the hands of every person desiring them, and has taken occasion to exploit their principal provision through the medium of the press and by having posters, containing a synopsis of these statutes, put up in public places throughout the state.

No violation has ever been reported that was not immediately investigated and prosecution instigated if warranted by the facts. It is impossible to enact unbreakable laws; more especially is it hard to enforce statutes, the infraction of which is not regarded as involving moral turpitude. Since the enactment of our laws approximately one thousand persons have been convicted for violating their provisions, while practically none were brought to justice, under the old conditions, for offending against local game and fish laws. The sentiment properly predominates in the state that in every case where the law is violated and the offense reported, no pains nor expense will be spared in bringing the miscreant to justice.

True sportsmen have no inclination to transgress the law, therefore in justice to this splendid class of citizens all others should be required to abide its terms. Within the borders of Alabama, like unto the population of every other state, are to be found men who masquerade as sportsmen who in reality are but rapacious slaughterers of wild life. These seek to satiate their desire to accomplish its destruction even with the voraciousness of their savage progenitors. They can only be held back by the most vigilant espionage of wardens, without the aid of which our game laws would be a mere nullity on the statute books.

THE VALUE OF BIRDS TO FARMERS.

It is gratifying to note the fact that the more thoroughly the law for the preservation of song and insectivorous birds becomes understood by the people to a greater extent is it valued and appreciated. Birds were created to hold in check certain aggressive forces that persistently prey on all special of plant life, thus designed by the Creator to balance the encroachment of insect pests. Without birds to check the ravages of insects the earth would soon be a barren waste.

Senator McLean, in reporting the bill to protect migratory game and insectivorous birds in the United States, said:

"As long ago as 1904, Dr. C. L. Marlatt, basing his estimates on the crop reports of the United States Department of Agriculture, asserted that the loss to the agricultural industries in that year, caused by insects alone, could be conservatively placed at \$795,100,000, and this estimate does not include a dollar for the use of insecticides.

"Mr. Forbush, in his most comprehensive book entitled 'Unusual Birds,' maintains that the insect pests, destroy agricultural products to the value of \$800,000,000 a year. He uses large numbers so freely in these days, both in science and finance, that hundreds of millions mean no more to use than hundreds of thousands did a few years ago. There are about six hundred colleges in the United States today. Their buildings and endowments have been centuries in accumulation. The value of the college and university buildings is estimated at \$260,000,000 and the endowments at \$219,000,000. If they should be destroyed tomorrow—buildings and endowments, the insect tax of one year would replace them and leave a balance sufficient to endow thirty-two new universities in the sum \$10,000,000 each.

"We have in this country today about 20,000,000 school children, and the cost of their education has become by far the heaviest tax laid upon the surplus of the country, yet it costs more by many millions to feed our insects than it does to educate our children. If there is any way in which this vast and destructive tax upon the national income can be prevented or stayed or resisted in any appreciable measure it would seem to be the part of wisdom to act without delay.

"For many years individuals, at their own expense, and voluntary societies and representatives of the civilized nations the world over have studied and estimated the value of birds to the human race. We call attention at this time to but a few of the estimates made, and such as seem to be fair and reliable, but enough, we think, to prove that in this country at least we have ruthlessly disturbed, if not destroyed, one of nature's wisest and most valuable balances between the birds and their natural food, and it is clear to those informed upon this subject that unless radical and immediate measures are adopted to restore a sure, safe and natural equilibrium between insectivorous birds and their foods the time will soon come when the annual loss caused by insects to agriculture in this country alone will be counted in billions instead of millions of dollars.

"Most insects, like the green leaf louse, or aphid, so destructive to the hop industry and many other of our most valuable fruits and vegetables, reproduce their kind at the rate of ten sextillion to the pair in one season. This number means 40,000 for every square inch of land that is above water. Placed in Indian file, ten to the inch, it would take light, traveling at the rate of 180,000 miles per second, 2,500 years to reach the file leader.

"The potato bug is less fecund. One pair will reproduce from fifty to sixty millions only in a season. The natural increase of one pair of gipsy moths would defoliate the United States in eight years.

"These estimates I quote from Professor Forbush, who in turn gathered them from the United States Bacteriological Survey, and we may say that these

cases are fair examples of the reproductive powers of the insectile world. Locusts, army worm and chinch bugs, unless checked in procreation soon become countless hordes, devastating wide areas of the earth's surface.

"It is to be remembered that insects live to eat. Some of them increase their size at birth 10,000 times in thirty days. Dr. Lintner, of the New Jersey Board of Agriculture, reports 176 species of insects attacking the apple tree. (U. S. Biological Survey.) About the same number attack the peach, plum and cherry trees. Dr. Packards finds four hundred species feeding upon the oak; three hundred attack the conifera. The number feeding upon cereals, grains and garden crops is also very large.

"The reports of the Bureau of Entomology show that destruction by some insects is widely spread and is increasing. Dr. Marlatt estimates that the loss to the wheat-growing states in 1904 occasioned by the Hessian fly was about \$50,000,000. Dr. Shinar estimates damage done to crops in the Mississippi valley caused by the chinch bug in one year, as high as \$100,000,000. The Rocky Mountain locusts, in years of their greatest activity, cost the states of the Northwest more than \$150,000,000. Dr. Lintner estimates the annual loss to farmers caused by cut-worms at \$100,000,000. The terrible loss of \$800,000,000 a year is fairly easy of proof.

"That the worm does not eat everything that grows is due to several causes—weather parasites, fungi, insect diseases, insectivorous birds, and mechanically applied poisons, which are expensive, unnatural and dangerous. However large may be the share of parasites, fungi and weather in checking the increase of destructive insects, investigation shows that it is lamentably insufficient, and the briefs of the bird defenders pretty clearly indicate that the birds have been, are and will be without question one of the most important agencies in staying the inroads of insect devastation. Men who have had this subject at heart and in hand for many years assert that bird life is one of the most indispensable balancing forces of nature.

"All birds eat and most of them eat most of the time, and they eat insects and little else. The old bird has just as keen an appetite as the young birds, and he is much larger and his daily ration is almost incredible."

An extensive examination, conducted by the Department of Agriculture at Washington, of the stomachs of over two hundred species of birds, taken from the cotton fields of the South, shows that the feathered friends of the farmer are industriously engaged in destroying the boll weevil and caterpillar. The reason why the growth of noxious weeds and the ravages of insects have become so appalling is because many of the most valuable species of birds that feed on weed seed and injurious insects have been slaughtered almost to the point of extinction.

It is the desire of the intelligent farmer everywhere to invite the assistance of birds for he recognizes the fact that they are his co-laborers in securing a bountiful yield from his fields.

DEER.

Reports received indicate that there has been a large increase of deer in Alabama. These beautiful and graceful animals were formerly so persistently pursued at every season of the year that they were either held down to a few even in the most likely localities, or else run out of the state entirely. Deer have been seen in a majority of the counties in Alabama during the past year; in many sections where none have been seen in more than fifteen years. These animals require for their native haunts large stretches of well timbered and protected territory, otherwise they can be easily sighted by their relentless enemy, man, and consequently killed.

That feature of the law which makes it unlawful to kill doe has had a splendid effect in bringing about a large increase in deer, as well as to make a hunter look twice before he shoots, in which event he can discriminate between a deer and a human being. Formerly, many sportsmen by shooting at a shaking bush killed their fellow-hunter instead of bringing down game.

The latitude in which this state lies was originally the favorite home and breeding ground for deer. Rapidly disappearing and run still further back as civilization made its advance, deer became, under conditions existing prior to the enactment of the game law, restricted in their range either to the jungles of the river bottoms or else to the almost unreachable summits of mountains.

PROTECTION OF FUR-BEARING ANIMALS NEEDED.

In pristine times Alabama abounded in fur-bearing animals. Enormous fortunes were made by fur-trappers who traversed the state, especially along the water-courses where they brought up the skins of these animals from the Indians and early settlers and floated their rich cargoes down the Alabama River to Mobile on rafts or flat-boats, or down the Tennessee to Paducah, Kentucky. Even after this state became populated with white settlers the business of trapping continued to thrive for many years.

No semblance of protection has ever been furnished even the most valuable of our fur-bearing animals, such as beaver, otter and mink. They have been taken at will at all seasons of the year, regardless of the fact that during the spring, summer and early fall months the fur is practically worthless, and now these valuable quadrupeds are nearing the point of extinction.

Many states prohibit the taking of otter and beaver at any time of the year. The constantly diminishing resources of this state, as it consists in fur-bearing animals, should be protected by providing that these quadrupeds can only be taken during the winter months, and that those, trapping for them on the lands

other than their own, cannot do so legally without having first had duly issued to them a trappers' license.

BEAR.

There is a considerable number of bear to be found in the southwestern counties of Alabama. They have for their haunts the almost impenetrable jungles of swamps and river lands and are extremely difficult to take or kill. Bear-hunting is a favorite sport in the counties where bear are found, and each season quite a number of these animals are taken. Bear are considered predacious animals, hence there seems to be no sentiment calling for their protection.

THE NECESSITY FOR STATE GAME REFUGEES.

The steady advance of civilization has resulted in constantly decreasing the forest area and in the reclamation of swamp and over-flowed lands for agricultural purposes. One of the great problems that confronts the conservationists of wild life is how to protect it without deprivation to the people.

Birds and game require nesting and breeding places where, undisturbed from the onslaughts of the hunter, they may annually rear their young. It is impossible to propagate game successfully under domestic environment, therefore some system of preservation must be devised, if the supply of birds and game is to be continued, that will be equal to replace the number annually killed.

Alabama in early times was abundantly stocked with every species of game native to this latitude. If secluded areas of non-cultivated forest lands and marshes could be set aside sacred to the haunts and breeding places of birds and game, the increase and overflow from such refuges would afford a constant source of recreation, food-supply and enjoyment for the people of Alabama.

A plan has been inaugurated to establish a chain of game refuges extending from the frozen north to the gulf, and the success which has already rewarded the efforts of the leaders of this project indicate an early consummation of this most laudable scheme.

DOVES.

The mourning dove is classed by our game laws as a game bird; many states, however, prohibit the taking or killing of this bird at all seasons of the year. Doves are tame, gentle birds when not molested, frequently breeding in gardens and shrubbery near dwellings, and often feeding with domestic poultry.

The nest is constructed on the flat surface of the branches of low trees and is usually made of only a few straws and twigs. The eggs are two in number, two or three broods being raised in a season. The young ones are fed on cut-

worms and bugs of various kinds and when they become older, on seeds and grain. They grow rapidly and are soon able to take care of themselves, although it is not an uncommon sight to see a female caring for fully fledged young. The matured birds feed on small seed, grain, small acorns and beechnuts.

Doves are one of the most valuable of all noxious weed seed destroyers. They do excellent service for the agriculturalists by devouring annually hundreds of tons of seeds in which are incased prospective weeds which, if left to grow, would have a tendency to stifle the crops. Doves are esteemed in the South as elegant articles of food, the young birds being especially tender and delicious.

The commissioner of the department of game and fish is of the opinion that the season on doves in Alabama opens too early. The 1st of August being the beginning of the open season, at that time the second brood has not reached maturity; often the old birds are killed while yet they are caring for the brood, thus the young ones are left to perish of starvation. Aside from this, a hunter should be kept out of the fields until the season opens on quail, for while abroad they are likely to be tempted to shoot these birds before the proper time as well as other species of game on which the season has not opened.

It is most gratifying to note that the practice of baiting doves has almost been stopped in Alabama. Several convictions have been had for this offense. In all instances where fields have been suspected of being baited, game wardens have been especially detailed to hold close watch thereon, as well as on those engaged in shooting over the suspected fields. Every possible effort has been put forth by this department to break up the nefarious practice of baiting fields for doves.

It is almost impossible to prove that dove fields have been baited in violation of law. A farmer may plant a patch of wheat and decline to cut it; he may sow grain and refuse to plow it under, and while for all intents and purposes the field has been baited to attract doves in large numbers, yet the juries seem disinclined to take this view of the case. The practice of baiting doves is going out of fashion, and the habit is diminishing to such an extent that it is hoped that in a few years this barbarous and unsportsmanlike manner of enticing doves to their destruction will be chronicled among the unpleasant memories of the past.

THE WILD TURKEY.

The wild turkey is the largest, and the gobbler of the species, the proudest and most aristocratic of our game birds. It is resident where found, inhabiting by preference rather mixed woods, where it seeks its food of acorns, beechnuts, seeds, nuts, berries and insects of various kinds, often scratching extensively amongst the leaves. The males are polygamous and often engage in fierce battles

for the favor of the females and may often be seen in the display of attitudes so characteristic of the domestic bird. The nest is a very simple affair, though often artfully concealed, consisting of a hollow scratched in the ground to a depth of two or three inches and lined with a few grasses and dead leaves. The eggs appear to vary in number from seven to fifteen, though as many as twenty-six have been reported, but these were probably deposited by two females. The young are cared for almost entirely by the female, and usually but a single brood is reared in a season, unless the first happens to be destroyed.

Wild turkey occur in every county in Alabama. They are much more abundant now than at any time during the last fifteen years. Formerly this excellent species of game bird was hunted regardless of breeding seasons, there being no law that could be enforced to restrain the reckless hands of the conscienceless vandals. Again, when a brood was only partially grown they would be flushed by hunters, only to be called up with ease and thus slaughtered in great numbers.

In contradistinction to the sentiment which formerly existed, the people now take a pride in protecting the flocks of wild turkey that may range in any particular neighborhood, and in the event a turkey is killed out of season or otherwise taken unlawfully, citizens are found ready and eager to prosecute and convict the offenders.

That portion of the statute limiting the taking of wild turkey only to gobblers has been largely responsible for the great increase in the ranks of this peerless bird.

QUAIL (BOB-WHITE OR PARTRIDGE.)

The quail is the most popular game bird native to Alabama. Like the dove it frequents the cultivated fields and no large amount of cover is required in order to furnish suitable nesting and breeding places for these birds. The Bob-white par excellence, or partridge, as it is commonly called in the South, is a bird with the lower breast and abdomen white or buff, barred with black, while in the male the throat and band over the eye are white, and a crown, together with a band from beneath the bill to the eye, and a band on the upper breast are black. Bob-whites are sociable birds, although never going in very large flocks and may be heard calling in low tones to each other. They prefer rather open country, such as fields and pastures where there are small bodies of woodland, brush and brier patches and rank-growing vegetables. Naturally, they are quite tame and unsuspecting, but the continual warfare of gunners has made them cautious. They cling closely to cover from which it is difficult to flush them without the services of a trained dog, although they fly strongly when once up. If

unmolested they go about in family parties, wandering but little from their birth-place until spring, when they break up into pairs and begin the duties of rearing the young. The male is fearless at this season and may be heard whistling the familiar "Bob-white," "Ah, Bob-white," from a fence post or other point of vantage, while the female is shy and but little in evidence. The nest is a simple affair, placed on the ground in a tussock of grass, a brier patch, or in a field or garden, and is usually provided with a natural archway of vines or other vegetation, but occasionally an artificial dome is constructed over it. In the northern part of the range, where they rear but a single brood, the clutch of eggs may number twenty-five or thirty; but in the south, where they raise two or three broods, the number does not usually exceed fifteen. The male apparently takes little part in incubating the eggs, although he assists in caring for the young, taking full charge of the first brood while the female is hatching the second. They feed on grain of various kinds, seeds, berries, wild grapes and insects, and in the fall often eat acorns and beechnuts.

Under the protective features of the game laws, quail have rapidly increased. Many bevvies are now found within the limits of incorporated cities and towns. The practice of trapping and netting these birds, and the shipping of them out of the state to northern markets has been absolutely stopped. For many years shippers of quail thrived in Alabama; they had agents in nearly all the counties, who collected the live birds and expressed them to the concentrating point from which they were transported, alive, to restock the depleted fields and to be served on the tables of the restaurants, in distant states.

The pursuit of quail possesses many fascinations. It is in the enjoyment of this sport that the well-trained pointer and setter can be seen to best advantage. The thrill that pervades the being of the happy hunter when his dogs make game, the delight that is his when with two well directed shots he brings down a "double" on a bevy-rise the sport he enjoys in seeing his dogs pick up the "singles" furnishes recreation incomparable.

Quail are most highly esteemed by our people as an elegant article of diet, and their numbers have so largely increased that they are found in practically every spot adapted to their habits.

THE PASSENGER OR WILD PIGEON.

The most striking incident that demonstrates that protective legislation is necessary in order to save from extinction any particular species of game is that of the total disappearance of the wild or passenger pigeon. Many of our citizens recall the fact that, a few decades ago, these birds were so abundant that when

they flew overhead they would obscure the sun, and that it would take many hours for a particular flight to pass a given point.

Audubon records the fact that at a certain place in Kentucky, in a section of forest about three miles wide and forty miles long, these pigeons were so thick at night, they covered all the trees, every limb and twig. They were killed there by tens of thousands. Hogs were driven for hundreds of miles to fatten on wild pigeons.

It appeared to many that in spite of the great butchery wild pigeons would hold their own, but they were slaughtered in such great numbers that in 1855 it became noticeable that these birds were rapidly decreasing. Even as late as 1857, the following extract from an Ohio State committee report, recommending the passage of a law protecting game birds, is most impressive:

"The passenger pigeon needs no protection; wonderfully prolific, having vast forests in the North as its breeding grounds, traveling hundreds of miles in search of food, it is here today and elsewhere tomorrow, and ordinary destruction cannot lessen them or cause them to be missed from the myriads that are yearly produced."

Fifty-five years after this recommendation, these birds which existed in countless millions became totally extinct for the reason that they did need protection of the most urgent kind. The passenger pigeon was not prolific (laying but one or two eggs) and under conditions that obtained in the breeding grounds it is hardly possible that any more than one in a dozen of the young attained maturity.

A prize of fifteen hundred dollars has been offered for any one who could find a nest of the wild or passenger pigeon, and it is safe to assert that the reward will never be claimed.

Since history records such startling facts relative to the obliteration of a species of game birds, once so plentiful and which was not protected by adequate legislation, what must be the fate of other species, not nearly so abundant, if subjected to the unrestrained and wanton destruction of relentless mankind?

SQUIRRELS.

Reports received indicate that squirrels have rapidly increased in every county of the state; these animals are now abundant in many sections from which, prior to the enactment of the game laws, they had almost totally disappeared.

Squirrels are one of the most beautiful and attractive animals to be found in the woodlands of Alabama. They are of three kinds, the gray, the fox and the black. Gray squirrels are far more abundant than any of the rest; they dwell in the hollows of trees and are exceedingly agile not only in climbing even the

tallest monarch of the forest but likewise in jumping from the branches of one tree to those of another.

The caudal appendage of the squirrel is like a beautiful ostrich plume, and when partaking of its meals or in saucy play its tail is curled gracefully over its back. The favorite food of squirrels is nuts and berries; even while hickory nuts are in the milky state, squirrels begin "cutting" them, and hunters frequently mark places where squirrels consort in large numbers by seeking out hickory nuts on the ground. Squirrels are known to migrate. In vicinities where an ample supply of food is not to be found and where squirrels formerly abounded, they have been known to disappear and to travel perhaps a mile from their abode to a good hickory or chestnut tree and in mulberry season they seem to know where every tree is that bears this luscious fruit and repair thither in large numbers. The favorite hour for feeding is in the early morning or late afternoon.

In pioneer days, squirrel hunting was a favorite sport. The first settlers of the country used the "squirrel rifle," the gun that made the soldiers of Andrew Jackson famous at the battle of New Orleans, in hunting these wiley animals. It was considered extremely unsportsmanlike to shoot a squirrel anywhere except in the head, and the favorite way of killing them was by "barking," that is to say by shooting between the squirrel and the limb upon which it rested, thus killing it by concussion.

FISH PROTECTION.

Angling is one of the gentlest and most refined of arts known to sportsmen of ancient and modern times; its devotees belong to the humblest as well as to the most exalted stations of life. Not only a sport of an excellent character is to be derived from fishing but the catch affords an elegant and palatable table article.

The barefoot boy, with torn hat and tattered clothes, equipped with hickory pole, homespun line, cheap hook and bait can, repairs to the shady fishing hole where the cool waters purl, and enjoys enticing the lazy yellow-cat with his tempting lure with a keen zest that rivals the thrills that accompany the landing of the wily black bass by the millionaire with his steel rod, gold mounted diamond bearing reel, silk line and phantom silver minnow.

Fishing furnishes a delightful medium of harmless open-air enjoyment; it is restful, it brings the angler in close contact with the wonderful charms of mother nature's enrapturing enchantments; the primitive instinct of man is called into play; the sordid, envious, jealous world is forgotten as the fisherman plies his art, and his soul becomes attuned to the harmony of his magical environment.

Alabama at one time, by reason of the fact that it was coursed by myriads of clear and swift running streams, was an 'angler's elysium' black bass, bream, pike and, in the northern sections of the state, salmon abounded in abundance, to say nothing of the dozens of other species of excellent fish that readily took the hook. The modern invention of nets, seines and traps the use of dynamite in our waters, has been responsible for the appalling decrease in our fish supply.

By the enactment of appropriate legislation for the protection of fish and the strict enforcement of such laws, by restocking our waters with desirable species of fish, the same ideal conditions can be made to prevail as existed in the days primeval.

FISH SUPPLY.

The supply of fish has increased in this state but has not kept pace with the increase in the game supply, due to changes made in the general fish law, under the provisions of which the use of fish-traps and nets was legalized in the waters of the state. The commissioner of this department most vigorously protested against the enactment of a law which would permit the practice of employing these devices of fish destruction.

While it is true that only hoop-nets in which bait is used to attract fish are used and that fish-traps with fingers, or slats, not less than two inches apart, without any other device in, around and above the fingers, for the purpose of tackling or catching fish, are employed, and that the wings of fish-traps so used must not occupy more than one-half the width of the stream in which it is operated when the said stream is at the low-water mark, still the draught on our fish supply continues unabated and the avenue is opened for whole-sale violation of the law as it stands.

Fish-traps are employed by persons owning the abutting land to the stream in which the trap is operated for the personal gain and profit of the owner, to the detriment of the people generally who live above and below the point where the fish-trap is operated and who have an inherent right in the fish that move up and down the stream. The commissioner is confident that not a few persons, who own fish-traps, steal out under the cover of night and place under the slats a wire-screen of such fine texture as to catch the smallest fish that swim.

The law should be changed so as to prohibit the use of any sort of fish-trap in the waters of this state.

On account of the hostility of the representatives in the legislature from Mobile and Baldwin counties to any regulation of the right to take fish in our salt and tide water, no legislation of any real practical benefit has ever been enacted

for the preservation of this vast but steadily diminishing resource. Those citizens who reside in Mobile and Baldwin counties, who are not engaged in commercial fishing, are opposed to the employment of the many devices that are now used, other than the ordinary hook and line, as a means of taking fish in the lagoons and bayous tributary to the bays.

Across many of the arms of the sea wire screens are stretched at high tide, thus when the water recedes thousands of fish of all sizes are left marooned; the best are taken for food while the others including many small ones of excellent species, perish. This practice should be stopped.

The fact that the size of the mesh nets used in Alabama for the purpose of taking fish is not prescribed by law those using them are thereby enabled to take fish so extremely small as to be practically valueless for food. The small fish so taken, if permitted to grow, would attain such sufficient size as to render them of considerable merchantable value. Nets having only large meshes should be permitted to be used in Alabama waters.

Although the law provides that game fish taken in nets shall be returned immediately to the waters, from whence caught, yet the commissioner of the department of game and fish seriously doubts that this stipulation is observed.

A statute should be enacted prohibiting any person, firm or corporation from discharging into any of the waters of this state any saw dust or other poisonous or deleterious substances. It is now unlawful to employ the use of poisonous substances for the purpose of taking fish, but some of the courts have held that the express intent was an imperative element to constitute the offense of killing fish illegally.

There are a number of fertilizer factories that constantly discharge into the streams of this state their poisonous refuse which annihilates fish for miles below where the factory is operated. The owners of some saw-mills persist in the practice of discharging into the streams saw-dust which kills off the fish by the thousands.

In simple justice to the people of Alabama these private individuals should not be permitted to so ruthlessly disregard every principle of right by thus wilfully diminishing the food-supply of the state. The fish killed by the poisonous substances, thrown into the streams, in decomposing, emit obnoxious odors. The live stock that drink the water are frequently poisoned, and altogether the baneful practice militates against the public welfare and should cease.

The department of game and fish is deeply grateful to the bureau of fisheries at Washington, which has distributed a large number of desirable species of fish throughout the state. The commissioner of this department has been liberally supplied with blank applications for fish by the United States Government and these

have been sent to all persons applying therefor, and they have been honored in due time.

It is most earnestly to be hoped that Congress at its next session will enact a bill establishing a fish culture station in the state.

FOREST PRESERVATION.

Forest preservation is an imperative correlative of bird and game protection. Forests furnish a place of refuge for all species of wild life where in peace and unmolested by man, the offspring may be reared in congenial environment. With the exception of quail and doves every species of game have grown more scarce in proportion to the rapidity with which the forests have been cleared away. As an independent economic proposition aside from its value to game, the exigencies of the times demand the immediate enactment of a statute having for its object the preservation of the forests.

The forests constitute one of the most important resources of the South, the lumber industry being its largest single manufacturing enterprise with products valued at six hundred million dollars, giving employment to two hundred and seventeen thousand men and having dependent industries, in which nearly two hundred thousand men are employed.

It is a palpable but deplorable fact that this resource is being rapidly depleted in such a manner as not only threatens all industries dependent upon forests for their raw material, but so as to effect seriously the general welfare of the people. This startling condition has arisen largely from the lack of adequate legislation having for its object the protection of forests from fire. The cutting away of the forests has caused erosion of the soil, resulting in the filling up of navigable streams, which is injurious to our water-power and causes the washing away of cultivated lands by overflows and the shifting of the channels of streams.

We should endeavor to crystalize a sentiment among the lumbermen, owning timber lands, favorable to resorting to measures to prevent their young timber and cut-over lands from being ravaged by fire in order that they may demonstrate that they wish to develop their holdings and are ready to co-operate with the state and federal authorities in order to secure any additional protection or assistance that can be obtained.

CONSERVE YOUR BIRTHRIGHT.

The birds and game, fish and forests that are now ours can be compared to a young man coming into his inheritance. If he cares for his fortune and is not a spendthrift, his birthright will increase to the extent that he can enjoy the privilege

of living in comfort or even luxury, and have enough remaining to transmit to his offspring as much as he received. But on the other hand, if he proves improvident and wasteful he will not only be impoverished during his life-time but his children will be born paupers.

So it is with the people of Alabama with their magnificent inheritance of mines, forests, water-ways, birds, game and fish. If we draw only from the national bank of our natural resources just so much as will provide for our comforts we can enjoy the blessings of a happy life. But on the contrary if we determine to obliterate everything and annihilate every vestige of wild life, the sunny south-land where brooks and rivers run musically through the luxuriant land, where the magnolia grandiflora, like white stars, glow in a firmament of green; where crystal lakes dot the greensward and the softest summer breezes dimple the wave-lips into kisses for the lillies on the shore; where the air is resonant with the warbled melody of a thousand sweet-voiced birds and redolent of the perfume of many flowers, will be for future generations a habitat as desolate as a rock-ribbed coast or a desert isle.

RAILWAY DAY AT THE NATIONAL CONSERVATION EXPOSITION

CO-OPERATION OF THE RAILROADS OF THE SOUTHEAST IN THE WORK OF EXPOSITION BUILDING AND IN THE ADVANCEMENT OF INDUSTRIAL, COMMERCIAL AND AGRICULTURAL PROGRESS.—CELEBRATION OF RAILWAY DAY.—ADDRESSES DELIVERED.

The success of the National Conservation Exposition, as an enterprise worthy the name, was in a large measure due to the co-operation of the railroads of the Southeast. The low rates granted by the Southeastern Passenger Association, the publicity given to the exposition by the lines represented in this association, the excellent displays installed in the Land and Minerals buildings by three of the principal roads of the South, the general interest manifested by all railway officials in the work of promotion and their voluntary efforts to aid in this work whenever opportunity offered, gave an impetus to the movement which could not have been furnished by other sources, as well as effective support to the exposition management in the development of its plans.

The addresses delivered on Railway Day not only showed the spirit of progress which animates the leading railway officials of the country in all their dealings with industrial and educational enterprises, but a clear understanding of present conditions and of the purposes for which the exposition was held. These papers make an important and interesting chapter of this work. Without them the history of the first exposition of conservation would be incomplete. This may be stated with special reference to the speech of the late William Wilson Finley, President of the Southern Railway System. It was his last public address—a message to the whole people from a man who gave the best years of his life to the development of the country served by his road. The address of President L. E. Johnson, of the Norfolk & Western Railway on “Conservation and Co-operation,” is reproduced as clearly setting forth the principles which the exposition was designed to teach, and consequently as an addition to the educational features of this review. In his address on “The Railroad Man—the Missionary of Progress,” Mr. G. A. Park, General Industrial Agent of the Louisville & Nashville Railroad, showed a thorough knowledge of conditions in, and needs of the South, in all lines of development, and his statements relate to matters of great moment to present and future workers in the upbuilding of this favored section. Following the addresses is an article by President Fairfax

Harrison, of the Southern Railway, successor to Mr. Finley. This article, written especially for this work, relates to principles of conservation, upon the application of which must depend the success of all movements for the uplift and development of the country.

Railway Day at the National Conservation Exposition, celebrated October 21, was an event in which the exposition management and the people of Knoxville were glad to participate. The large number of railroad men who visited Knoxville on that day were accorded a welcome as honored guests of the city, as co-workers in exposition building and as efficient promoters of Southern progress.

RELATION OF THE RAILWAYS TO SOUTH-EASTERN DEVELOPMENT

BY W. W. FINLEY*.

It is fitting that, at this great Exposition, the purpose of which is to further the conservation of natural resources, not by their withdrawal from use, but through their economical development, a day should be set apart for the railways.

Transportation is such an important factor in present-day civilization, and the railways play such a large part in the carriage of persons and property, that it is impossible to conceive of any general broad plan of conservative development that does not take account of transportation by rail. We are more especially interested in the development of our own section and, at the invitation of the President of the Exposition, I shall speak to you briefly on "The Relation of the Railways to Southeastern Development."

Owing to climatic and soil conditions and to the distribution of natural resources, such as forests, minerals, coal and water powers, certain localities have peculiar advantages for the production of certain commodities. They can produce these commodities in larger quantities than are demanded for local consumption. Profitable production, therefore, is dependent upon ability to have the surplus over what can be consumed locally carried to localities where these commodities are in demand and to have other articles carried from localities where they can be produced more advantageously. It follows, therefore, that transportation facilities to the markets of the world are essential to anything more than a most rudimentary development of any locality, and transportation facilities are an indispensable factor in all business.

We sometimes hear people talk about railways and their relations to business as if they were something separate and apart, and were not themselves business enterprises. In his book, "The Individual and Society," Professor James Mark Baldwin says:

"Business has to do with the production of, and distribution of, valuable things—money, utensils—anything for which there is a demand in society, on which society or some individuals of it set value. * * * To produce such things in response to the demand and to distribute them to those from whom the demand comes is the undertaking of business."

*This was the last address delivered by Mr. Finley, late President of the Southern Railway Company.



THE LATE WILLIAM WILSON FINLEY

In this, Professor Baldwin includes the distribution of products, or transportation, under the head of business in as full sense as their production, and I am satisfied that, from whatever viewpoint we may consider the railways of the Southeast, we will find that rail transportation is an essential part of every business enterprise in the section. I may even say that it is the most important single factor in business, because distribution is essential to the largest and most profitable development of every business enterprise. Without transportation the market for any commodity would be limited to the locality of its production. The railways and other distributing agencies bring producers into touch with the markets of the world. For this reason public opinion should not sustain unjust treatment of the railways any more than it would sustain injustice to any other part of the business structure of the Southeast. The railways are so intimately linked up with every business enterprise in the Southeast that any injury inflicted on them will react upon the whole body politic just as certainly as an injury to any part of a man's body will injure the man.

We all recognize that the future progress and prosperity of the people of the Southeastern States are dependent upon the development of the agricultural and industrial resources of our section. For this reason, through our State and Federal Governments, through organizations of various kinds, and through fairs and expositions, we are constantly striving to encourage agricultural and industrial development. I believe it can be demonstrated that it is to the interest of every individual that the railways of the Southeast shall receive as full measure of encouragement by Government and by the people, and shall be as strongly supported by public opinion, as any other business enterprise. In fact, just as the past growth of our section has already been made possible by its railway facilities, its future development is dependent upon the enlargement of those facilities.

Great as has been the progress of the Southeastern States in the past, I believe that it is but the promise of what their enterprising and progressive people shall accomplish. As indicating the rate at which these States are progressing in comparison with other parts of the United States, I may point out that, in the nine States of Virginia, the Carolinas, Georgia, Florida, Alabama, Mississippi, Kentucky and Tennessee, the United States Census Bureau reports that the value of farm property increased from \$2,189,114,320 in 1900, to \$4,461,411,250 in 1910, an increase of 103.8 per cent, as compared with 35.6 per cent for New England, 28.1 per cent for the Middle Atlantic States, and 78 per cent for the Middle Western States of Ohio, Indiana, Illinois, Michigan and Wisconsin. The value of all farm crops in these States increased from \$593,843,573 in 1899, to \$1,199,424,319 in 1909, an increase of \$605,580,746, or 102 per cent, a much more rapid rate of growth than is shown by any other group of the older States. The value of manufactures

in these States increased from \$701,560,000 in 1899, to \$1,455,927,000 in 1909, an increase of \$754,871,000, or 107.7 per cent.

Since these census figures were compiled the growth of this section, so greatly favored by nature, has continued. Southeastern farmers are essentially progressive. They are adopting the most improved methods, and the figures of the United States Agricultural Department show that, making allowance for seasonal variations, the average yield per acre of each crop reported on by the Department is increasing in every Southeastern State. In response to the economic law tending to attract manufacturing industries to localities in which raw materials and power resources are easily accessible, the industrial development of the Southeast is also continuing.

The past growth of this section, as I have pointed out, has been in large measure due to the facilities that have been available for the carriage of its surplus products to market. It is a self-evident proposition that, if production shall increase and facilities for transportation shall not be increased, a point will be reached beyond which further agricultural and industrial development will be hampered by lack of adequate means for carrying products to market. We have seen that, in the ten years covered by the last census, agricultural and industrial production, as measured by the value of products, more than doubled in the Southeastern States. The relation between this increased production and railway facilities is graphically shown by statistics of the Interstate Commerce Commission covering the ten-year period, which show that the freight traffic of the railways in the territory south of the Ohio and Potomac Rivers and east of the Mississippi increased from 17,096,672,680 ton miles in 1900 to 33,840,444,295 ton miles in 1910, or 97.9 per cent, while in the same period passenger traffic increased from 1,501,533,479 passenger miles to 3,223,945,565 passenger miles, or 114.7 per cent. In this period the facilities of the railways of the Southeast were not increased in proportion to the increase in traffic. The ability of the railways to carry the constantly increasing products of the section to market has been in great measure due to a larger and more efficient use of their facilities. There is, however, a limit beyond which any machine or plant cannot be efficiently operated and, if the volume of traffic in the Southeast is to continue to grow in future years at the same rate as in the past, an increase in railway facilities will be essential to the satisfactory marketing of the products of farms, forests, mines and factories.

While in some localities new railway construction will be needed, I believe that the most urgent need will be in the enlargement of the facilities of existing railway lines by the provision of additional trackage and equipment. In 1900 the railway system of the Southeast, considered as a whole, was substantially a single-track system. The point has already been reached where the commerce of the section

can no longer be handled on single-track railways and the increased efficiency of operation to which I have referred has largely been made possible by the construction of second tracks on the more congested parts of the lines and by the multiplication of passing tracks and the enlargement of terminal yards. In the ten years from 1900 to 1910 the length of second track on the railways of the Southeast increased from 264 miles to 1,740 miles, or 558.58 per cent. Great as this percentage of increase is, it represents the double-tracking of relatively a small proportion of the railway mileage of the Southeast, as is shown by a comparison with the States north of the Ohio and Potomac Rivers and east of Illinois, in which there were in 1910, 13,663 miles of second track, 1,993 miles of third track and 1,364 miles of fourth track. A double-track railway is many times as efficient as a single-track railway and, if the producers of the Southeast are not to be at a disadvantage, as compared with those of other sections, in the marketing of their products, the work of double-track construction must continue.

There is another aspect in which the railways of the Southeast, as business institutions, may well be considered; that is, in their relation to other lines of business through their purchasing and wage-paying power. They are very large users of an almost infinite variety of materials and supplies. Great industries, such as those of manufacturing iron and steel, building cars and locomotives, lumbering and coal mining, are largely dependent upon railways for their prosperity. The employees of a railway being distributed all along its lines, railway wages are paid in every community and quickly find their way into the local channels of trade, benefiting every line of business. The extent to which this is true in the Southeastern States is indicated by the reports of the Interstate Commerce Commission, which show that the wage payment, of railways in this section amounted, in the year ended June 30, 1910, to \$132,954,744, an increase in ten years of 99.4 per cent and, if figures for the entire section for later years were available, they would show still further large increases.

Another aspect of the relations of the railways to the public is in their ownership. Contrary to an opinion that seems to be quite prevalent, ownership of the railways of the United States is very widely distributed and is, to a very considerable extent, in the hands of people of relatively small means. By way of illustration, I may say that there are 7,544 holders of the preferred stock of the railway company that I have the honor to represent and that, of this number, 5,612 own less than fifty-one shares each. The bonds of railway companies, in addition to being held as investments by individuals and trustees of estates, are very largely held by insurance companies, savings banks, and the trustees of colleges and similar institutions, so that practically every holder of an insurance policy, most savings bank depositors, and many others are directly interested in the maintenance

of railway credit even though they may never personally have owned a railway bond or a share of railway stock.

Thus we see that strong and prosperous railways, able to expand their facilities, are essential to the continued progress of the Southeast and that there is every reason why the people of this section should be interested in them as business institutions. It is equally true that the railways are interested in the progress of the Southeastern people, for growing and prosperous communities along their lines are essential to their successful and profitable operation. Taking this view of their interest in the territory traversed by their lines, the railways of the Southeast are carrying on a very comprehensive work for the agricultural and industrial development of this section and for aiding in the successful marketing of the products of farms, orchards, and gardens along their lines. All of this work is animated by a spirit of co-operation.

This great Exposition, drawing together examples of the best products of the Southeast, is an inspiration to every one who visits it. It is a manifestation of the co-operative spirit in which, for the general good, the most successful producers are showing what the progressive people of this section can do on their farms and in their factories. Its educational value will be seen in an elevation of agricultural and industrial standards. It shows to the world what this section has to offer to the farmer, to the manufacturer, and to everyone who is seeking to better his condition. It marks a forward step in the development of the Southeast. The public-spirited citizens of Knoxville, who, by their financial support and their untiring labors, have made this Exposition the success that it is, have done a great thing, not only for Knoxville, but for our entire Southeastern section, and I feel sure that I voice the sentiments of every one who has gathered here on "Railway Day" when I express our highest appreciation of their public-spirited work.

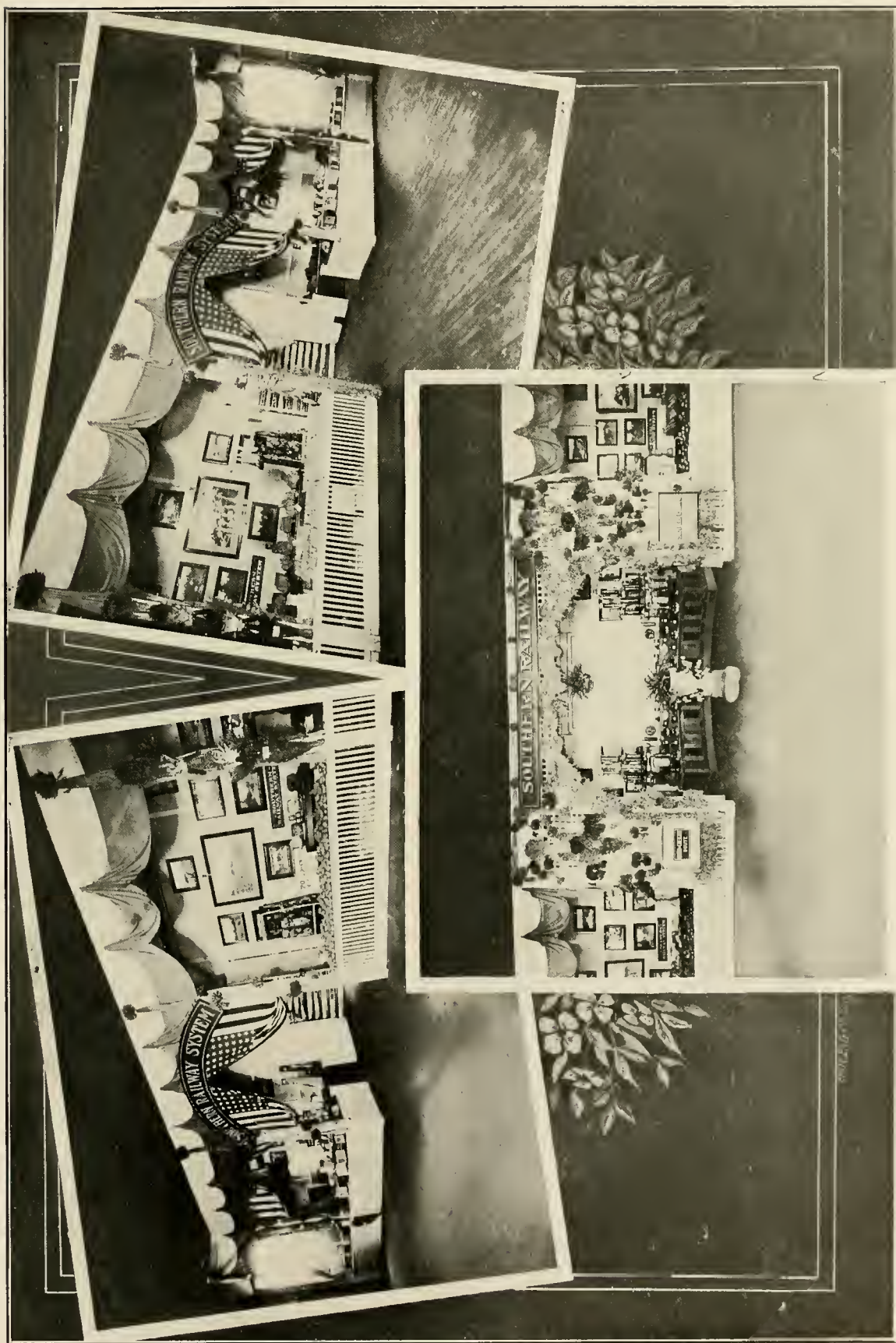


EXHIBIT OF THE SOUTHERN RAILWAY, AT THE NATIONAL CONSERVATION EXPOSITION, AWARDED GOLD MEDAL
FOR MOST COMPREHENSIVE LAND AND INDUSTRIAL DISPLAY



LAND AND INDUSTRIAL DISPLAY OF THE NORFOLK & WESTERN RAILWAY, NATIONAL CONSERVATION EXPOSITION.
AWARDED GOLD MEDAL FOR MOST ELABORATE LAND AND INDUSTRIAL EXHIBIT.

CONSERVATION AND CO-OPERATION

BY L. E. JOHNSON.*

Mr. Chairman, Ladies and Gentlemen: I want to express my high appreciation for the pleasure of being with you on this occasion, and taking part—co-operating—in such a laudable enterprise as your great National Conservation Exposition. The nation at large, and especially the South, will applaud your efforts, and welcome the outcome of this great display of our energies and progress, and the stimulus that it will give to our commercial and industrial activities. It is a pleasure to be invited to co-operate and to contribute to the success of these movements, “National in aim”; “National in Scope” with “ideas behind them.”

The Norfolk and Western Railway has installed its exhibits upon your grounds, as is done in all movements of kindred character, whenever practical, thus giving concrete evidence of its sympathy and co-operation.

The subject chosen for this address is conservation and co-operation.

True conservation is, of necessity, coupled with an intelligent and active co-operation of all the diversified agencies operating upon, and with, that which is found necessary to be conserved.

The idea has somehow become prevalent, more or less, in the public mind that Conservation refers only to our natural resources—the bounties of Dame Nature—such as soil, water, forests, coal and such like original creations.

I think the subject has a broader meaning, and rightfully embraces many other things that pertain to the happiness and general welfare of mankind, such as health, education, culture, and kindred topics, which, however, I will not now undertake to discuss.

To begin with, true Conservation does not mean, as Gregory says in that admirable book, “Checking the Waste,” “the locking up of the resources, nor a hindrance to real progress in any direction.” “It means only wise, careful use.”

I want to go further and say that true Conservation, to the practical mind of today, means not only a “wise careful use” of these things that bounteous Nature has provided, but also includes many of the things which enterprise and skill of man have developed and established for the comfort, convenience, and uses of the human race, and which have already become almost as indispensable to human welfare as many of the natural elements.

A civilized nation’s assets, from a material standpoint, do not in this day of advancement, consist solely of those things, in their natural state, which exist un-

*President of the Norfolk & Western Railway Company. Address delivered at the Exposition Auditorium on Railway Day, October 21st, 1913.



L. E. JOHNSON, PRESIDENT, NORFOLK & WESTERN RAILWAY CO.

der and upon the surface of the earth, such as forests, soil, water, minerals, etc.

Some of the things that man has produced have become *quasi* natural resources—assets of the nation—one of which is our vast system of land transportation—our 246,000 miles of railroads, in which the United States leads the world, having 36,000 more miles than all the railroads of Europe!

We maintain that this is one of America's greatest resources, and must and will be intelligently taken care of and conserved by and with the full and hearty co-operation of our whole people, under wise, fair and wholesome laws, both State and National, as to rates of traffic and other control.

That Railroads are a great National asset, I need hardly stop to argue.

Mr. Frank A. Fetter, PH.D., L. L. D., of Princeton University, says: "This nation in time to come must engage in active commercial competition with the rest of the world. We must manufacture and sell against other nations. Railway rates will enter as an important factor into that competition. Germany and France today use their railroads to assist the home manufacturer as against his foreign competitor. Just as the veins and arteries are the great highways of the body, conveying the lifeblood to all parts of it, so railways carry the Commercial lifeblood of this Nation, in rapid distribution throughout all parts of our country, and any hasty, ill-considered legislation, or other unwise and unjust interference with the free flow of commerce is a menace to the progress and advancement of the country. France saw and realized what an asset railroads would be, and her Government worked out a complete system and comprehensive plan of routes, and then furnished more than half the necessary capital for the entire cost, resulting, however, in a complicated mixture of Government and private ownership.

Our good neighbor, Canada, sees this importance, and next year "promises to see in operation from ocean to ocean two new Canadian railways." "This early completion has been made possible by the recent success of the two roads in securing subsidies and loans from the Government exceeding in amount \$30,000,000!" In June "the Canadian Government voted the Canadian Northern a subsidy of \$15,640,000, in return for which it was to receive \$7,000,000 stock as an investment." "Apart from this, subsidies to the Canadian Northern and affiliated companies exceed \$120,000,000!"

While the American railroads are not asking for government loans and subsidies, this is cited to show the esteem in which our intelligent neighbor holds this great National asset, and what a liberal co-operative spirit makes possible!

I hope that it will be definitely understood that our railroads now built and running do not now, and never will, ask for subsidies, nor will the railroads now contemplated ever depend upon outside Government aid in their construction or maintenance.

What we do ask, however, and what we expect the enlightened public sentiment of this nation to give us, is fair, equitable legislation, on the part of Congress and the different State Legislatures, based upon a full, broad, comprehension of existing conditions, without discrimination, favorable or unfavorable, coupled with an equitable administration of such legislation, in that broad spirit of common sense Co-operation for the Public welfare—this is all we ask and this is all that public sentiment will demand!

I desire to pause in this particular part of this discussion to assure you, Mr. President, Ladies and Gentlemen, that I do not for one moment lose sight of the importance of the other branch of this vast subject. One writer says that National natural resource conservation is the greatest question before the American people. I do not minimize it, I rather magnify it.

It is fully comprehended that by wilful National waste may come woeful National want. "The land of promise, once flowing with milk and honey, with forests of cedar, fir and oak; its treasures of wheat, barley, oil and fruits, is now almost a desolate waste. So has old China in ages gone by, through ignorant, prodigal misuse lost her natural bounties, and has her periodical famines.

Rome once levied a princely tribute from Sicily—called the granary of Europe—of twelve millions of bushels of grain each year. She stood this drain, and still prospered and built cities, but this same story of National waste made her soil practically barren, and her people national suppliants.

So I urge that this work be prosecuted with vigor, zeal and intelligence, until our whole people realize that Nature exacts implicit obedience to her inexorable laws, and never fails to impose the full penalty for their violation.

And I believe that I speak for all the railroad corporations, and certainly for the Norfolk and Western system, when I say that we will give full counsel and aid in every legitimate way in a hearty Co-operation with National Conservation.

Other Nations have seen and profited by the history of Palestine, China and Sicily. France had, near the coast, a large and increasing sand dune waste, and as far back as 1793 the Government began the planting of an adapted variety of pine, by which to check the spread of sand. Today 275,000 acres are in fine forest with a value of \$10,000,000 as land.

In the interior of France was a sandy marsh, as valueless as our Death Valley. The Government, with the co-operation of individuals, changed 2,000,000 acres of this marsh into a forest now valued at \$100,000,000.

Germany has her regular tree planting days, in which all the people take part. This is full co-operation, not only among the people, but through and with the laws of Nature.

So let us foster and enlarge upon our Arbor Day, plant tree after tree, transform our waste places, and check this ruthless destruction of what God has so bounteously bestowed upon us.

The Railroads stand ready and willing to co-operate in all such movements.

I want to speak more particularly from the standpoint of the transportation resource and asset, and its non-destruction, at least, by hasty and sometimes hostile legislation.

It is taken for granted that nobody in our day would like to see the railroads destroyed. We all like to live, at least, in comfortable proximity to some line of transportation.

Every State seeking settlers advertises among its chief attractions its "unparalleled railroad facilities."

Towns and cities do the same; to read some of those attractive advertisements we almost come to the conclusion that every city and town in America is a railroad center.

Look at our own Virginia and West Virginia coal fields—among this country's greatest natural resources—and of what value would they be without adequate transportation?

Now then, railroads *are* among our most valuable resources, big assets. One writer says that there are over a thousand million dollars invested in lines and terminals, which is probably below the mark—are they worth conserving? To say the least of it, they should not be strangled, maimed, and sometimes killed by misguided legislation, in the way of rate laws.

When you come to think of it, who owns the railroads?

The stockholders are the partners and owners, the bond-holder is the creditor. So it is the policy of up to date railroad management to have stock well distributed amongst the general public—the people—and also to have as small a bonded indebtedness as possible.

A writer in the Literary Digest, in giving a list of ten roads, says: "Interest must be paid, provided solvency is to continue." Dividends, on the other hand, depend upon the earning power of the road, and the rights of the stockholder. Of these ten roads, the Pennsylvania stands at the head of the list with only 30 per cent. bonds, and 70 per cent. stock; next comes the Norfolk and Western, with 47 per cent. bonds and 53 per cent. stock. This writer continues, saying that a large amount of stock and small amount of bonds make the safe and strong corporation. This is, of course, obvious, but the point here stressed is this, the owner-stockholder must and should, in justice and fairness, have a square deal and get fair return for his money.

Indiscriminate rate legislation jeopardizes this, makes capital shy, and retards further railroad building, to a great extent. That America is not today building the railroads that we ought to have, and the people are beginning to want, is proven by this startling fact.

The New York Times Annalist says:

"As to relative increase, however, it appears that during five years our showing was only 7.3 per cent. of increase, while the increase for the whole world was 10.5 per cent. Asia increased 15.9 per cent., and Africa 37.3 per cent." Of course, I take it that new countries, in which railroads are matters of quite recent years naturally make the better showing, but we all know that in our own country there are many places that might be as "new" as Africa, so far as railroads are concerned. Here is food for thought: Is capital afraid to build roads? Is our *Money* afraid of our *laws*? Laws that *are* now, and some that *may* be?

The Norfolk and Western has 7,300 stockholders—owners of that valuable property. The par value of the present share capital is \$126,304,000. 39 per cent. of these shareholders are women, there are 11 educational bodies holding 366 shares, 5 charitable and benevolent institutions holding 86 shares, 2 church trustees holding 70 shares, and one hospital holding 25 shares. Are not these thousands of men and women—our citizens—and these institutions, who have invested all these millions, worthy of due consideration in the commercial world? Should such a widespread interest as this National Asset be constantly in dread of death-dealing legislation?

We are not complaining, and never will complain of that proper Governmental control which the nature of land transportation, from its *quasi* public nature, must expect. We say, as said the late Mr. Spencer: "Strengthen the laws in condemnation of rebates, secret devices and unjust discriminations to any extent possible, and provide, if such further provision still be necessary, for the prompt arraignment and prosecution of all offenders of the law in the duly constituted courts of the country, and for the unsparing punishment of those who may be found guilty. If there are such offenders in the railway fraternity, their offenses should be exposed and punished. But it is un-American and unfair, not to say outrageous, because it is alleged there are such, that every manager, and every president and director shall be subject to indiscriminate public condemnation, and that innocent investors shall have their property jeopardized, and their rights infringed, because those to whom the prosecution of the law is entrusted fail to find the offender and punish him." To show you that people with money to invest are not falling over themselves to buy railroad stock, I quote from the Digest, as follows:

"A prospective investor, having forty thousand dollars at his disposal, asked to be advised as to the best place to put it. He was told that 'from preferred rail-

road stocks it was impossible to secure as large a yield as from industrials.' " Now, in order to remedy an evil, or cure a disease, first diagnose the case, discover the cause, then apply the proper remedy. I am firmly of the opinion that indiscriminate, haphazard, sometimes malicious rate legislation—passenger and freight—is one of the most potent causes of frightening prospective investors from buying railroad securities.

Rate making is a difficult task. Nobody knows better than the traffic expert how hard it is to properly adjust those matters.

The Supreme Court of the United States has said:

"The importance of the question cannot be overestimated. Billions of dollars are invested in railroad property; millions of passengers, as well as billions of tons of freight, are moved each year by the railroad companies, and this transportation is carried on by a multitude of corporations working in different parts of the country, and subjected to varying and diverse conditions." 167 U. S. 494. "The railroads manufacture a certain commodity called transportation, which they sell at the market price. They are, after all, private enterprises of a semi-public nature, and they are entitled to a fair return on their investments the same as every other business."

We contend that whatever may have been the state of feeling existing between the great public—the body of our people—and railroad managements heretofore: and without speculating as to any of the causes heretofore existing by and through which there were, possibly, mutual misunderstandings—in the opinion of many, the vast majority of railroad corporations, if not all, but certainly the Norfolk and Western, only asks or expects, as quoted above, to be treated with the same equity and justice as is meted out to those engaged in any other business.

We want to co-operate with the whole people, we want their good will and sympathy, and we hope to be able to show that we deserve this.

Equitable rates are the lifeblood of railroads, as everybody knows. While rate making, as I have said, is a most technical and difficult task, requiring vast skill and experience, yet it seems, sometimes, that flat-fist rates are framed into law, without that due consideration and courtesy that would be accorded to such vast interests, and huge amounts of capital engaged in any other lawful business. I say lawful business advisedly, for it sometimes seems that we of the railroads are considered the outlaws and pariahs of commercial society.

But I am compelled to think from my observation and experience that a new era of mutual confidence and co-operation is dawning, in all fields of business life and activity.

The National Treasury has confidence in the banks to place large sums of money for co-operation in the movement of crops. This is a good omen—it is an index

to a more universal, non-partisan, unprejudiced, "getting closer together" with the spirit of mutual helpfulness.

When the American people see and understand they will always act fairly, and with due consideration for all interests involved.

A prominent writer on railroad matters says:

"As matters now stand, under our law, the business of railroading has in a large measure ceased to be private, and has become open and public." What more can be asked?

Government is in supreme control, without the responsibility of management, and without the risk of opprobrium from any ultimate failure.

The demagogue takes advantage of this condition of things to oppress our nation's greatest asset, with the view of making himself solid with his less informed constituency, thus supplanting economics with politics of the worst hue.

President Hadley, of Yale, in his "Economics," says:

"The value of money is measured by the quantity of other things which a unit of money will purchase. It varies inversely as the general level of prices. If general prices are high, a given amount of products or services will cost a great many dollars."

We realize that prevailing prices for everything used by man are high, and so the chief topic of present economics is the "high cost of living." Unfortunately, this increased cost does not stop with family life. Railroads feel it, and realize it in every department. Unceasing and insistent demands are made upon the railways for more expensive outlays in increased facilities of every description, better stations, with high cost conditions; safer equipment in roadbed and rolling stock; more safety and conveniences for the traveling and shipping public; demands for higher wages of employes; and large outlays of divers character, to meet the rigid requirements as laid down by the various laws enacted by Congress and the State Legislatures; rulings of the Interstate Commerce Commission, and the various State Railroad Commissions.

All this is coupled with an unceasing effort to continually lower the rates for carrying freight and passengers. This course cannot be indefinitely pursued without causing great detriment to transportation lines, the final result of which will be, if ruthlessly persisted in, a practical confiscation and ultimate destruction of all railroad interests.

To meet these demands, and all other reasonable requirements and conditions, the roads should be allowed to increase their rates reasonably, to a point where their income will be sufficient, at least in a measure, to meet these demands and to maintain the property and still give to the stockholder a fair and just return

for his money invested. This, we contend, is right, and we confidently appeal to the Public for a fair-minded consideration of conditions as they now exist.

Of course, improvements and betterments tend to enhance the value of railroad property, even though adding materially to its cost. The Commerce Commission, recognizing that cost is increased, says:

"The value of the property which the company is using for the public benefit has been enhanced, and this justifies it in demanding from the public a greater return than formerly."

"It is unquestionably a fact," as was stated in an address before the Grain Dealers' National Association, at Norfolk, Va., on October 1, 1912, by your present speaker, "that whether the railroads of this country will be permitted to enjoy a proper revenue, will be dependent upon the good sense and fair judgment of the business men of this country. They are the people who, in the first instance, pay the rates, and it is at their instance and as the result of litigation instigated by them, that the usual attack is made."

The Financial Chronicle of September 6th says:

"That the railroads of the United States continue to do an increasing business, but without drawing any additional profits, by reason of that fact." The roads in fact, are doing a larger business than ever before, but their net income is diminishing—the fundamental cause being the rising cost of operations. It is several years since the rise in expenses began, but it has remained persistent ever since, and is now gaining very rapid momentum, so that a stage has been reached which furnishes occasion for the deepest solicitude. "Meanwhile additional burdens are being assumed by the roads in providing new capital for betterments." (See Literary Digest, Sept. 20th, 1913.)

In the near future there will be great demands on capital by the railroads. In the Digest of October 11th, 1913, we find: "Within the same period—5 years—steam railroad securities to the amount of One Billion Dollars will mature, while for new work on railroads, in betterments and extension,—there will be a call for about three billion more."

"It certainly cannot be secured for the railroads until there be some change in the attitude of the public and the Legislatures, State and National, toward the railroad companies. But it must be obtained or else there will be great danger that business will be stagnated; there will be a congestion of traffic."

Again, we appeal to the people in confidence. These transportation lines, as national assets, should have a fair opportunity to live. We contend that rates must increase in order to meet inexorable demands, secure capital for future use, and to preserve the life and usefulness of these powerful engines of Commercial Success and Supremacy of this Nation.

“For the key to the gates of commerce the mighty railroads hold;
E’en at this hour, one-half their power undreamed of is untold.
Today, o’er each mighty river, prairie, and mountain crag,
Great engines dash and whirl and flash, and precious burdens drag.”

THE RAILROAD MAN—THE MISSIONARY OF PROGRESS

BY G. A. PARK.*

On account of very important railroad matters requiring the personal attention of Mr. Milton H. Smith, President of the Louisville & Nashville Railroad, he was unable to accept the very courteous invitation extended to him by Mr. T. A. Wright, President of this splendid exposition, to be present and address the railroad men today, designated as "Railroad Day."

I sympathize with you and share your disappointment in not having Mr. Smith present. There are few men equipped with his knowledge and experience along all lines of railway construction, maintenance and operation; few still share his prophetic vision which enters the realms of the unseen future and discerns possibilities of great value to the interests which he represents, and there are few comparable to him in forming plans, which, under his inspired leadership, mature inestimable benefits to the great Southland.

I am honored in being selected and am here for the purpose of representing the Louisville & Nashville Railroad which, with others, penetrates this rich section whose resources are so graphically displayed in this, the first exposition in history, to publicly preach conservation of our resources, a region prolific with present developments and pregnant with illimitable opportunities along all lines of activity—social, educational, commercial, industrial and agricultural.

Few of us here assembled have the same official designation inscribed upon the pay rolls, yet the phrase, "railroad man," includes us all in the common bond of railroad brotherhood. All mankind may be properly divided into three classes—the tradesmen, professional men and railroad men. Our students of nice distinctions have not been able to further classify us.

We have created a new profession, numbering seventeen hundred thousand members, who annually draw a billion and a quarter dollars in wages—and most of us spend it as promptly as we receive it. In collateral industries, such as car and locomotive shops, foundries, paint shops and manufacturers of steel, lumber, iron, etc., there are a million and a half men whose annual wages amount to nearly a billion dollars.

When we realize that the railroads' fuel bill is a quarter of a billion a year; that they pay out over a hundred million dollars annually in taxes and operate a

*General Immigration and Industrial Agent, Louisville & Nashville Railroad. Address delivered on "Railroad Day," National Conservation Exposition.



LAND AND INDUSTRIAL EXHIBIT OF THE LOUISVILLE & NASHVILLE RAILWAY, NATIONAL CONSERVATION EXPOSITION, AWARDED GOLD MEDAL FOR MOST UNIQUE LAND AND INDUSTRIAL EXHIBIT.

quarter of a million miles of track, we can get some idea of their ramifications, and it is not an extravagant statement to say that from one-fifth to one-quarter of the entire population of the United States is, directly or indirectly, dependent upon the railroads for their very existence.

All of you may not be informed of the character of work that the railroads extend to the manufacturing, agricultural and live stock interests; therefore, it may not be out of place to refer to some of the constructive and conservation efforts of the organized bureaus of railroads for the territories traversed by their rails.

Trained specialists and experts have been selected, possessing qualifications to be of the greatest service to those industries. Mere intellectual attainments, or the extent of the experts' knowledge, do not suffice. They are supposed to have tact and good sense, a good education, experience, practical knowledge, ability to organize, leadership and personality to create enthusiasm and interest, *must not* be afraid to demonstrate the work they teach and *must be* in sympathy with all of their problems. They are, of necessity, agronomists, horticulturalists, entomologists, plant pathologists, botanists, chemists, agrostologists, animal husbandmen, dairy experts and other kindred sciences which relate to manufacturing, agricultural and live stock interests, and must be conversant with marketing problems so as to best serve those interests.

This character of work requires for its success high ideals, with no selfish motives, and the instilling in the minds of those they serve a united purpose for the betterment of the individual, the manufacturer and the surrounding section and, of course, all interests and people should, necessarily, work harmoniously together to insure the greatest resultant good.

This is a co-operative age and the development work of the railroads is along conservation lines of all kinds as well as constructive lines that make for future progress, and we are gratified to find today business men, bankers, commercial organizations, agricultural associations, fruit and trucking associations and railroads co-operating one with the other in their efforts to best conserve and best preserve the soil which nature has given to us and which should be considered the most valuable possession ever committed to man. It can never be duplicated, and yet we are racking and impoverishing it exactly as we are felling the forests and rifling the mines.

A prosperous territory always makes a prosperous railroad. It is, therefore, not surprising that this new dispensation makes the railroads missionaries to perform this public, patriotic service to the country—a welfare to humanity.

Few of us comprehend the available wealth and advantages that man is possessed of, let alone grasping the problems of conserving the resources and preventing the wasting that can never be restored. These resources are derived from

four sources, viz.: the water, the mine, the forest and the soil. From them we receive every blessing and the essentials that sustain life.

In Mr. James J. Hill's Book, entitled "Highways of Progress," it is estimated that 5% of the food products are obtained from the water.

From the forest there is consumed annually three or four times more timber than is restored to the forest growth. Some varieties, in general use at the present day, will be exhausted within a decade. Other varieties, unless reforested, the end will be reached before the completion of the present century.

The products of the mines can only be used once and when the iron and coal shall have been removed, they cannot be restored and the industrial civilization that is dependent and built upon them must necessarily suffer as their scarcity becomes felt. The available supply of coal will be greatly reduced by the close of this century, yet this priceless resource has had but little thought given for its conservation. The story of the iron resources is similar. Have you thought that it is impossible to operate a mine, build a house, weave a fabric, prepare a meal or cultivate an acre of ground, under modern methods, without the aid of iron? The United States Geological Survey, in an officially published document, after a careful examination, states:

"Assuming that the demand for iron ore during the present century may range from fifty million to one hundred million tons per year the Lake Superior district would last for from twenty-five to fifty years more, if it supplied the entire United States. But counting on the known reserves elsewhere in the United States, the ore will last for a much longer period, though, of course, it must necessarily show a gradual but steady *increase* in the cost of mining along with an equally steady *decrease* in grade."

Such prognostications, from such a painstaking and scientific source, portend dire calamities for the generations of the future. Is it not, therefore, due to our children and our grandchildren that the most intelligent thought be given and action taken in order to conserve and preserve those resources upon which common humanity depends?

Our remaining resource, viz.: the soil, is one that the thoughts of the scholars, the scientists and individuals of all classes of humanity have of late years been centered upon. We have already begun to feel the pressure, the depreciation and the wanton wastefulness of the land. In Mr. Hill's book, it is further stated that more than five hundred million acres have been occupied by settlers within the last fifty years and the problem of the future, as it has been in the past, is the possibility of the lands holding out for the future support of the people.

Specially trained men constantly travel throughout the northern and western States, carefully selecting the desirable class of farmers to whom they tell the story

of the South's greatest opportunities, and endeavor to induce them to remove there-to. To supplement the work of these traveling agents, attractive literature is prepared, graphically setting forth and artistically illustrating the South's resources, and this is sent through the mails to the thousands of inquirers who have been attracted to the Southland.

The railroad stands for *immigration* and is unalterably opposed to *emigration*. Every section of the South spells opportunity and every citizen should help to build up his own community and not take his talents into another section of his or other Southern States.

In the matter of immigration into the Southern States, it should be borne in mind that a markedly different proposition is presented from these efforts, and methods that prompted and guided those used in the development and settlement of the Northwest, who labored along natural lines. The emigrant from the North Sea countries naturally sought conditions and localities where his kindred had preceded him and where his language and race make him feel at home. He in turn adds the strength of old-time ties to depict to and encourage those left behind in foreign lands to come to and be one of his kith and kin with whom to neighbor. The railroads of the great Northwest had immense land-grants on which they could locate their immigrants, thus being recompensed for their expenses in building up their country and waste places. With the railroads of the South, there was nothing like this to aid in inducing immigration. They must await the growth of these sections, the enlargement of the hamlets into towns and cities and settlement of the waste or vacant places into prosperous communities before they can expect to see the country enriched from the products of the soil, mine, quarry and forest.

No railroad man can compare his profession with any other vocation without feeling that his work is honorable, helpful and constructive. We are striving to serve the railroads and the sections traversed by them in bringing our experience, gained by a few failures but enriched with many successes, in creating numbers of smoke stacks, indicative of industries that thrive and give employment to numberless persons with their families, and they in turn feeding, clothing and sheltering the teeming thousands in both the city and the country.

The calling of a railroad man is made up of noble thoughts which produce noble acts. Every hour of the day and night he is engaged in the performance of a duty that makes him responsible for the safety of the traveling public or the transportation of tonnage, either dead or alive, that enables the millions of people of our own land and those of foreign climes to receive the benefit of what the manufacturer and the agriculturist produce.

Is it not, therefore, simple justice to assume that the railroad, manned by its loyal employes, is the missionary of this new dispensation; their service one of patriot-

ism to their country, a worthy contribution to the welfare of all humanity and a source of strength to the great pillars of our government. The loyal service of railroad men means much to the lives of the millions of today and the teeming millions of the future. You can, with a clear conscience, recite the childish prayer, "Now I lay me down to sleep," and feel that the day's duty was well done and, fearless of what the future has in store for you, know that your children and their children will enshrine your acts that have made the world better today than yesterday, and have an abiding faith that in their influence upon the tomorrow of the future, a still better page of life will be recorded.

Were we asked to give a slogan for a railroad man's life, it would be an axiom of Emerson: "Make yourself necessary to somebody; do not make life hard to any." Your task, whatever its order or selection, calls for your individuality and leaves its impress upon your work. To be successful in your specialty, it is absolutely essential that you love your work, have a deep interest in its every minutia—then you may be assured of success, be it in modest or great positions. A duty well performed brings its own reward, be that duty executed by the president or the water carrier of a railroad.

No railroad man laboring in the South can visit this exposition without carrying away from it the idea of the work he will be called upon to do in helping to develop the stupendous resources herein set forth.

The Southland is very much alive and the men employed on its ninety thousand miles of railroads are largely responsible for its present wealth and charged with its future development. The agricultural and manufactured products of the South are each worth annually in excess of three billion dollars. We raise each year a billion dollars' worth of cotton and mine over a hundred million tons of coal. We now use more raw cotton in our mills each year than is used in New England. The products of our mines, quarries and forests run into fabulous amounts, and our corn crop amounts to a billion bushels a year. We have all the records for prize corn yields.

We can but judge the future by the past and that judgment indicates a great work for the railroad men to do. Transportation is the evangel of development and the railroad men must gird up their loins and see to it that the records of the future will blaze more brightly than in the past.

There is one marked feature by which one can judge the character of the railroad—"little courtesies." The public judges the railroad largely by the attitude, personality or appearance of the representatives with whom it has dealings. A courtesy extended in a kindly manner costs nothing to the employe, but Oh! how great an asset and of what enormous value it may be to the railroad. A courtesy always brings to you as well as your railroad a good return, just as will the habit

of "crabbedness" or indifference hurt your reputation and be prejudicial to the railroad. Perhaps, some of us count the little things of life as nonessential and never think that the function of a railroad is to furnish to its patrons and the territory it traverses the greatest, most idealistic and most humane service possible, and that the character of that service depends largely upon the spirit in which it is rendered. Ever have before you the highest aims and ideals and feel—may know, that you are performing a sublime work and the world is indirectly feeling your helpful, sympathetic uplift.

It may be well to remember that while genius may begin a great work, it requires labor to complete it. We best enjoy our work when we best perform it. Samuel Smiles says:

"Honorable industry always travels the same road with enjoyment and duty, and progress is altogether impossible without it."

Do not permit yourself to be discouraged or alarmed at baseless charges made by publicity-seekers who, without a day's railroad experience, criticise or advise upon every conceivable phase of railroad work, but remember the words of Kipling:

If you can keep your head when all about you
Are losing theirs and blaming it on you;
If you can trust yourself when all men doubt you,
But make allowance for their doubting, too;
If you can wait and not be tired by waiting,
Or being lied about don't deal in lies,
Or being hated don't give way to hating,
And yet don't look too good, nor talk too wise.
If you can dream and not make dreams your master;
If you can think and not make thoughts your aim,
If you can meet with triumph and disaster
And treat those two imposters just the same,
If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools,
If you can talk with crowds and keep your virtue
Or walk with Kings, nor lose the common touch;
If neither foes nor loving friends can hurt you;
If all men count with you, but none too much;
If you can fill the unforgiving minute
With sixty seconds' worth of distance run,
Yours is the earth and everything that's in it,
And, which is more, you'll be a Man, my son.



FAIRFAX HARRISON, PRESIDENT SOUTHERN RAILWAY COMPANY

CONSERVATION OF SOUTHERN SOILS

BY FAIRFAX HARRISON*.

There is, I believe, no phase of the conservation movement so important to our Southern states as is that of soil conservation. It is essential, not only to our continued agricultural prosperity, but also in a large measure to the development of our manufacturing and commercial interests; for the best market that a Southern manufacturer or merchant can have is that provided by a prosperous farming community.

Fortunately soil conservation does not require withdrawal of the soils from use. The old saying that one cannot eat his cake and have it too does not apply to the use of the soils. On the contrary, soil fertility may best be maintained and built up by a system of farming that will yield the largest present returns. For proof of this it is not necessary for us to refer to the world-known experimental farm at Rothamsted, England, where for more than fifty years systems of successful soil management have been practically demonstrated, or, to the Schmatzfeld Estate, in Germany, with its records since 1552, showing a gradual development of production from 12.5 bushels to 45.1 bushels of wheat per acre, and correspondingly great increases in yields of other crops. We have, right at home, in our Southern states, many practical demonstrations of what can be done on our own soils. The Agricultural Department of the University of Tennessee, at its experiment station, and the agricultural colleges of the other states are doing excellent work in this direction. We have many examples of soils, badly abused by the one-crop system, being restored to abundant productivity by intelligent farmers, and in every neighborhood members of the Boys' Corn Clubs are demonstrating the readiness of Southern soils to respond to up-to-date farming methods. Further proof of the capacity of Southern soils to yield increased returns is afforded by the results obtained by the Department of Farm Improvement Work of the Southern Railway Company and its associated Companies.

The reports of the United States Agricultural Department show that in the ten-year period beginning with 1900, the average production of corn in the Southeastern states was from 10.2 bushels per acre in Florida to 26.7 bushels per acre in Kentucky. Farmers, who followed the advise of our Department of Farm Improvement Work in the season of 1913, obtained an average yield of nearly 41 bushels of corn per acre. The average production of lint cotton in the Southeastern states in the ten years beginning 1900, was from 162 pounds per acre in

*President of the Southern Railway Company

Alabama to 209 pounds per acre in North Carolina. Farmers, who followed the advice of our Department of Farm Improvement Work in the season of 1913, obtained an average of 376 pounds per acre, and this, notwithstanding the fact that a considerable proportion of the acreage reported on was in territory into which the Mexican Cotton boll weevil has spread.

It has been said that agriculture has become one of the learned professions. It does not follow that the man who has not had the advantage of an agricultural college education cannot successfully apply scientific methods on his farm. Happily, the results of the scientific work of the United States Department of Agriculture, of agricultural colleges, and experiment stations are embodied in publications which can easily be obtained by every farmer desiring them, and the personal advice of demonstration agents of the state and federal governments and of the railroads, can be obtained by farmers in most Southern localities. The methods that should be adopted for successful soil building are such as can be put into practice by every farmer. They embrace crop rotation, the largest possible application of farm manure, the intelligent use of commercial fertilizers, and the application of lime, where it is needed. In many localities in the South tile drainage will be found to be most helpful.

I am strongly impressed with the importance of live stock raising in the South as a factor in soil building, as well as on account of the direct profit to be realized from it. Former Secretary of Agriculture Wilson and Dr. Rommel, Chief of the Division of Animal Husbandry, in the United States Agricultural Department, have testified to the fact—demonstrated by actual experiments—that beef and pork can be produced in the South cheaper than in any other part of the United States. The long list of prizes awarded to Southeastern farmers at the International Live Stock Exposition of 1913 bears evidence to the quality of animals that can be raised in the South. For several years past the supply of meat producing animals in the United States has been steadily decreasing, due in a large measure to the cutting up of the great western cattle ranges into farms. The demand for meats and for dairy products is increasing with our constantly growing population. The cattle tick, which has been an obstacle to the profitable development of the beef and dairy industries in the South, is being eradicated. The serum treatment affords an effectual means for the prevention of hog cholera. Conditions are, therefore, exceedingly favorable for the development of all branches of the live stock industry in the South.

In urging the importance of soil conservation in the South, I am not losing sight of what has already been accomplished. Our farmers are progressive. Larger numbers are each year putting improved methods into practice. I believe, therefore, that we may look forward with confidence to such an up-building of soil productivity in the South as will enable our section to preserve its great economic advantage of producing the larger part of the cotton supply of the world, and that it will, at the same time, provide an increasing proportion of the food supply of the United States.

CONSERVATION AND HIGHWAYS.

BY CYRUS KEHR.*

Good Roads exhibits at the National Conservation Exposition were made in the form of actual demonstration roads, models showing materials, manner of construction and finished work; road-making materials and machinery; maps of important highways; photographic enlargements of both good and bad roads and the consequences and industrial and social conditions attending each.

This was an instructive and highly important feature of the exposition. The principle of conservation is clearly applicable to the question of good roads.

As merely a mechanical or physical operation, the building of a good road is a pointed lesson in conservation. The trained road builder adapts the location of his road to conservation of the land to be traversed by the road. He so locates the road as to do the least harm to the land and the landscape. He makes the location with reference to avoiding ugly and costly cuts and fills and with reference to avoiding destructive and ugly washing of the ground by storm water. He furthermore makes the location with a view to making the one road accommodate the largest amount of travel from different regions, in order to avoid unnecessary duplication of roads and consequent unnecessary use of lands for this purpose. Furthermore, in making the location, the road builder seeks to attain the easiest grades and the most direct routes that are consistent with such cost as the prospective volume of travel will justify. Such low grades and direct courses conserve time and the energy of hauling outfits, whether animal or mechanical power be used. Furthermore, in making his location, the road builder, as far as practicable, locates the road with reference to adapting it to producing elevating and inspirational effects upon the travelers. Such effects tend to maintain the strength and vitality and enhance the efficiency of the people.

When the road has been located, the trained road builder adapts his construction to available material near at hand, instead of using material brought from a distance. Thus there is a conservation of money and energy and the suggestion is made that in all things we should seek economy through study to make use of materials and resources nearest at hand. And the construction is designed with reference to permanence—with a view to avoiding waste and loss by the action of the elements and by traffic. This effort toward permanence and to avoid waste through improper construction is a good educational example in conservation.

After the highway has been properly located and constructed, the person trained in highway administration offers another important point in conservation.

*Chairman Highway Department National Conservation Exposition. Collaborator U. S. Office of Public Roads for Tennessee. Secretary Tennessee Highway Association.

This is maintenance, or up-keep, or protection of the road against deterioration, in order that the necessity for repairing or reconstruction may be postponed as long as possible. And the original investment made to extend over as long a time as possible. Under this head, the entire road is inspected from day to day by persons who have been trained for detail and exactness. Everything tending to obstruct drains at the sides of or extending beneath the road is removed. If there is tendency anywhere toward washing during rains, the right thing to prevent such washing is promptly done. If there is tendency anywhere for water to stand and sink into any portion of the road, that is prevented, for if water is allowed to sink into the roadway, a soft place is made which yields when loads pass over it, and thus a depression is made to receive more water and the road structure is broken and put into form to break more under passing loads. If the road structure shows any wear or weakening at any place, that is at once as carefully treated as a small cavity in the surface of a tooth is treated by a dentist. The weak place is cut to suitable depth and shape, and the cavity thus formed is then systematically "filled" with the several kinds of material which will bring the structure to full strength and fully to the level of the surrounding road surface, so that this place becomes as good as new. It may be said that this road is thus, from year to year, kept in the condition of the deacon's famous one-horse shay—each part as good and as strong as every other part. It is to be observed further that maintenance is not repairing nor rebuilding, but it consists in doing such things as are calculated to render repairing and rebuilding unnecessary. This is a practical and valuable and suggestive lesson in conservation. It should prompt people to economy and care with reference to many things.

The economy in hauling and travel due to good roads is of the greatest importance as a conservation factor. With good roads, all manner of farm products may be more easily hauled. Trips require less time and larger loads may be hauled.

In many instances the building of a good road has made possible the doubling and even the quadrupling of former loads. Indeed there are localities where formerly a single bale of cotton and a wagon made a load and now the same team can as easily haul eight bales. With good roads, a train of wagons carrying a total load of from twenty to fifty tons may be drawn by an auto-truck or a "tractor," a corresponding number of teams being allowed to remain at work on the farms. The good roads permit the delivery of farm products according to market demands, so that the farmer receives the largest amount of money for his products. There have been many cases of good market while farm products were rotting on the farm because of impassable roads.

Good roads present another factor in conservation in that they permit the delivery of farm products to the market and the hauling of supplies and building

material to the farm during such times as work on the farm is slack. It is a loss to the farmer if there is no farm work for a month and the roads are at the same time in such condition as to prevent the hauling of farm products, building material, fence material, supplies, etc.

The good road is further a factor in conservation in that it permits quick trips for all manner of purposes, as the bringing of supplies to the farm, taking parts of farm machinery for repairing, obtaining repair parts, getting the doctor for sickness or accident. Making prompt machine repairs saves and conserves the time of all the people, teams, and equipment engaged in reaping or threshing or any other operation which is interrupted by a break-down. As an example, a piece in a threshing equipment breaks. By telephone, the agent, in a town fifteen miles away, is requested to bring a new part, and he arrives by automobile in an hour.

Better roads permit more regular school attendance, and this means a conservation of boys and girls. Good roads permit the consolidation of schools which means better schools and also a saving in money. Good roads also permit regular church attendance and the consolidation of churches, which means conservation with reference to morality and money.

Bad roads are destructive of the people of the locality. To make a living at all, under such conditions, excessive effort is required, so that there is no time for intellectual, moral, and esthetic improvement. The loneliness, the isolation, the absence of things which stimulate and interest, tend to stagnate. But with people stagnation is only temporary. It is merely a halting. There is advance or retrogression. The people of a community who are under the limitations prescribed by bad roads can not ordinarily advance, and if they do not advance they retrograde. These limitations not only affect such people industrially, but mentally, morally, and physically. It has been stated on good authority that many cases of insanity now to be found in asylums are due to the isolation, the utter lack of things of interest, the absence of inspiration due to bad roads.

Physicians have even found that these conditions cause such a lack of buoyancy as renders some of these people, when sick, unable to respond to medical treatment. Thus the conservationist who seeks to conserve the health and lives of the rural people must recognize good roads as one of his working factors.

Furthermore, the conservationist who seeks to conserve and improve the health and lives of the people of the city, particularly the working classes, must recognize good roads as a factor; for, by means of good roads the city people may spread much farther from the city center and thus avoid or relieve the congested districts in which the health and lives of city people are sacrificed. Even if only the wealthy people move out ten to twenty miles, using automobiles on the good roads, their going makes more room in town for others.

DEPARTMENT OF EDUCATION

Among the most important resources of a nation are human life and efficiency. The most important conservation is, therefore, the conservation of life, health and efficiency of the citizenship of the nation. The National Conservation Exposition, recognizing the importance of this type of conservation, provided for it by the establishment of three departments especially devoted thereto: Health, Child Welfare and Education.

Accordingly, it was the aim of the committee on education to provide such exhibits as would show the need and best methods of conserving the physical and mental inheritance of the youth of the land through the agency of schools, public and private, elementary and higher. In carrying out this plan, exhibits, demonstrations and models of the best work of the best schools of the South and of the nation were collected.

The exhibits made by the Department of Education occupied all of the upper floor of the land building, and were installed by Miss Leah Fletcher, Superintendent of the Knox County Industrial School. A play ground, with modern equipment, was also provided. Among the displays were those made by the Knoxville High School, The National Kindergarten Association, of New York, Union City High School, Union City, Tenn., Columbus Industrial High School, Columbus, Ga., Deaf and Dumb School, Knoxville, University of Tennessee, Tusculum College, Greenville, Tenn., East Tennessee Normal School, Johnson City, Tenn., Teachers' College, New York City, Lincoln Memorial University, Harriman, Tenn., Lincoln Memorial Hospital, Knoxville, Knox County Schools, United States Bureau of Education, East Tennessee Audubon Society, Knoxville, Pratt Institute, Brooklyn, N. Y., Maryville College, Maryville, Tenn., Buford College, Nashville.

Descriptions and illustrations of some of the exhibits follow:

EXHIBIT OF THE PUBLIC SCHOOLS OF UNION CITY, TENN.

The exhibit from the public schools of Union City, Tennessee, was largely an illustration of methods. The value of the laboratory method in Geography was abundantly illustrated in the various maps—political, physical, commercial and product. The physical geography maps showing the various tides and the courses of the winds, furnished ample proof that geography can be made a live issue with the pupils. The earlier years of the work, of course, were cruder than those of the finishing year, where the maps on exhibition well nigh approached perfection. Instruction given on the subject is almost entirely through the study and making of maps.



AN ATTRACTIVE EDUCATIONAL EXHIBIT AT 1910-1911 APPALACHIAN EXPOSITIONS

The writing exhibit was incontestible proof of the value of free arm movement. In that subject the work, even in the first grade, where the pupils write with a bold large hand, to the finer and more artistic products of the pupils in the High School gave every evidence of increasing legibility and rapidity of execution without the tiresome finger grip. The various "ovals" and straight "ups and downs," sometimes, for variety's sake, woven and interwoven into fantastic forms, were the basis of freedom of motion and uniformity of execution. The individuality of the penman was in no way destroyed.

From the exhibit it was easy to trace the course in language, grammar and literature, beginning with the paragraph in the third grade, advancing to the three part analysis in the fourth grade, and the subsequent three paragraphs. Description, characterization and narration were carried on with increasing care and attention to details (and here was shown the instructions given in the choice of words, sometimes poetical, sometimes forceful, according to the subject), until in the seventh and eighth grades the original story written by the several pupils was indeed a work of art.

The biological work of the students of the eighth grade had for its basis no doubt the development of reproduction, leading the child to see for himself without undue stress on the part of the teacher, the desirability and the beauty contained in the morality of eugenics, creation's plan, was much in evidence.

The Manual of Training work in the grades was as systematically portrayed as it was systematically given. In the first grade there was the in and out weaving with its final product—the Tam-o-Shanta. In the third grade the rug weaving on small frames. In the fourth grade the larger rug weaving was made possible because of the training in the previous grades. Hand sewing beginning with the outline of maps of Tennessee and United States in the second grade was continued throughout the school with fine needle sewing in the sixth, seventh and eighth grades, to the making of under and outside garments in the latter years of the High School.

The Art work was complete from the first grade through the twelfth. The children in the first grade are taught to reproduce from the original object where the main purpose was a conception of form, and where flowers and still life objects such as come within the purview of the child are brought to the attention of the pupil. Fables and child stories were well illustrated. From the eighth grade on, the pupil is evidently taught the use of the various mediums and with increasing skill. The drawing from poses was especially clever, while the original posters excited much attention. It was evident that the aim of the Union City Schools in their art work was to make this subject practical, for there was designing adopted to all trades; there was sketching, cartooning and bolder bill posters. In fact, the



COMPREHENSIVE EDUCATIONAL EXHIBIT, 1910-1911, APPALACHIAN EXPOSITIONS

art display showed that this underlying current of practical work done is always graced with the fairer lines of the cultural.

EXHIBIT OF THE NATIONAL KINDERGARTEN ASSOCIATION.

There are still 4,000,000 children—or more than ninety per cent of those between four and six years of age in this country, for whom kindergartens have not been provided. The extension of kindergartens is clearly one of the most important educational questions of the day, and a realization of this led to the establishment in 1899, of the National Kindergarten Association which is now co-operating with the United States Commissioner of Education in maintaining a Kindergarten Division in the federal Bureau of Education.

One of the objects of this society is to arouse a more intelligent and general interest in this subject not only among educators, but also on the part of the general public.

Besides furnishing lecturers, educational pamphlets and an illustrated lecture, this Association has prepared a traveling exhibit. This has been sent to many large conventions and fairs and was displayed throughout the session of the Summer School of the South and afterward went to the National Conservation Exposition where it created much favorable sentiment.

The exhibit as shown at the Exposition consisted of fourteen sections, some of which showed specimens of hand-work, while others contained brief descriptions of principles and methods. There were also examples of the use of the larger "gifts" and of clay-modeling.

One section of the exhibit showed how the child gets ideas of color, form, order and number by stringing beads of different shapes and colors in a variety of designs. Another gave examples of the needlework from which he learns to develop design and begins to create and construct. Still others showed the use of crayons and paints, the rudiments of manual training by the use of paper, scissors and paste, and the clay-modeling and block building which combine creative power, and the perception of measurement, number, form, proportion and balance.

The purpose, methods and results of kindergarten training were set forth in the exhibit on half a dozen tablets which explained in a graphic way each step in the development of the child's powers of observation and creation, and the share in it which the teacher and child each have.

EXHIBIT OF THE UNIVERSITY OF TENNESSEE.

The exhibit of the University of Tennessee occupied the north end of the gallery devoted to educational exhibits. The space was divided into alcoves, each showing some phase of university life.

Approaching the exhibit from the east side the first alcove contained a collection of oil portraits of former presidents and trustees of the institution.

The next alcove was devoted to the art department and on the three walls were shown the work of students in crayon, water color, pastel, oil. An interesting group was made up of pen and ink drawings used to illustrate various student publications.

The domestic science exhibit contained the work of students from the freshman to the senior year, covering sewing, cooking, design and labor investigation. Show cases in the front were filled with excellent examples of student work. Back of this was displayed a model kitchen suitable as equipment for a county high school.

The largest and most complete exhibit made by the University was made by the engineering department. Well to the front was an automatic machine neatly housed in an oak case, displaying 48 pictures illustrating university life. Each picture remained in view for a brief period and then disappeared, being replaced by another. In a line with this machine were two fine pieces of machine shop work, the product of student labor in the University shops; namely, a 16-inch engine lathe and a universal milling machine. In the rear of these machines on benches, were displayed examples of pattern making, machine shop and forge shop work. The walls were covered with mechanical drawings.

The work of the agricultural experiment station was shown on 12 large wall charts, showing graphically the effect of science in caring for the soil, selection of seed, growing of crops and marketing the product. Attracting much attention in this exhibit were a number of samples of the soils of Tennessee with a placard describing the best scientific treatment.

EXHIBIT OF THE COLUMBUS INDUSTRIAL HIGH SCHOOL.

A complete exhibit of the Columbus Industrial High School, Columbus, Ga., was sent to the National Conservation Exposition. It consisted of millinery and dress making, from the domestic science department; tables, cabinets, chairs, etc., from the wood shop; gasoline engines and several like things from the mechanical arts department; a complete specimen from the textile department, consisting of cotton on the stalk, following it through all the different machines until it came out the finished cloth, and patterns from the pattern department.

A large number of the reports of the school, which were gotten out by the United States government, were sent to be distributed as advertising matter.

ECONOMIC AND SOCIAL CONSERVATION

BY DUNCAN U. FLETCHER*.

Recently a distinguished orator and statesman began an address by saying "eloquence does not consist in words which pass from head to head, but rather in the feeling which passes from heart to heart."

I find comfort in this thought. While I come without words, studied and prepared, or otherwise, that might impress you, my heart is full of sympathy with your great enterprise here, and beats in full unison with your hopes and desires in respect to your public-spirited undertakings. If the sentiments of my heart may find response in yours, even though not uttered by tongue, I shall be gratified.

Naturally one's first thought, after going over these beautiful grounds and through these well appointed buildings, examining the splendid display of exhibits, is to express hearty congratulations to the officers and managers of this great exposition.

It has a fortunate setting in this prosperous and favored city of which no resident need feel otherwise than proud and with which every visitor is delighted.

Considered merely from the educational standpoint its results must be beneficial and far reaching. It gives, in miniature, a representation of the vast natural resources about you and the uses for them by the genius and enterprise of the people. It represents the evidence of nature's bountiful gifts and man's appreciation of them.

In this region, around you, we find every provision made for maintenance, comfort and happiness. There have been showered upon this land the choicest blessings of Providence. It devolves upon you to conserve and wisely use them.

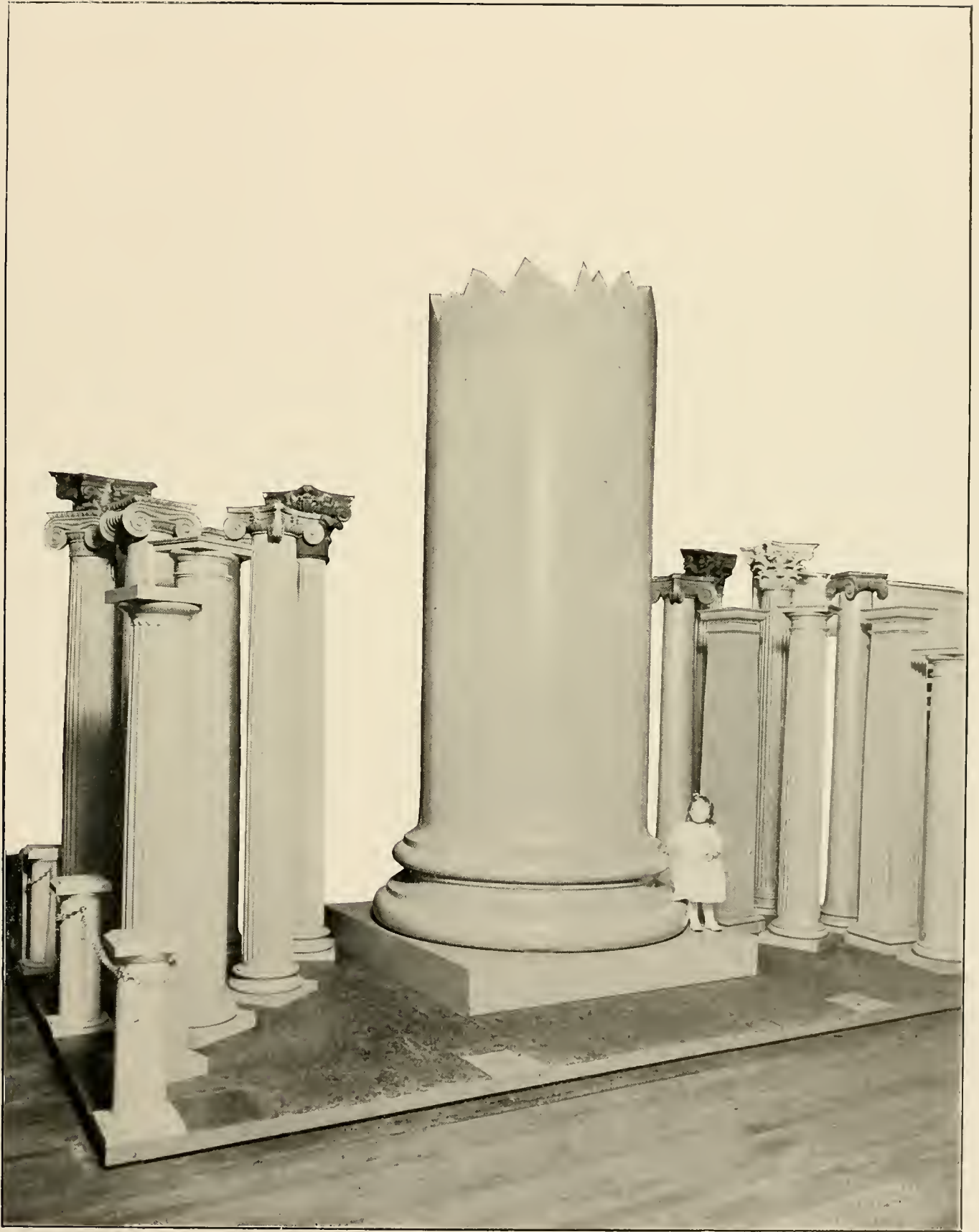
True conservation does not mean—store and not use. It is a foe to non-use. It means preserve, care for, wisely and properly use. It is an enemy of waste, a friend of sane utilization.

No one can look upon these exhibits and study the relations of these resources but barely indicated here, without realizing that under intelligent direction the development has just begun which holds possibilities in the future no imagination dare foretell.

WATER POWER.

I may mention one source of incalculable growth which abounds in the Appalachian chain we but yesterday discovered. One cubic foot of water falling

*Address by Senator Duncan U. Fletcher, of Florida, President of the Southern Commercial Congress, delivered on Pan-American Day, National Conservation Exposition.



GOLD MEDAL EXHIBIT OF THE "NICKERSON" PATENT DOUBLE-LOCK JOINT COLUMNS, AT THE NATIONAL CONSERVATION EXPOSITION

9 feet each second has the power of a truck horse. Translated into dollars and cents it is worth \$35.

This power, we have just learned, can be transmitted 50, 100, 150, 200 miles; and this distance we are learning to increase and the diminution of power to lessen.

All about you—extending throughout the Appalachian Range—there are millions of cubic feet of water falling nine feet each second—meaning millions of horse power—meaning billions of dollars in value. This is one of Nature's great forces, found right at hand, which men are conquering and which will be employed to advance civilization and better conditions for mankind.

The great water fall of Niagara, for instance, does the work that a million men could not do. The power hidden away in these mountains and valleys and hills, can do millions of times over all the hard work needed to make this the greatest manufacturing area in the world. You can harness these forces and set them doing work millions of men could not do. This power is going to waste or has not been developed. True conservation teaches us to search it out, stop the waste, store it where necessary, save it, utilize it, without destroying it, for the service of humanity.

Fortunate, indeed, is that people living in the midst of the magnificent resources and the abundant means of developing them, which surround you here

Possibilities for trade expansion are opening up to the South through the Panama canal and its commercial influences, and it is no idle fancy to think of this region as the hive of industry and the home of prosperity. You should now take steps to shape and direct the channels of trade through South Atlantic and Gulf ports, so as to avail yourself of the great highway uniting the oceans.

The routes should be established as direct as possible and once fixed they will be most likely to remain for many years. You have no time to lose. The Southern Commercial Congress will at its meeting in Mobile, October 27-29, to which you are invited, emphasize these points. Latin America is becoming one of the best customers of the United States. Figures for the fiscal year show that \$321,000,000 worth of exports were shipped out of the United States to these countries and the imports from that territory into the United States amounted to \$441,000,000. Immense expansion of that trade is just ahead of us. Those communities going after it can readily command it.

ELECTRIC POWER.

Let me direct your attention to another important use to which your natural resource—water power—may be put. There are three necessary elements in all

food—phosphate, nitrogen and potash. Tennessee, like Florida, has the phosphate Germany has the potash and in the absence of discoveries in this country, we will be obliged to look to Germany for that material, at least for some time to come. Recently a process has been discovered whereby the nitrogen in the air can be drawn through funnels and fixed in lime and thus become the nitrogen of commerce. This requires excessive heat, which can be produced by electricity, which can be economically generated by water power.

Thus you will have the two important elements entering into commercial fertilizers and since the demand for fertilizer will increase rather than diminish through the coming years, you can form an idea of the magnitude of such an industry.

AGRICULTURE AND CONSERVATION.

The chief industry of all civilized nations is agriculture. While intent on building up industries of a manufacturing sort and extending trade, we must not lose sight of agriculture. Older nations have made that mistake and today an economic change is taking place extending toward rural reconstruction. Germany realized the necessity of taking care of agriculture and has become perhaps the most highly developed in agricultural finance, intensive farming, and in production and distribution of any European country. Hence the German farmer employs lands for pasture worth \$600 per acre and Germany produces ninety-five per cent of the food supply required to support her 67,000,000 people.

England in 1909 found it necessary to create her development commission and to liberally endow it for the purpose mainly of aiding and developing agriculture.

When we view the tendency from the country to the cities and towns, the falling off in exports and the increasing of imports of those products of the farm needed in daily life, the increase in tenants and the decrease in occupying owners, the augmenting population, with which production does not keep pace, indicating that we are rapidly approaching a condition where we will fail to produce a sufficient supply of the prime necessities of life to supply the home demand, we must realize that the time has come for us to seriously consider what the trouble is and to set about finding a remedy.

One thing we do know and that is our farmers have not enjoyed the benefit of a banking and currency system framed to serve their needs. Our present system is a commercial system designed to serve commerce, manufacturers and industries and business other than agriculture.

Our farmers have paid higher rates of interest than the merchant, have not been given terms suitable to their needs and probably could not be given such terms under our system of banking, have been in the hands of factors, lenders and commission men, to such an extent they have not been able to develop their indus-

try as otherwise they might have done and they have had but a precarious control over the profits of their industry.

We know another startling fact, and that is it costs more to market food products than any other class of products. Organization and co-operation have furnished the way in older countries.

By making practical and wise application of the principles indicated, including a reform which will provide for utilization of assets for credit purposes, the problem of economic and social conservation in rural life may be solved.

It must be conceded that a burdensome financial system hinders the farmer. Whether due to that in part, or other causes, it must also be conceded that waste, waste, waste, is sown with grain, planted with the seed, and proceeds with every operation, in production and harvesting, and finds its greatest volume in the final performance, marketing. The methods and practices which permit of this, of course, must be changed sooner or later.



HOUSE BOAT, "THE VAN-WRIGHT," THE SCENE OF BANQUETS AND SOCIAL EVENTS, NATIONAL CONSERVATION EXPOSITION

RED CROSS SOCIETY'S PART IN CONSERVATION

BY MABEL T. BOARDMAN.*

Without human life, of what value is conservation?

It is for the benefit of man's life that all the energies which are devoted to the conservation of our natural resources are given. So down at the very foundation of conservation must lie the preservation of that for which conservation exists.

It is in this principle of conservation of human life that the Red Cross has its being. Inspired first by Florence Nightingale in the Crimea, though born on the bloody battlefield of Solferino, more than fifty years ago, when Henri Durant witnessed the terrible waste of human life because of the lack of medical nursing and care, it has become one of the great conservation forces of all the world. It acts under the only universal conservation treaty in existence. One after another all the nations of the world have signed this treaty of Geneva, first drafted in 1864, revised in 1906, and its provisions extended to naval warfare by the treaty of The Hague. This treaty provides for the protection, that is the conservation of the sick and wounded in war. It has its own insignia, and whenever throughout the world the grating doors of the Temple of Janus open wide their terrible portals, it flings to the winds of heaven its merciful banner of conservation of the sick and wounded, the flag of the Red Cross. Under the protection of this treaty the great Red Cross societies have been created to take charge of volunteer aid in time of war.

Thus, the Red Cross had its origin in the purpose of conservation of human life in time of war. How efficiently it has carried out this duty where well organized it is only necessary to glance at the remarkable statistics of the work done by the Red Cross of Russia and Japan during the late war in the Far East. I am tempted here to dwell for a moment upon one or two facts connected with the Japanese Red Cross. It has today over 1,522,000 members and its annual revenue amounts to over \$2,000,000. In spite of the late war which was such a serious drain upon the resources of the country, the Japanese Red Cross never depleted by a single yen its permanent fund. This fund amounts to \$10,000,000 and it has besides in other funds over \$2,000,000 on hand.

But though since the beginning of history wars have been from time to time the misfortune of mankind, the great forces of nature bring a far more frequent need for such assistance as the Red Cross is able to render. Because of this ever-

*President of the American Red Cross Society. Address delivered on Red Cross Day, at the National Conservation Exposition.

recurring need of organized aid the Red Cross reached out its strong and well-trained arms into this broader field to succor the victims of great disasters.

The charter granted by congress to the American Red Cross and which created it the officially authorized Red Cross of this government, provides that it shall not only "take charge of the volunteer relief in time of war" but that it shall "continue and carry on a system of national and international relief in time of peace and apply the same in mitigating the sufferings caused by pestilence, famine, fire, floods, and other great calamities, and to devise and carry on measures for preventing the same."

And this leads me to our own American Red Cross, not a private association of certain people, but the officially authorized Red Cross of this government belonging to all of us, responsible to the people and whose existence congress may at any time cancel by the annulling of its charter. Its accounts are audited by the war department, the chairman and five members of the central committee, representing the departments of state, treasury, war, justice and navy are appointed by the President of the United States. The state department is represented because of participation in international relief, the treasury provides the National Red Cross treasurer, the department of justice, the counselor and the army and navy have their reasons for representation not only because of war association, but, because during national disaster relief, as at San Francisco, Hattiesburg, Key West, and the great Mississippi and Ohio floods of this and last year, the Red Cross has the heartiest and most invaluable aid of our army, while in international relief, as in Italy after the earthquake, and at Bluefields, Nicaragua, it receives the equally hearty and valuable aid of our navy.

Briefly, then, of what does the American Red Cross organization consist? William Howard Taft, when President of the United States, was its president, and largely to his constant interest, wise counsel, and valuable assistance is its success due. In March Mr. Taft resigned and President Wilson accepted the presidency with hearty good will. It has besides the other usual officers national director, Mr. Ernest P. Bicknell, whose particular duty is to proceed immediately to the scene of any serious disaster, there to take charge of or advise in regard to the Red Cross relief work. The central committee of eighteen elect an executive committee of seven. Under this committee the work of the Red Cross is segregated into three departments for war, national and international relief, each under a board of fifteen members. The chairman and vice-chairman of each board are members of the central committee.

The war relief board, of which the surgeons representing the army and navy on the central committee are respectively chairman and vice-chairman, has prepared

a complete list of every coastwise vessel suitable for a hospital ship so that such a ship could be chartered at a moment's notice. It has, moreover, drawn up a complete and detailed list for the equipment of such a ship with the estimate of the cost of this equipment and the necessary transformation for hospital purposes. It is studying the questions of civil hospital accommodations for war-time need, of hospital trains, of field hospitals, rest stations, the use of private automobiles for ambulances, and other kindred subjects. A sub-committee, six of whom are members of the board and nine of whom are representative women of the trained nursing profession, and whose chairman is Miss Jane Delano, superintendent of the army nurse corps, has systematized the Red Cross nursing service, prepared uniform regulations, organized state and local committees, and has already enrolled four thousand of the best trained nurses in the country for active service in time of need. These splendid nurses at such times not only undertake the most difficult work under frequently severe hardships, but when on this active duty accept from the Red Cross only half of their usual salary. Over two hundred of these nurses were called into the flood district this spring, and did valiant service. Seventy were on duty at Gettysburg, when 11,540 old soldiers passed through the fourteen emergency Red Cross stations scattered over the battlefield. At the inauguration of Presidents at Washington and in case of other great functions in various cities, scores of Red Cross nurses are to be found in the emergency stations to aid in case of sudden illness or accidents among the vast crowds of people.

The Red Cross nursing committee has arranged for courses for women in "Elementary Hygiene and Home Care of the Sick." A most excellent text book for these courses has been prepared by Miss Delano and Miss McIsaacs of the committee, a book that should be in every mother's library and on every household book shelf. The conservation of human life that begins even with parental care and continues under the well instructed mother during the ages of childhood to maturity, is built on foundations that disease finds it a difficult task indeed to undermine.

Another sub-committee of the war relief board is the first aid committee, the chairman of which, Major Robert U. Patterson of the army medical service, is detailed for this particular duty by the surgeon-general.

At the time of the Cherry Mine disaster, Mr. Kingsley, of the United Charities of Chicago, went immediately to the scene of the disaster, remaining until Mr. Bicknell could arrive there. Then for several months at the request of the Red Cross his assistant and two good women who could speak Italian and Polish to the poor distracted miners' widows remained at Cherry while Mr. Bicknell's Red Cross plan for permanent relief could be perfected and accepted. By this plan now being carried out the generous funds contributed by the people of Illinois, by its state legisla-

ture and by the Miners' Union, amounting to about \$300,000 have been consolidated and are being administered by a joint commission so that a pension can be paid to each widow and minor child until the children are of an age to become wage-earners themselves and the fund is exhausted.

This spring and summer after the great floods in the Ohio and Mississippi valleys nearly fifty of the Red Cross agents have been doing most excellent executive work in co-operation with local committees. Temporary needs of food, clothing and shelter were provided, several thousand houses were repaired, some few hundred new ones were built. Furthermore, the work of rehabilitating small business men and providing tools for workmen was carried out. This was all done in a most practical way, the Red Cross administering between two and three millions of dollars in this work. So generous were the contributions, and so well was the fund administered by the Red Cross, that though the state legislature had placed in its hands, under the government's direction, \$250,000, only \$100,000 of this amount was needed.

From the Philippines in the Far East, from San Francisco on our western coast, to Chelsea on our eastern coast, from the gulf up the Mississippi Valley to our Central States, thirty different fields of disaster since 1905, our Red Cross has done active service within our own borders.

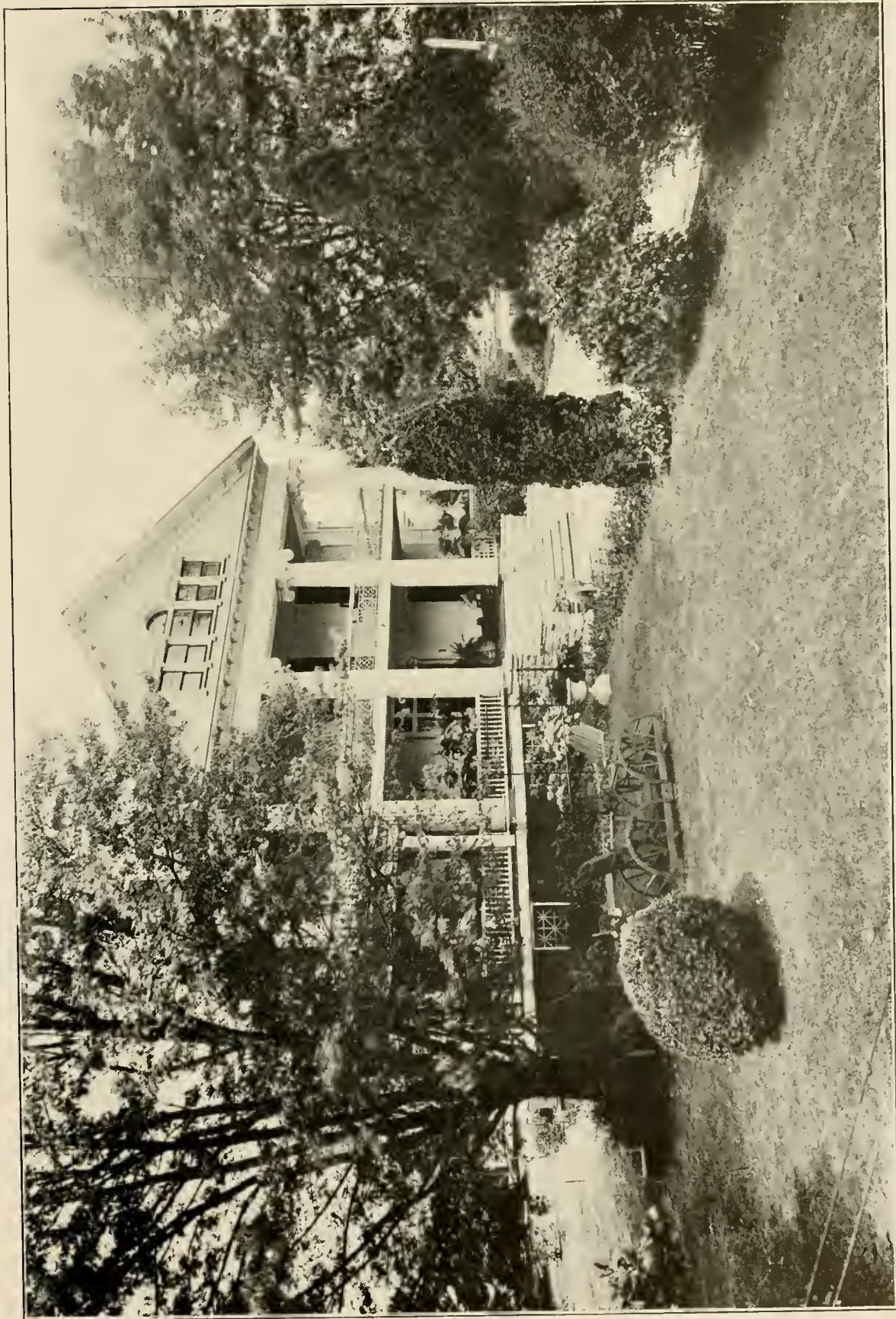
The National Relief Board has also had charge of the little Red Cross Christmas seal. That stalking specter of pestilence, called tuberculosis, has laid his devastating hand on every nation, he invades the palace as well as the hovel, and the youth of the people are his surest prey. With a weapon tinier than the stone in David's sling the Red Cross sends forth this little seal to do its part. In the last five years it has netted over \$1,400,000 with which to war against this grim destroyer. Here again the Red Cross carries out its principle, the conservation of human life.

Yet another great work for the conservation of human life that our American Red Cross is just inaugurating is that of the Red Cross rural nursing service. Not until it took this up had there been any extensive system of nursing in the United States outside the cities such as we find well developed in several foreign countries. The Queen's Jubilee Institute of Great Britain and Ireland and the Victorian Order of Nurses in Canada include broad areas of rural population within their field and trained nursing care is brought within the reach of large numbers of the most isolated country people. To many interested in questions of public health, the time seems to have arrived for the establishment of a similar service to meet the growing need in rural sections of this country. The American Red Cross, a national society dedicated to the relief of suffering and the prevention of disease, has undertaken this work, thus extending its activities in a broad health campaign.



CARDINAL GIBBONS

ORATOR COLUMBUS DAY, NATIONAL CONSERVATION EXPOSITION



HOME OF GEO. W. CALLAHAN

Where Cardinal Gibbons was entertained on the visit of His Eminence to Knoxville, during the National Conservation Exposition

It is building up a nursing personnel to be composed of graduates of hospital training schools of recognized standing who are also registered nurses and are required to have special training or experience along the lines of public health nursing or social service. Provision is made by the Red Cross for a four months' course in visiting nursing, utilizing certain well established visiting nursing associations in city and country as training centers for rural nurses. The Red Cross offers to assign these visiting nurses to rural communities and supervise their work upon certain conditions.

In many rural sections nurses are cut off from helpful association with others doing similar work. Both high minded nurses and public spirited citizens are apt to be seriously handicapped by this isolation, whereas identification with an extensively organized effort such as the Red Cross rural nursing service, would give them an added stimulus toward the establishment and maintenance of high standards in public health nursing. The Red Cross offers to extend general supervision over its rural nurses and meet the expense of this.

It is urged that individuals and groups of persons considering rural nursing in any branch of public health activity will get in touch with the American Red Cross, Washington, D. C. Discussion is solicited from all who are considering this work relative to the organization of a local committee, selection of a rural nurse and ways and means for her support.

And at last may I say a word or two for the by-products of conservation and Red Cross service?

In the work of the Red Cross first aid department lies the far reaching result of conservation of the wage-earner of the family as well as the labor producer of the country, or in case of his death in disaster, as at Cherry, the administration of the relief funds so that the unfortunate widow can keep her little children at home. A by-product, the conservation of the family.

The preservation of life in time of war has not only its humane feature, but its patriotic reason. In fact, the Japanese Red Cross puts this principle first. The saving of one of the most important assets of any country, that of its manhood, becomes a by-product of conservation for the sake of patriotism.

And lies there nothing in the thought that both in peace and war there is value in the preservation of lives so dear in many of the homes of our country? A by-product of conservation for the sake of love.

Another by-product is the conservation of communities. Whether some little hamlet or some large city suffers from the overwhelming calamity of fire, flood, storm, earthquake or pestilence or the still more pitiful disaster of widespread famine settles over a great province or empire, its people are brought down to desolation

and despair. Their neighbors suffer with themselves and there are none at hand to help them in their wretchedness. Without aid they must die or drift away from their homes like unmoored boats after a storm to be swamped at sea or wrecked upon the rocks of unknown shores. It is then to these communities as well as to the individual that the Red Cross comes. It calls to the disconsolate, "Comfort ye, my people. Build again your homes. Sow again your fields. The strong arms of the Red Cross are here to aid you, held up by your brothers of the nation, yea, if need be, by your brothers of the world." On a beautiful silver tablet presented by the Italian relief committee to the American Red Cross are engraved in Latin the words of an old Roman historian: "Your bounty repaired the catastrophe not merely of individual citizens but of entire cities."

Strangely taking its inception on the field of battle, this great international organization of the Red Cross for the conservation of human life has been born, passed from infancy into a strong and noble manhood ever ready to protect and preserve that human life for which the conservation of all material things has its reason and its purpose.

APPENDIX

In reproducing the report of the Conservation Conference of 1908 in the first chapter of this work, it is felt that the personnel of the Conference should be given, not only as a matter of historic interest but that the names of those who first banded themselves together to battle for what is just and right—for the prevention of needless waste of natural wealth—for the promotion of the general welfare and the welfare of posterity through the conservation of the resources of the country upon which the health, happiness and prosperity of the nation must rest—may be recorded among those of the makers of history and true public benefactors:

PERSONNEL OF THE CONFERENCE.

The Joint Conservation Conference was composed of the following:

Hon. Wilford B. Hoggatt, governor of Alaska.
Hon. Joseph H. Kibbey, governor of Arizona.
Hon. X. O. Pindall, acting governor of Arkansas.
Hon. Rollin S. Woodruff, governor of Connecticut.
Hon. H. B. F. Macfarland, chairman Board of Commissioners, District of Columbia.
Hon. Preston Lea, governor of Delaware.
Hon. Napoleon B. Broward, governor of Florida.
Hon. Hoke Smith, governor of Georgia.
Hon. W. F. Frear, governor of Hawaii.
Hon. Charles S. Deneen, governor of Illinois.
Hon. Walter R. Stubbs, governor-elect of Kansas.
Hon. Jared T. Sanders, governor of Louisiana.
Hon. Austin L. Crothers, governor of Maryland.
Hon. Curtis Guild, Jr., governor of Massachusetts.
Hon. Fred M. Warner, governor of Michigan.
Hon. John A. Johnson, governor of Minnesota.
Hon. E. F. Noel, governor of Mississippi.
Hon. George Curry, governor of New Mexico.
Hon. John Burke, governor of North Dakota.
Hon. George E. Chamberlain, governor of Oregon.
Hon. Regis H. Post, governor of Porto Rico.
Hon. Martin F. Ansel, governor of South Carolina.
Senator William C. Edwards, representative of Canada.
Hon. R. H. Campbell, representative of Canada.
Mr. Andrew Carnegie.
Mr. John Mitchell.
Dr. Albert Shaw, editor Review of Reviews.

Personal representatives of governors:

- Mr. J. C. Needham, California.
- Mr. William G. Evans, Colorado.
- Hon. Eugene Hale, Maine.
- Col. John A. Ockerson, Missouri.
- Hon. Francis G. Newlands, Nevada.
- Mr. Philip W. Ayres, New Hampshire.
- Hon. James S. Whipple, New York.
- Hon. Rosewell Page, Virginia.
- Hon. William Irvine, Wisconsin.
- Hon. Charles R. Van Hise, Wisconsin.
- Hon. William E. Mullen, Wyoming.

Representatives of the States:

Alabama—

- Hon. W. P. Lay, chairman conservation commission.
- Hon. Frank H. Lathrop, member conservation commission.
- Mr. J. B. Powell, member conservation commission.

California—

- Mr. Francis Cuttle, member conservation commission.
- Mr. Frank H. Short, member conservation commission.
- Mrs. Lovell White, member conservation commission.
- Mr. Grant Conard.

Colorado—

- Hon. Simon Guggenheim, U. S. Senator from Colorado.
- Mr. I. N. Stevens, member conservation commission.
- Mr. Clarence P. Dodge, member conservation commission.
- Mr. Ellsworth Bethel, member conservation commission.
- Mr. Brooks Irione.

Connecticut—

- Mr. Albert N. Abbee.
- Mr. R. T. Crane.

Delaware—

- Hon. Benjamin Nields, member conservation commission.

Florida—

- Hon. William H. Milton, U. S. Senator from Florida, and chairman conservation commission.
- Hon. Duncan U. Fletcher, member conservation commission.

Georgia—

- Mr. John A. Betjiman, member conservation commission.

Illinois—

- Hon. Isham Randolph, chairman conservation commission.
- Dr. H. Foster Bain, member conservation commission.
- Dr. Cyril C. Hopkins, member conservation commission.

Mr. Glenn W. Traer, member conservation commission.

Indiana—

Hon. Henry Riesenberg, chairman conservation commission.

Hon. Chas. S. Bash, member conservation commission.

Mr. Joseph D. Oliver, member conservation commission.

Mr. E. W. Wickey, member conservation commission.

Kentucky—

Mr. John B. Atkinson, member proposed conservation commission.

Mr. Wm. R. Belknap, member proposed conservation commission.

Hon. D. C. Edwards, member proposed conservation commission.

Mr. Fred W. Keisker, member proposed conservation commission.

Mr. F. C. Nunemacher, member proposed conservation commission.

Mr. J. C. Tomlin, member proposed conservation commission.

Mr. J. B. Bennett.

Gen. John B. Castleman.

Mr. A. D. James.

Mr. John W. Langley.

Col. A. T. McDonald.

Mr. Clifton J. Waddill.

Louisiana—

Hon. Henry E. Hardtner, chairman conservation commission.

Hon. Harry P. Gamble, secretary conservation commission.

Maj. F. M. Kerr, member conservation commission.

Maryland—

Mr. Bernard N. Baker, chairman conservation commission.

Prof. William Bullock Clark, member conservation commission.

Mr. Edward Hirsch, member conservation commission.

Massachusetts—

Prof. Frank W. Rane, chairman conservation commission.

Michigan—

Hon. Wm. H. Rose, chairman forestry commission.

Hon. W. B. Mershon, member forestry commission.

Hon. Wm. F. Knox.

Hon. Huntley Russell, commissioner of the state land office.

Minnesota—

Hon. F. B. Luch.

Mr. P. H. Nelson.

Mr. S. D. Works.

Mississippi—

Prof. H. L. Whitfield.

Missouri—

Mr. W. K. Kavanaugh, chairman commission on waterways.

Dr. Herman Von Schrenk, chairman commission on forestry.

Dr. William H. Black, member commission on waterways.
Mr. T. H. Herring, member commission on waterways.
Mr. W. K. James, member commission on waterways.
Mr. S. Waters Fox.

Nebraska—

Prof. G. E. Condra, chairman conservation commission.
Mr. P. H. Marlay, member conservation commission.
Mr. F. D. Wead, member conservation commission.

New Jersey—

Mr. E. B. Voorhees, chairman conservation commission.
Mr. Alfred Gaskill, state forester and member conservation commission.
Dr. Henry B. Kummel, member conservation commission.
Mr. Henry J. Sherman, member conservation commission.
Mr. Morris R. Sherrerd, member conservation commission.

New Mexico—

Hon. Solomon Luna, chairman conservation commission.
Hon. H. W. Kelly, member conservation commission.

New York—

Hon. Raymond A. Pearson, member conservation commission.
Hon. Henry H. Persons, member conservation commission.
Hon. Frederick Skene, member conservation commission.
Hon. Frederick C. Stevens, member conservation commission.

Ohio—

Mr. Jacob A. Beidler, chairman forestry bureau.

Oregon—

Hon. Joseph N. Teal, chairman conservation commission.

Pennsylvania—

Dr. J. T. Rothrock, chairman conservation commission.
Mr. Powell Evans, member conservation commission.
Mr. A. B. Farquhar, member conservation commission.
Col. Wm. S. Harvey, member conservation commission.
Hon. W. R. Smith, Member of Congress.

Rhode Island—

Mr. Henry A. Barker, chairman conservation commission.
Mr. J. Herbert Shedd, member conservation commission.
Mr. Jesse B. Mowry.

South Carolina—

Mr. E. J. Watson, chairman conservation committee.
Prof. Earle Sloan, member conservation committee.

South Dakota—

Hon. Robert J. Gamble, chairman conservation commission.
Mr. Eben W. Martin, member conservation commission.

Tennessee—

Prof. L. C. Glenn.

Utah—

Hon. O. J. Salisbury, chairman conservation commission.

Hon. A. W. Ivins, member conservation commission.

Virginia—

Hon. P. St. Julian Wilson, chairman conservation commission.

Dr. Thomas L. Watson, member conservation commission.

Hon. George W. Koener, member conservation commission.

Hon. W. E. Bibb, member conservation commission.

West Virginia—

Mr. Hu Maxwell, chairman conservation commission.

Mr. Neil Robinson, member conservation commission.

Mr. James H. Stewart, member conservation commission.

Mr. G. W. Atkinson.

Representatives of national organizations:

American Academy of Political and Social Science—

Prof. Emory R. Johnson, chairman conservation committee.

Dr. S. M. Lindsay, member conservation committee.

American Association for the Advancement of Science—

Prof. Wm. F. M. Goss, personal representative of the president.

American Association of Agricultural Colleges and Experiment Stations—

Mr. J. L. Snyder, president.

American Automobile Association—

Mr. Powell Evans, personal representative.

Mr. C. Gordon Neff, member conservation committee.

American Bar Association—

Mr. John Hinckley, secretary.

American Chemical Society—

Prof. Marston T. Bogert, president.

Dr. F. W. Clarke, chief chemist, U.S. Geological Survey, and member conservation committee.

Mr. R. B. Dole, member conservation committee.

American Civic Association—

Mr. J. Horace McFarland, president.

Mr. Clinton Rogers Woodruff, Secretary.

Mr. A. B. Farquhar, member conservation committee.

American Electrochemical Society—

Mr. Edward G. Acheson, president.

Mr. Edward R. Taylor, chairman conservation committee.

American Federation of Labor—

Mr. Samuel Gompers, president.

Mr. James O'Connell, third vice-president.

- Mr. Frank Morrison, secretary.
 American Forestry Association—
 Col. Wm. S. Harvey, member board of directors.
 American Institute of Architects—
 Mr. Cass Gilbert, president.
 American Institute of Electrical Engineers—
 Mr. John H. Finney, member conservation committee.
 American Institute of Mining Engineers—
 Mr. John Hays Hammond, president.
 American Medical Association—
 Dr. Herbert L. Burrell, president.
 Dr. J. H. Musser, chairman conservation committee.
 Dr. George W. Gay, member conservation committee.
 American Mining Congress—
 Judge J. H. Richards, president.
 Mr. E. R. Buckley, first vice-president.
 Mr. J. T. Callbreath, Jr., secretary.
 American Newspaper Publishers Association—
 Mr. John Norris, chairman conservation committee.
 American Railway Association—
 Mr. Arthur Hale, personal representative.
 American Railway Engineering and Maintenance of Way Association—
 Mr. Wm. McNab, president.
 American Scenic and Historic Preservation Society—
 Mr. Hiram J. Messenger.
 American Society of Civil Engineers—
 Mr. Chas. Macdonald, president.
 American Society of Mechanical Engineers
 Mr. Calvin W. Rice, secretary.
 Mr. Luther D. Burlingame, representative conservation committee.
 Mr. John R. Freeman, member advisory board.
 Mr. Jesse M. Smith.
 American Society for Testing Materials—
 Mr. Chas. B. Dudley, president.
 Appalachian National Forest Association—
 Hon. D. A. Tompkins, president.
 Mr. John H. Finney, secretary.
 Atlantic Deeper Waterways Association—
 Hon. J. Hampton Moore, president.
 Business Men's League of America—
 Mr. James E. Smith, president.
 Mr. Wm. F. Saunders, secretary.
 Mr. Clarence H. Howard, member conservation committee.

- Mr. Geo. W. Simmons, member conservation committee.
 Carriage Builders' National Association—
 Mr. Geo. H. Babcock, member conservation committee.
 Mr. W. P. Champney, member conservation committee.
 Conservation League of America—
 Mr. Walter L. Fisher, president.
 Mr. John F. Bass.
 Mr. Lauriston Ward.
 Farmers' National Congress—
 Hon. B. Cameron, president.
 Mr. A. C. Fuller, member executive committee.
 Mr. E. W. Wickey, member executive committee.
 General Federation of Women's Clubs—
 Mrs. F. W. Gerard, chairman committee on forestry.
 Mrs. John D. Wilkinson, chairman committee on waterways.
 Miss Laura D. Gill.
 International Tax Association—
 Mr. Lawson Purdy, vice-president.
 Mr. A. C. Pleydell, secretary.
 Interstate Inland Waterway—
 Mr. C. S. E. Holland, president.
 Interstate Mississippi River Improvement Association—
 Mr. Charles Scott, president.
 Lakes-to-the-Gulf-Deep Waterway Association—
 Mr. Wm. K. Kavanaugh, president.
 Mr. Wm. F. Saunders, secretary.
 Mr. Lyman E. Cooley, member conservation committee.
 Hon. X. O. Pindall, member conservation committee.
 Mr. Charles Scott, member conservation committee.
 Mr. James E. Smith, member conservation committee.
 Missouri River Improvement Association—
 Col. Henry T. Clarke, president.
 National Academy of Sciences—
 Dr. Ira Remsen, president.
 Prof. William Bullock Clark, chairman conservation committee.
 Prof. E. G. Conklin, member conservation committee.
 National Association of Agricultural Implements and Vehicle Manufacturers—
 Mr. Newell Sanders, chairman conservation committee.
 National Association of Audubon Societies—
 Mr. T. Gilbert Pearson, member conservation committee.
 National Association of Cotton Manufacturers—
 Mr. C. J. Woodbury, secretary.

- National Association of Manufacturers—
Mr. James W. Van Cleave, president.
- National Board of Fire Underwriters—
Mr. J. Montgomery Hare, president.
- National Board of Trade—
Mr. Frank D. La Lanne, president.
- National Business League of America—
Mr. La Verne W. Noyes, president and member conservation commission.
Mr. Victor Falkenau, chairman conservation commission.
Mr. A. B. Farquhar, member conservation commission.
- National Civic Federation—
Mr. John Mitchell, chairman trade agreement department.
- National Council of Commerce—
Mr. George L. McCarthy, member conservation committee.
Mr. H. E. Miles, member conservation committee.
Mr. Frank B. Wiborg, member conservation committee.
- National Drainage Association—
Hon. Napoleon B. Broward, president.
- National Editorial Association—
Mr. Chester Harrison, member conservation committee.
- National Electric Light Association—
Mr. Dudley Farrand, chairman conservation committee.
- National Forest Conservation League—
Hon. Samuel R. Van Sant, president.
Mr. Theodore Knappen, secretary.
Mr. W. S. Dwinnell.
- National Grange—
Mr. H. J. Patterson.
- National Hay Association—
Mr. Maurice Neizer, president.
- National Hickory Association—
Mr. H. D. Hartley, secretary and member conservation committee.
- National Irrigation Congress—
Mr. George E. Barstow, president.
- National Lumber Manufacturers' Association—
Mr. George K. Smith, secretary.
- National Municipal League—
Mr. Clinton Rogers Woodruff, secretary.
- National Slack Cooperage Manufacturers' Association—
Mr. C. M. Van Aiken, president.
- National Tax Association—
Mr. A. C. Pleydell.

Mr. Lawson Purdy.

Trans-Mississippi Commercial Congress—

Mr. Thomas F. Walsh, president.

Mr. J. T. Callbreath, Jr.

Mr. J. B. Case.

Mr. F. W. Fleming.

Mr. I. T. Pryor.

Upper Mississippi River Improvement Association—

Mr. Thomas Wilkinson, president.

Woman's National Rivers and Harbors Congress—

Mrs. Frances Shuttleworth, corresponding secretary.

Bureau chiefs and experts:

Geological Survey—

Dr. George Otis Smith, Director.

Mr. Henry Gannett, geographer national conservation commission.

Mr. Robert Follansbee.

Mr. R. B. Dole.

Dr. D. T. Day.

Mr. M. R. Campbell.

Dr. C. W. Hayes.

Mr. M. O. Leighton.

Mr. W. C. Mendenhall.

Mr. E. W. Parker.

Mr. F. B. Van Horn.

Dr. Bailey Willis.

Mr. H. M. Wilson.

Forest Service—

Mr. Wm. T. Cox.

Mr. Wm. L. Hall.

Mr. R. S. Kellogg.

Mr. A. C. Shaw.

Mr. Philip P. Wells.

Mr. E. A. Ziegler.

General Land Office—

Hon. Fred Dennett, Commissioner.

Mr. Francis W. Clements, first assistant attorney.

Mr. E. C. Finney.

Bureau of Statistics, Department of Commerce and Labor—

Dr. O. P. Austin, Chief.

Bureau of Entomology—

Dr. L. O. Howard, Chief.

Mr. C. L. Marlatt.

Dr. A. D. Hopkins.

Weather Bureau—

Prof. Willis L. Moore, Chief.

Prof. Harry C. Frankenfield.

Reclamation Service—

Mr. Morris Bien.

Indian Office—

Mr. R. G. Valentine.

Bureau of Plant Industry—

Dr. B. T. Galloway, Chief.

Bureau of Corporations—

Mr. W. B. Hunter.

Biological Survey—

Dr. C. Hart Merriam, Chief.

Bureau of Statistics, Department of Agriculture—

Hon. Victor H. Ohlsted, Chief Statistician.

Bureau of Fisheries—

Mr. Hugh M. Smith.

Office of Experiment Stations—

Dr. A. C. True, Director.

Bureau of Chemistry—

Dr. H. W. Wiley, Chief.

Bureau of Soils—

Dr. Milton Whitney, Chief.

Delegates at Large:

Mr. Victor C. Alderson, Colorado.

Mr. Geo. N. Babb, New York.

Mr. R. Dan Benson, Pennsylvania.

Mr. Chas. W. Bernhardt, Georgia.

Mr. Nathan D. Bill, Massachusetts.

Mr. George Black, Washington.

Mr. W. F. Black, Alabama.

Mr. L. W. Brown, Virginia.

Mr. W. P. Brown, Washington.

Mr. A. W. Butler, Maine.

Mr. Joseph L. Cahall, Delaware.

Mr. W. M. Cameron, Tennessee.

Mr. Thomas W. Carmichael.

Mr. S. H. Chappell, Georgia.

Mr. R. F. Clerc, Louisiana.

Mr. Geo. Ward Cook, Massachusetts.

Mr. S. A. Cosulich, Louisiana.

Mr. S. H. Cowan, Texas.

Mr. John Craft, Alabama.

Mr. Thomas F. Cunningham, Louisiana.
Mr. A. W. Damon, Massachusetts.
Mr. J. A. Delfeker, Wyoming.
Mr. Gould Dietz, Omaha.
Mr. Theodore Dwight, New York.
Mr. C. H. Ellis, Louisiana.
Mr. B. F. Eshleman, Wyoming.
Mr. John W. Faxon, Tennessee.
Mr. Chas. D. Gates, Kentucky.
Dr. Edward Everett Hale, Washington, D. C.
Mr. Henry R. Hayes, Massachusetts.
Mr. W. S. Holman, Texas.
Mr. E. S. Johnson, Georgia.
Mr. P. G. Johnston, Idaho.
Mr. Charles P. Johnston, Louisiana.
Mr. H. S. Keathoper, Alabama.
Mr. M. N. Kline, Pennsylvania.
Mr. Victor M. Lefebere, Louisiana.
Mr. Sidney F. Lewis, Louisiana.
Mr. H. H. Little, Virginia.
Mr. Wm. McCarroll, New York.
Mr. J. T. McClellan.
Mr. V. Manvin, Louisiana.
Mr. Josiah Marvel, Delaware.
Mr. H. J. Messenger, Connecticut.
Mr. Roy Miller, Texas.
Mr. R. A. Mitchell, Alabama.
Mr. S. F. Mosle, Texas.
Mr. W. J. Nebb, Georgia.
Mrs. Mary M. North, Maryland.
Mrs. Lina Simpson Poffenboyer, West Virginia.
Mr. Wm. F. Prouty, Alabama.
Mr. J. T. Pryor, Texas.
Mr. C. E. Rafferty, Washington, D. C.
Hon. F. A. Richards, Massachusetts.
Mr. Franklin C. Robinson, Maine.
Mr. G. A. Rogers, Kansas.
Mr. W. B. Royster, Tennessee.
Mr. F. D. Ryan, Washington.
Mr. C. G. Smith, New York.
Mr. H. C. Smith, Louisiana.
Mr. Edwin A. Start, Massachusetts.
Mr. Charles J. Swift, Georgia.

Mr. E. C. Taleny, Mississippi.
Mr. S. Taliaferrio, Texas.
Mr. M. B. Trezevant, Louisiana.
Mr. Louis Éd. Vanoff, Louisiana.
Mr. J. S. Warren, Tennessee.
Mr. J. H. Woods, Massachusetts.
and

The National Conservation Commission.

GIFFORD PINCHOT,
Chairman of the Joint Conference.

THOMAS R. SHIPP,
Secretary of the Joint Conference.



KNOXVILLE, TENNESSEE

THE JURY OF AWARDS HAS CONFERRED

A *Gold Medal*

To *The Utter Manufacturing Company*

For *Best Display of Pianos and Organs*

In the Southern States Building

This *16th* Day of *September*, 1913.

T. J. Wright

PRESIDENT

Sam E. Hill

CHAIRMAN

W. M. Goodman

SECRETARY

W. E. Mynderse

COMMITTEE ON
AWARDS

J. B. Leary

Specimen of Diploma Entitling Exhibitor to Gold Medal for Meritorious Products Displayed.



KNOXVILLE, TENNESSEE

THE JURY OF AWARDS HAS CONFERRED

A *Diploma*

To *Baird-Cates Company*

For *Best Family Range Exhibit, The Range "Eternal"*

Manufactured by Engman - Matthews Range Company, South Bend, Ind.

This 31st Day of October, 1913.

F. A. Wright

PRESIDENT

Sam E. Hill

CHAIRMAN

W. M. Goodman

SECRETARY

W. E. Mynderse

COMMITTEE ON
AWARDS

J. B. Lowry

Specimen of Diploma Entitling Exhibitor to Gold Medal for Meritorious Products Displayed.

THE BUILDERS OF THE EXPOSITIONS HELD AT KNOXVILLE

The men and women who financed and carried through successfully three of the largest expositions ever held in the South; the Conservation Exposition, September-October, 1913, being the first of its kind and of National scope and importance.

AARONSON, JOSEPH, Wholesale dry goods, (New York.)

ACUFF, J. M., Rapid Transfer Company.

ADCOCK, J. S., Firm of Lewis & Adcock.

AGEE, C. S., Secretary and Treasurer Masters' Patent Flooring Co.

AHLER, HERMAN, Treasurer Ahler Plumbing Co.

AHLER, J. A., President Ahler Plumbing Co.

AKERS, B. W., Jeweler and Optician.

AKERS, EDWIN, Proprietor Akers Auction House.

ALBERS, EDWARD S., Secretary Sanford Chamberlain & Albers Co., wholesale drugs.

ALEXANDER, DR. EBEN, Physician.

ALLEN, CHAS. M., Superintendent Nickerson Mfg. Co.

ALLEN, F. L., Manager Standard Oil Co., of Louisiana

ALLEN, JOHN M., President John M. Allen Co.

ALLEN, JOHN M., JR.

ALLEN, W. F., Assistant Secretary and Treasurer Appalachian Exposition and Auditor National Conservation Exposition Co.

ALIENSWORTH, J. T., With International Harvester Co. (Evansville, Ind.)

ANDERSON, MRS. ELIZA.

ANDERSON, G. W., With Nickerson Mfg. Co.

ANDERSON, J. H., Vice-Pres. & Treasurer Jim Anderson Co.

ANDERSON, JAS. A., President Jim Anderson Co.

ANDERSON, JAS. H., President Anderson, Dulin, Varnell Co., Member Board of Directors Appalachian Exposition, 1911.

ANDREWS, FOREST W., Firm of Luckey, Fowler & Andrews, Attorneys.

APOSTOLIS, V., Proprietor Busy Bee Restaurant.

ARMISTEAD, E. D., Secretary Square Drug Co.

ARMSTRONG, CHAS. G., Manager Armstrong Clothing Co.

ARNOLD, M. D., President Arnold, Henegar, Doyle Co., wholesale shoes; President Ap-

palachian Knitting Mills; Vice-President Appalachian Exposition, 1911.

ARNSTEIN, M. B., President M. B. Arnstein Co., Retail dry goods, etc.

ASHE, J. J., President Knoxville Savings Bank; Proprietor Ashe's Restaurant.

ATKIN, C. B., President C. B. Atkin Co., Mantel Mfrs. and Atkin Hotel Co.

AUDIGIER, L. B., Vice-President S. B. Newman Co., printers; chairman Poultry Committees Appalachian Expositions.

AULT, H. T., President Merchants Bank.

AULT, W. G., Firm of McDaniel & Ault.

AUSTIN, JOHN L., City Revenue Collector.

AYRES, DR. BROWN, President University of Tennessee.

BACON, D. C., Treasurer T. E. Burns Co., retail grocers.

BACON, W. J., Secretary-Treasurer Littlefield & Steere Co., candy manufacturers.

BAKER, D. F., Secretary C. M. McClung & Co., wholesale hardware.

BAKER, L. M. G., Firm of Lewis & Baker, attorneys.

BAKER, W. C., Baker Mfg. Co.

BAKER, W. J., Assistant Secretary & Treasurer Knoxville Brick Co.

BAIRD, W. W., Firm of Baird, Cates & Co., ranges, stoves, hardware, etc.

BARBER, CHAS. J., Architect.

BARBER, GEO. F., Firm of Barber & Ryno, architects.

BARBER, MANLEY D., President Reliance Building Co.

BARGER, J. N., Junk dealer.

BARNETT, H. M., Secretary-Treasurer Farris, Fuller, Crenshaw Co., wholesale notions.

BARNETT, J. W.

BARNETT, W. H.

BARRETT, HUGH L., Ky. Lithographing Co. (Louisville.)

BART, MORRIS, Wholesale notions.

BEAMAN, CLARENCE, Firm of Beaman Bros., retail shoes.

BEAMAN, O. C., Firm of Beaman Bros.

BEAN, J. H., Treasurer Bean, Warters & Co., printers.

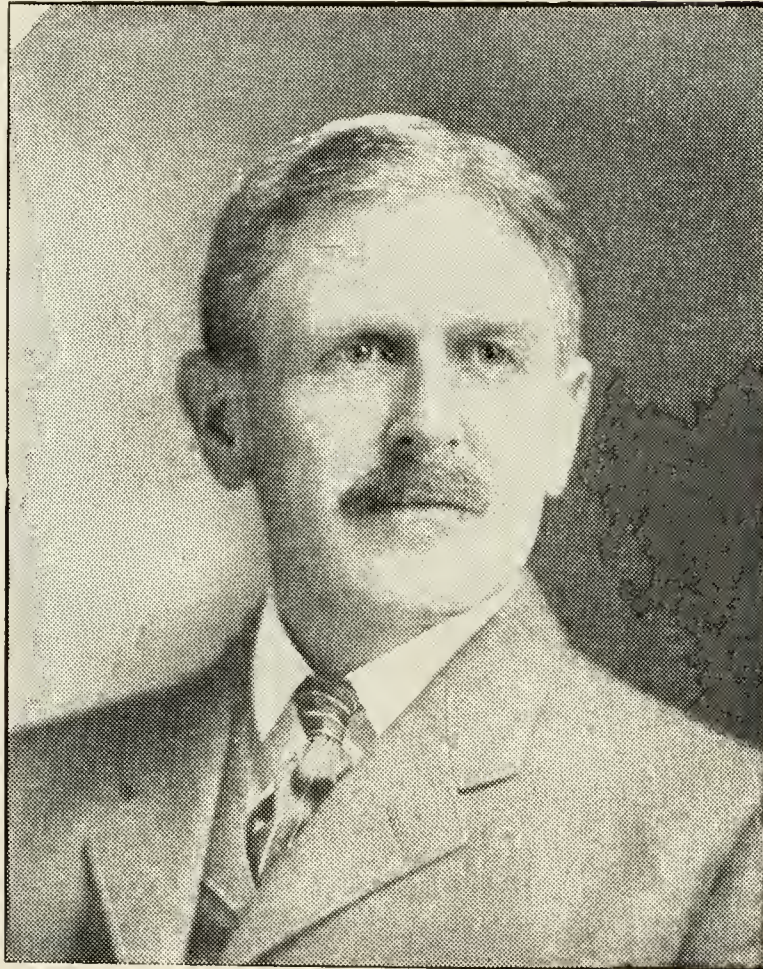


Photo by Knaffl & Brakebill.

Wm. J. OLIVER

PRESIDENT FIRST APPALACHIAN EXPOSITION, 1910

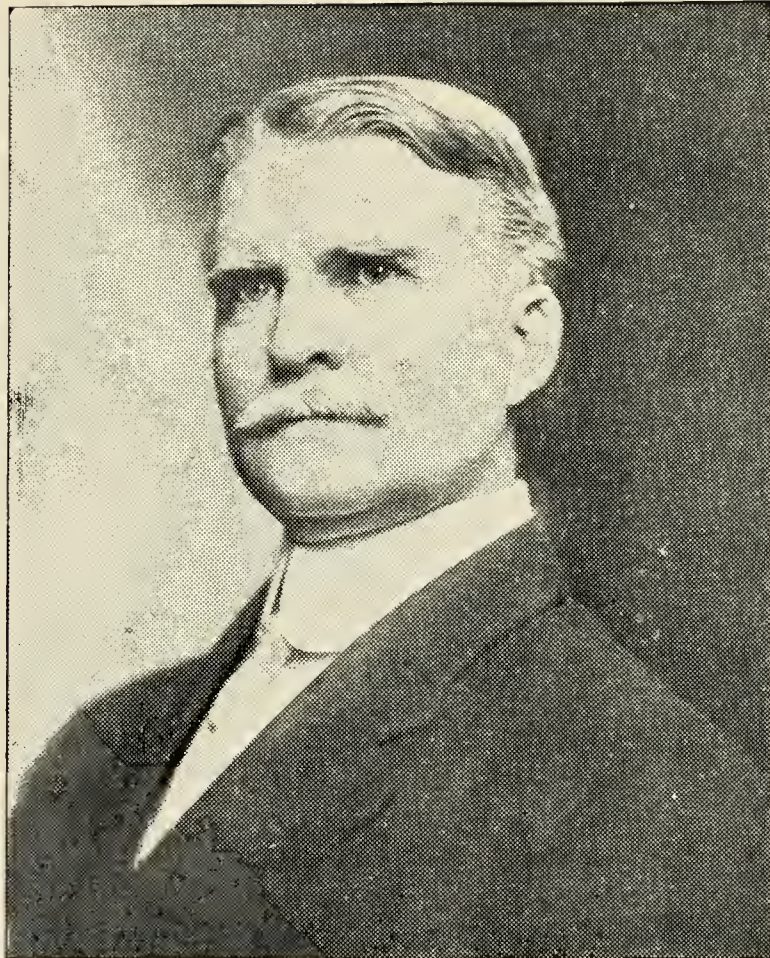


Photo by Knuffl & Brakebill.

COL. L. D. TYSON
PRESIDENT APPALACHIAN EXPOSITION, 1911



GEO. E. HELM
1ST V. PRES.



CARY F. SPENCE
4TH V. PRES.



W. J. SAVAGE
2ND V. PRES.



JESSE THOMAS
3RD V. PRES.

Photos by Knaffl & Brakbill.

VICE-PRESIDENTS APPALACHIAN EXPOSITION, 1910

BEARDSLEY, C. D., Manager Tennessee Inspection Bureau.
 BECK, J. C., President Beck-Tarver Co., farm machinery and implements.
 BEELER, U. D., Firm of Suttle & Beeler, clothing manufacturers.
 BEILER, I., Fruit store.
 BICKLEY, C. T., Firm of Bickley, McClure & Co., wholesale clothing.
 BICKLEY, E. L., Firm of Bickley, McClure & Co.
 BICKLEY, W. E., Firm of Bickley, McClure & Co.
 BLACKBURN, C. A., Secretary-Treasurer Knoxville Lumber & Mfg. Co.
 BLANKENSHIP, LEON H.
 BLAUFELD, J., Cigar store.
 BLOOM, M., Firm of H. Bloom & Co.
 BOIES, DR. W. A., Physician.
 BOLT, G. W., Sheriff of Knox County.
 BONHAM, F. T., Assistant Business Manager Journal & Tribune.
 BONHAM, W. M., Treasurer C. M. McClung & Co., Member Committee on Publicity and Promotion, Appalachian Exposition, 1910.
 BONDURANT, H. C., Wholesale groceries.
 BORCHES, MRS. J. E., Broker.
 BORIGHT, WASHINGTON, President Knoxville Real Estate Exchange.
 BOWMAN, EUGENE.
 BOWMAN, R. L., With J. M. Leek & Co.
 BOYD, HORACE M., Restaurant.
 BOYD, JOHN L., President East Tennessee Savings Bank; Manager Proctor Coal Co.
 BOYD, DR. S. B., Physician.
 BOYD, SAM B., Chief Knoxville Fire Department.
 BOWER, CHRISTIAN, Dealer second-hand goods.
 BRABSON, DR. B. D., Dentist.
 BRADFORD, GEO. E., Secretary-Treasurer Deaver, Kennedy Co.; President Commercial Club.
 BRADLEY, W. C., With Dodson-Gillespie Shoe Co.
 BRAKEBILL, CLAS., Firm of Brakebill & Hamilton.
 BRAKEBILL, J. H., Firm of Knaff & Brakebill, photographers.
 BRANDAU, H. L., 2nd Vice-President Swan, Sullins, Brandau Co., wholesale grocers.
 BRANNER, H. B., President Third National Bank.
 BRISCOE, DANIEL, SR.
 BRISCOE, J. E., Vice-President Daniel Briscoe Co., wholesale dry goods; member Board of Directors Appalachian Exposition, 1911.
 BRISCOE, P. J., JR., Briscoe Motor Car Co.
 BRISCOE, P. J., SR.

BROOKS, L. L., Contractor.
 BROOKS, JNO. M., Insurance.
 BROOKS, JAS., Firm of Claiborne & Brooks, building contractors.
 BROOKS, P. M., Traveling salesman.
 BROOME, PROF. F. H., Secretary Agricultural Experiment Station, University of Tennessee.
 BROWN, CHAS., Manager Pryor Brown Stables.
 BROWN, DUDLEY F., Vice-President Davis & Susong Co.
 BROWN, FRANK, With Claiborne, Tate & Cowan, clothing manufacturers.
 BROWN, JOHN S., Treasurer The Fulton Company.
 BROWN, PRYOR, Proprietor Pryor Brown Stables.
 BROWN, T. G., President Brown-Ross Shoe Company.
 BROWNLEE, J. T., Secretary & General Manager Standard Knitting Mills.
 BROWNLEE, J. WYLIE, President Knoxville Board of Trade; Vice-President National Conservation Exposition.
 BROWNLEE, W. M., Secretary-Treasurer McMillan & Hazen Co., wholesale shoes.
 BROWNLOW, J. B., Firm of J. B. & W. G. Brownlow, real estate.
 BROWNLOW, W. G., Firm of J. B. & W. G. Brownlow, real estate.
 BRIMER, D. W., Firm of Brimer & England Bros., building contractors.
 BROWN, RALPH W., Cashier Holston National Bank.
 BRUMBACK, JOHN F., Manager C. D. Kenney Co., teas, coffees, etc.
 BUNTING, LINDSAY, Firm of Kennedy & Bunting.
 BURKHART, JOHN M., President American Clothing Co.
 BURNS, T. E., President T. E. Burns Co., retail grocers.
 BURROWS, A. Y., Attorney at Law.
 BUTLER, A. A., Meat stall.
 CALDWELL, D. B., Firm of Caldwell, Nance & Co., clothing, etc.
 CALLAHAN, GEO. W., President and Manager Callahan Construction Company; President Knoxville Pure Milk Co.; Vice-President Knox County Bank & Trust Co.
 CALLAN, F. J., Tailor.
 CALLAWAY, J. J., Vice-President and General Manager Gaut-Ogden Co., office supplies, etc.
 CAMP, E. C., President and General Manager Coal Creek Coal Company.
 CAMP, E. N. (New York.)



O. M. TATE.
TREASURER.

W. M. GOODMAN
SECRETARY & DIST. GEN'L.

W. R. EMERT, AUDITOR

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OFFICERS FIRST APPALACHIAN EXPOSITION, 1910

CAMP, G. M., Superintendent Coal Creek Coal Co.
CAMP, H. N., Secretary-Treasurer Coal Creek Coal Co.
CARMICHAEL, H. N., Firm of Chandler & Co., builders' supplies.
CARMONY, J. S., With C. L. Welsh & Co.
CARPENTER, C. M., With R. G. Dun & Co.
CARPENTER, D. A., President Knoxville Brick Co.
CARPENTER, FRANK A., Manager Paekard Garage.
CARSON, J. B., Firm of Carson & Son.
CARSON, T. C., Firm of Carson & Son.
CARTER, JNO. C., Vice-President American National Bank.
CARTER, F. A. (Sweetwater, Tenn.)
CARTER, S. V., Cashier East Tennessee National Bank; Treasurer National Conservation Exposition.
CARTY, N. E., Retail cigars.
CASH, ARCHIBALD, Firm of Neal & Cash.
CATES, R. L., Firm of Baird, Cates & Co., Stoves, ranges, etc.
CATES, C. T., JR., Firm of Shields, Cates & Mountcastle, attorneys.
CAULKINS, DR. DOUGLAS, Physician.
CHALKER, HAMILTON L., Manager Chalker Portrait Co.
CHAMBERLAIN, F. W., General Agent Penn. Mutual Life Insurance Co.
CHAMBERLAIN, W. P., President Sanford, Chamberlain & Albers Co., wholesale druggists.
CHAMBLISS, DAN M., President and General Manager Kuhlman & Chambliss Co., druggists; Vice-President Knoxville Pure Milk Co.; member Board of Directors Appalachian Exposition, 1911.
CHANDLER, W. P., Assistant to Knoxville Commissioner of Finance.
CHANDLER, VIRGIL P., President Chandler & Co., builders supplies.
CHAPMAN, D. C., President Chapman Drug Company; member Board of Directors Appalachian Expositions, 1910-11.
CHAPMAN, MRS. SUE JOHNSTON.
CHASTAIN, DAVID T., 2nd Vice-President Chastain, Smith & Vestal Co., wholesale grocers.
CHASTAIN, W. J., President Chastain, Smith & Vestal Co.
CHAVANNES, ADRIAN L., President Chavannes Lumber Co.
CHILDRESS, GEO. C., Firm of Childress & Hunter; Chemist Chapman Drug Co.
CHOATE, ROBT. R., General Manager Knoxville Gas Co.
CIANCIOIA, JOE, Fruit stand.

CLAIBORNE, J. F., Firm of Claiborne & Brooks.
CLAIBORNE, W. T., President Claiborne, Tate & Cowan, clothing manufacturers.
CLANTON, JOHN D., With Knoxville Sentinel.
CLARK, E. C., With Coal Creek Coal Co.
CLARK, FRANK E., Firm of Clark & Jones, music, pianos, organs, etc.
CLARK, W. A., Vice-President and Treasurer American Clothing Co.
CLANTON, PROF. P. P., U. S. Commissioner of Education.
COCHRAN, A. C., President East Tennessee Brewing Co.
COCHRAN, E. B., Vice-President East Tennessee Brewing Co.
COCHRAN, J. M., Secretary-Treasurer East Tennessee Brewing Co.
COLEMAN, L. L., President and General Manager Jellico Coal Co.
CONDON, S. P., Firm of Condon, Graham & Millner.
CONSTANTINE, CASTER J., Firm of Constantine & Palas.
COOK, H. G., Firm of H. J. Cook Co., Jewelers and opticians.
COOK, H. J., Firm of H. J. Cook Co., Jewelers and opticians.
COOLEY, JAS. L., Firm of Cooley & Woods.
COOPER, H. T., Secretary-Treasurer Whittle Trunk & Bag Co.
COOPER, W. E., Manager Southern Coal & Coke Co.
CONNOR, ED D., Chief of Police.
CONNOR, J. J.
CONNOR, J. A., Vice-President Lowe-Horde Hardware Co.
CONNOR, P. D. (Clinton, Tenn.)
CORCORAN, T. E., Knoxville Fire Department.
CORKLAND, GERSON, Retail dry goods.
CORNELL, PROF. C. S., Director Department of Music, National Conservation Exposition; member Board of Directors Appalachian Exposition, 1911.
CORUM, JOHN R., Blacksmith.
COTTON, E. C., Assistant Entomologist, Agricultural Station, University of Tennessee.
COTTRELL, DR. A. J., Dentist.
COTTRELL, C. C., Retail wall paper.
COWAN, CHAS. M., Manufacturer bluing.
COWAN, MRS. J. D.
COWAN, J. H., Firm of Claiborne, Tate & Cowan.
COX, T. B., Secretary-Treasurer East Tennessee Packing Co.; member Board of Directors Appalachian Exposition, 1911.
COX, JOHN A., Contracting carpenter.



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COMMITTEE ON PUBLICITY AND PROMOTION, APPALACHIAN EXPOSITION, 1910

COX, W. H., Vice-President McCulley Hat Co.

COXE, JOSEPH C.

COYKENDALL, EDWARD, Secretary-Treasurer Regal Mfg. Co.

COYKENDALL, J. D., Manager Regal Mfg. Co.

COYKENDALL, S. D., President Regal Mfg. Co.

CRISWELL, J. B., Sales Manager Haynes, Henson Shoe Co.; Chairman Department of Publicity and Promotion, Appalachian Exposition, 1910.

CRAWFORD, JAS. M., Farmer.

CRAWFORD, SAMUEL B.

CROUCH, C. W., Florist.

CROUCH, W. H., Musician.

CRUDGINGTON, J. W., Secretary-Treasurer, S. B. Newman & Co., printers; Assistant Treasurer Appalachian Exposition, 1910.

CRUMBLISS, J. G., United States Marshall; Director Horse Show National Conservation Exposition.

CRUMP, R. L. (New Orleans.)

CRUZE, C. C., Vice-President and Manager Cruze, Lyons, Hayes Co.

CULLEN, CHAS. C., President Chas. C. Cullen & Co.

CULTON, J. W., President Murray Construction Co.

CURETON, EDMOND H., President Cureton, Kennedy & Callaway, retail clothing.

CURTIS, HENRY W., Jeweler.

DAIL, DR. V. C., Specialist.

DAILEY, W. E., Treasurer Wiggins & Dailey Co., retail grocers.

DALLAS, B. B., Boiler manufacturer.

DALLAS, CHAS. F.

DANIEL, H. M., Secretary-Treasurer Edelen Transfer Co.

DAVIS, A. S. J., President and Treasurer Modern Tiling Co.

DAVIS, E. J. (estate.)

DAVIS, DR. CHAS. HUFF, Specialist.

DAVIS, GEO. H., Chairman Executive Committee Knoxville Railway & Light Co.

DAVIS, J. BRUCE, Secretary-Treasurer Davis & Susong Co.

DAVIS, P. H., With Wright Hardware Co.

DAVIS, HOWELL J., President and Treasurer East Tennessee Coal Co.

DAVIS, G. B., Firm of Davis Bros.

DAVIS, J. W., Firm of Davis Bros.

DAY, ALFRED B., President Sanford-Day Iron Works.

DEANE, THOS. A., Secretary-Treasurer Appalachian Mills.

DEARMOND, A., Salesman.

DEARMOND, J. P., Retail grocer.

DEAVER, J. L., President Deaver-Kennedy Co., wholesale dry goods; Vice-President Appalachian Exposition, 1911.

DELANEY, CHAS., Manager Stratford Hotel.

DEPUE, E. H., Knoxville Steam Laundry.

DEPUE, H. A., Knoxville Steam Laundry.

DICK, A. C., Firm of Dick, McMillan & Co.

DICK, HAL., Retail grocer.

DODSON, W. R., Firm of Dodson-Gillespie Shoe Co.

DOLL, GEORGE, President Doll & Co., books, office supplies, etc.

DOLL, R. M., Firm of Doll-Mynderse Co., real estate.

DOMINICK, G. J., Secretary A. Greenwood & Co.

DONALDSON, W. J., Attorney at Law.

DONAHUE, JOHN, President and Manager Hall & Donahue Coffin Co.

DOSSER, A. T., General Manager Daniel Briscoe Co., member Board of Directors Appalachian Exposition, 1910.

DOUGLASS, E. L., Manager Jellico Coal Mining Co.

DRAKE, J. H.

DUGGAN, S. W., Secretary Poplar Creek Coal Co.

DULIN, H. L., Vice-President Anderson, Dulin, Varnell Co., wholesale dry goods, etc.

DUKES, W. T., Contractor.

DUNCAN, JOHN G., President John G. Duncan Co., machinery.

DUNCAN, W. T., Knoxville Fire Department.

DUNN, J. M., Firm of Dunn & Sou, building contractors.

DUNN, O. M., Firm of Dunn & Sen.

DUPES, J. E., Manager Rowe Transfer Co.

EDELEN, J. W., President Edelen Transfer & Storage Co.

ELLIS, W. C., Manager S. H. Kress & Co.

ENGERT, FRED A., Firm of Engert & House.

ENGLAND, B. R., Brimer & England Bros. building contractors; member Board of Directors Appalachian Exposition, 1911.

ENGLAND, J. S., Brimer & England Bros.

EMERSON, J. L. (Athens, Tenn.)

EVERETT, W. J., Secretary Jellico Coal Mining Co.

FAIR, FLORENCE E., Secretary Fair Foundry Co.

FAIR, JAS. E., President Fair Foundry Co.

FANZ, IGNAZ, President Fanz Packing Co.

FARMER, W. H., With Southern Railway Co.

FARRIS, J. E., Vice-President Farris, Fuller, Crenshaw Co., wholesale notions.



C.H. GORDON
MINES & MINERALS

M. JACOB
LIVE STOCK

J. R. GRAF
ARCHT MAIN BLDG.

LLOYD BRANSON
ART

JOHN A. JONES
AGRICULTURE

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CHAIRMEN COMMITTEES, APPALACHIAN EXPOSITION, 1910

FARRIS, SAMUEL B., President Farris, Fuller, Crenshaw Co., wholesale notions.
FENTON, H., Manager Credit Clearing House.
FERGUSON, W. B., Vice-President W. J. Savage Co.
FERRELL, J. W., Firm of J. W. Ferrell & Co.
FERRIS, PROF. CLAS. E., University of Tennessee.
FINKLESTEIN, MAX, Proprietor Globe Clothing Co.
FITZGERALD, J. C., Real Estate.
FITZGERALD, JOHN T., Secretary Knoxville Saw Mill Co.
FLENNIKEN, FRANK, Insurance.
FLENNIKEN, JNO. W., City Commissioner of Streets and Public Improvements.
FLENNIKEN, M. F., Insurance; member Board of Directors Appalachian Exposition, 1911.
FLOYD, F. F., Vice-President Jellico Coal Co.
FOSTER, E. J., President Foster Bros. & Barnett Co.
FOX, J. W.
FOX, L. E., Knoxville Fire Department.
FIRESTONE, B. R., President Racy Cream Co.
FISHER, F. L., President East Tennessee National Bank.
FREEL, CLAS.
FREEMAN, A. L., Vice-President Chapman Drug Co.
FRALEY, JOE, Proprietor Fraley Hotel.
FRANTZ, JOHN H., Firm of Cornick, Frantz, McConnell & Seymour, attorneys.
FRAZER, CAPT. J. L., Knoxville Fire Department.
FRY, C. O., Secretary-Treasurer McCulley Hat Co.
FUNK, CLAS. M., Secretary-Treasurer W. J. Savage Co.; Treasurer Atlas Marble Co.

GABORRY, C. A., Knoxville Fire Department.
GAINES, AMBROSE, President Imperial Shoe Co.
GALBRAITH, H. H., Firm of Galbraith Bros., real estate.
GALBRAITH, J. J., Firm of Galbraith Bros.
GALLAHER, G. H., Vice-President The H. T. Hackbey Coal Co.
GALYON, EUGENE, President Knoxville Lumber & Mfg. Co.
GALYON, L. A., Contractor.
GARDNER, FRANCIS D.
GARRETT, E. FRANK, District Manager Cumberland Telephone Co.
GASS, W. H.

GAUT, JOS. P., President Holston National Bank; President Gaut-Ogden Co., Secretary-Treasurer Pruden Coal Co.
GATLIFF, DR. A., President Southern Coal & Coke Co.
GAVIN, M., Secretary Coal Creek Mining & Mfg. Co.
GENTRY, R. B., Vice-President Procter Coal Co.
GEORGE, ALBERT, Firm of S. H. George & Sons, dry goods, etc.
GEORGE, EDGAR, Firm of S. H. George & Sons, dry goods, etc.
GEORGE, SOL. H., President S. H. George & Sons, dry goods, etc.
GEORGE, SOL. M., Firm of S. H. George & Sons, dry goods, etc.
GERVIN, W. A., Brick contractor.
GETAZ, JAS. L., Firm of David Getaz, Son & Co., building contractors.
GETTYS, R. P., Firm of Kyle-Gettys Co.
GIBB, C. R., Firm of Gibbs & Maloney, real estate.
GIBSON, R. K., R. K. Gibson & Co., brokers; President Acme Electric Co.
GIFFIN, S. B., Trustee Knox County.
GILLIN, CHAS. A., Physician, Secretary-Treasurer City Garage & Transfer Co.
GILLIN, CHAS. H., President City Garage & Transfer Co.
GILLENWATERS, W. M., Traveling salesman.
GILLESPIE, E. M., Firm of Dodson-Gillespie Shoe Co.
GILLESPIE, E. W., Machinery, etc.
GILLESPIE, F. A., Firm of Dodson-Gillespie Shoe Co.
GILLESPIE, JOHN K., Firm of Gillespie, Shields & Co., wholesale clothing.
GOFORTH, H. R., Vice-President J. Allen Smith & Co.
GOODMAN, W. H., President Roddy-Goodman Co., candy manufacturers.
GOODMAN, W. M., Director General National Conservation Exposition.
GOTHARD, E. C., Superintendent of Agents, Mass. Mutual Life Insurance Co.
GOUFFON, CLAS., Proprietor Gouffon Transfer Co.
GRAF, HERBERT R., Architectural Designer, R. F. Graf & Sons, architects.
GRAF, J. R., Architectural Designer, R. F. Graf & Sons, architects.
GRAF, R. F., Supervising Architect, R. F. Graf & Sons, architects.
GRANT, E. E., Proprietor The Fashion.
GRAY, A. C., Gray Sign Co.
GRAY, C. B., Gray Sign Co.
GRAY, C. R., Gray Sign Co.
GREDIG, A. E., Firm of Gredig & Ijams.



Photo by Knaffl & Brakebill.

MRS. H. W. HALL

PRESIDENT WOMAN'S BOARD, FIRST APPALACHIAN EXPOSITION, 1910

GREENE, JOHN T., Manager Crane & Co.
GREEN, JOHN W., Firm of Green & Webb, attorneys.
GREENWOOD, ALBERT, President A. Greenwood & Co., and Greenwood Adv. Co.
GRIDLEY, H. C.
GROVES, ARTHUR, President Jellico Coal Mining Co.
GRIMM, A. C., Attorney at Law.

HACKER, Ed, Stenographer.
HACKNEY, H. B., Manager Hackney Coal Co.
HALE, N. W., President Knoxville Nursery Co.
HALL, HERBERT W., Secretary-Treasurer Hall & Donahue Coffin Co.
HALL, J. S., Secretary-Treasurer J. S. Hall & Sons, retail clothing.
HALL, L. S., President L. S. Hall Co., retail shoes.
HALL, W. L., President Hall, Stephenson Co., retail furniture.
HALL, WILL S., President J. S. Hall & Sons; Vice-President Wright Hdwr. Co.
HAMILTON, HOMER, Firm of Brakebill & Hamilton.
HANDLEY, OSCAR, Secretary Anderson, Dublin, Varnell Co.
HANNA, H. H., President The McTeer Co.
HANNAN, R. H. (Maryville, Tenn.)
HANNIFIN, JAS. A., Plumber.
HARBISON, W. W., President Harbison Shoe Co.
HARRIS, J. E., Produce merchant.
HARRELL, G. M., Proprietor Harrell Transfer Co.
HARRELL, DR. J. G., Dentist.
HARRINGTON, T. R., Retail grocer.
HARRISON, W. E., Secretary-Treasurer Harrison Mfg. Co.
HARRISON, W. MORRIS, President Harrison Mfg. Co.
HART, H. A., Real estate and loans.
HARVEY, C. H., President Knoxville Railway & Light Co.; President Fountain City Co.; President L. S. Hall Co.; Fourth Vice-President National Conservation Exposition.
HASSON, C. S., Vice-President House-Hasson Hardware Co.
HAUN, FLOYD E., Cashier Knoxville Savings Bank.
HAYES, J. W., With M. M. Newcomer & Co.
HAYES, L. A., Secretary Cruze-Lyons-Hayes Co., hardware, etc.
HAYNES, FRANK M., President Haynes, Henson Shoe Co.; President Bon Jellico Coal Co.; President Knoxville Sentinel Co.
HAYNES, P. R., Meat market.

HAYNES, T. H. (Middlesboro, Ky.)
HAYES, T. J. T., With Southern Railway Co.
HAZEN, ASA, Vice-President McMillan & Hazen Co., wholesale shoes.
HAZEN, R. S., President and General Manager Hazen, Trent & Harrell Co., wholesale grocers; member Board of Directors Appalachian Exposition, 1910, and Board of Directors National Conservation Exposition.
HAZEN, W. C., Real estate.
HEALEY, H. O., Secretary Victoria Marble Co.
HEICKEL, S. G., Knoxville Fire Department.
HEINE, ARNOLD B., Arnold B. Heine & Co. (New York.)
HEINS, W. J., Jeweler.
HEISKELL, HON. S. G., Mayor of Knoxville.
HENDERSON, C. W., President C. W. Henderson Co., Seeds, etc.
HENDERSON, J. L. (Powell Station, Tenn.)
HENDERSON, DR. J. D., Physician.
HENDERSON, W. B., General Agent, Union Central Life Insurance Co.
HELM, GEO. E., President King Mantel & Furniture Co.; Secretary Cumberland Property Co.; Vice-President Appalachian Exposition, 1910.
HENDERSON, J. H., Secretary and Treasurer Tennessee Mill Supply Company.
HENEGAR EDWARD, Secretary and Treasurer Arnold, Henegar, Doyle Co.; Vice-President City National Bank; Chairman Publicity Committee National Conservation Exposition.
HENRY, E. B., Building contractor.
HENSLEY, JAS. A., City Commissioner of Public Safety.
HENSON, MRS. MARTHA.
HERRELL, S. J., With Knoxville Railway & Light Co.
HEWETT, F. C., Secretary-Treasurer Spence Trunk & Leather Co.
HICKMAN, J. H., Treasurer Knoxville Lithographing Co.
HICKMAN, JOHN C., Secretary-Treasurer Chapman Drug Co.
HICKMAN, J. E., Firm of Hickman & Johnson, fire insurance.
HICKS, JOSEPH C., Prop. Hicks Sheet Metal Works.
HICKS, J. O., Firm of Hicks & Jamerson, wholesale dry goods.
HILL, PROF. C. O., Professor Chemistry University of Tennessee.
HILL, DR. OLIVER W., Physician.
HILL, SAM E., City Commissioner of Finance.



Photos by Knaffl & Brakebill.

MEMBERS BOARD OF DIRECTORS, APPALACHIAN EXPOSITION, 1911

- | | | |
|----------------------|-----------------------|--------------------|
| 1—Dr. T. ap R. Jones | 9—Lawrence D. Tyson | 16—S. R. Rambo |
| 2—Prof. H. A. Morgan | 10—Sanford H. Cohen | 17—T. A. Wright |
| 3—M. D. Arnold | 11—Cary F. Spence | 18—John A. Jones |
| 4—C. W. Henderson | 12—W. F. Allen | 19—J. P. Roddy |
| 5—A. F. Sanford | (Asst. Sec. & Treas.) | 20—Dr. M. Jacob |
| 6—D. M. Chambliss | 13—A. G. Hope | 21—J. W. Brownlee |
| 7—J. G. Sterchi | 14—M. M. Newcomer | 22—Wiley L. Morgan |
| 8—G. F. Milton | 15—Charlton Karns | |

HINTON, THOS. J., President & Manager Hinton Laundry Co.
HISCOCK, JAS. W., Vice-President Fair Foundry Co.
HODGES, S. E., Attorney at Law.
HOGAN, W. D., Vice-President Masters Patent Flooring Co.
HOOD, JOHN E., Vice-President Knoxville Gas Co.
HOOD, W. P., Superintendent Knoxville & Augusta Railroad.
HOPE, ALBERT G., Firm of Hope Bros., jewelers.
HOPE, DAVID J., Firm of Hope Bros.
HOPE, JAMES D., Firm of Hope Bros.
HOPE, JOHN W., Firm of Hope Bros.
HOPKINS, JNO. W., Retail cigars.
HORD, ELDRIDGE, Secretary-Treasurer Lowe Hord Hardware Co.
HORTON, W. E., Bookkeeper M. M. Newcomer Co.
HOSKINS, L. W., President Walla-Walla Gum Co.
HOSKINS, R. M., Vice-President Walla-Walla Gum Co.
HOUK, ED S., Secretary Chillhowee Hosiery Mills.
HOUK, JOHN C., Attorney at Law.
HOUSE, S. E., President House-Hasson Hardware Co.
HOUSER, GEO. R., Proprietor Imperial Barber Shop.
HOYLE, SAMUEL T., Knoxville Excelsior & Mattress Mfg. Co.
HUBBELL, A. N., Retail furniture.
HUDSON, CHAS. H., Vice-President Standard Knitting Mills.
HUDSON, HENRY, Attorney at Law.
HUFF, WOOD, Insurance.
HUNTER, CHAS. E., Wall paper and paints.
HUNTER, W. E. (Elizabethton, Tenn.)
HUNTER, WM. K., Firm of Childress & Hunter.
HURAY, MARTIN, Superintendent Knoxville Abattoir Co.
HURAY, PAUL.
HUTSELL, O. R., Manager Crescent Laundry.

LAMAS, DR. H. A., Physician.
LAMAS, H. P., Firm of Gredig & Ljams.
IRBY, JOHN P., Bookkeeper.
IRWIN, B. H., Firm of Vance Furniture Co.

JACK, W. L., With S. R. Rambo, real estate.
JACKSON, D. L. (Asheville, N. C.)
JAMERSON, J. S., Firm of Hicks & Jamerson.
JACOB, MOSES, Firm of Jacob & Shaw, veterinary surgeons; Chairman Live Stock

Committees Appalachian Exposition, 1910-11.

JARNIGAN, CHAS. H.
JEFFRIES, R. G., Treasurer Cruze-Lyons-Hayes Co.
JENNINGS, JAS. W., Firm of Jennings & Searl.
JOHNSON, CURTIS B., President and General Manager The Curtis B. Johnson Publishing Co., publishers Knoxville Sentinel.
JOHNSON, J. G., Secretary-Treasurer Beck-Tayver Co.
JOHNSON, R. P., Firm of Hickman & Johnson, fire insurance.
JOHNSON, J. G., Attorney at Law.
JOHNSON, T. W., Knoxville Fire Department.
JOHNSON, W. Q., Vice-President Square Drug Co.
JOHNSON, HON. W. R., Mayor Park City; Manager American Construction & Development Co.; Commissioner of Finance National Conservation Exposition.
JOHNSTON, HU M., President Union National Bank; Vice-President King Mantel & Furniture Co.; 3rd Vice-President National Conservation Exposition.
JOHNSTON, S. M., Vice-President Knoxville Knitting Mills; Secretary-Treasurer King Mantel & Furniture Co.
JOHNSTON, J. Y.
JOHNSTON, R. J., Attorney at Law.
JOHNSTON, T. H., Treasurer and General Manager Knoxville Knitting Mills Co.
JONES, DR. C. B., Physician.
JONES, HENRY S., Firm of Clark & Jones, pianos and organs.
JONES, JOHN A., Supt. Agriculture and Live Stock Departments, National Conservation Exposition; member Board of Directors Appalachian Exposition, 1911.
JONES, JOHN B., Secretary-Treasurer Empire Marble Co.
JONES, ROBERT M., Firm of Wright & Jones, attorneys.
JONES, DR. T. ap R., Physician; President South Knoxville Macadam Co.; Chairman Department of Health, National Conservation Exposition.
JOUROLMAN, LEON, Attorney at Law.
JUSTUS, H. N., Secretary-Treasurer Wright Hardware Co.

KAISER, G. H., President Kaiser Bros., Seeds, Fruits and Vegetables.
KAISER & Co. (New York.)
KARNES, CHARLTON, President Knox County Bank & Trust Co.; Secretary and Treasurer Knoxville Pure Milk Co.; Treasurer Title & Trust Co.



VICE-PRESIDENTS, APPALACHIAN EXPOSITION, 1911

D. M. Chambliss, 4th Vice-President.
J. L. Deaver, 2nd Vice-President.

M. D. Arnold, 1st Vice-President.
J. G. Sterchi, 3rd Vice-President.

KARNES, HOWARD, Harness Manufacturer.
KEENER, BRUCE, Vice-President C. M. McClung & Co., wholesale hardware.
KEENER, E. L., Secretary-Treasurer Kreis-Keener Shoe Co.
KEENER, S. H., Proprietor East Tennessee Dental Depot.
KEHR, CYRUS, Patent attorney; Chairman Good Roads Committee, National Conservation Exposition.
KELLER, E. R., Vice-President and Supt. Callahan Construction Co.
KELLY, T. C., Supt. Knoxville Railway & Light Co.
KELSO, DR. HENRY J., Physician.
KENNEDY, E. M., Vice-President Cureton-Kennedy & Calloway.
KENNEDY, J. F.
KENNEDY, J. T., Firm of Kennedy & Bunting.
KENNEDY, W. T., Vice-President Deaver, Kennedy & Co., wholesale dry goods.
KENNERLY, J. G. (Cleveland, Ohio.)
KENNERLY, W. T., Firm of Pickle, Turner & Kennerly, attorneys.
KERN, DR. ALBERT G., Physician; member Health Committee, National Conservation Exposition.
KERN, C. M., Secretary-Treasurer Peter Kern Co., bread and confectionery.
KERN, JOHN P., President Peter Kern Co.
KERN, ROBERT A., Assistant Secretary Peter Kern Co.
KEPHART, W. H., Firm of Miller & Kephart, real estate.
KIDD, P. A., Traveling salesman, Gillespie, Shields & Co.
KINCAID, DR. J. H., Specialist.
KING, I. C., Register of Deeds, Knox County.
KING, OLIVER, President Oliver King Sand & Lime Co.
KIRBY, CHAS. E., Musician.
KIRBY, JOHN M.
KNAFFL, JOSEPH, Firm of Knaffl & Brakebill, photographers, and Knaffl Bros.
KOHLMASE, O. A., Secretary & Manager Rowe Transfer Co.
KREIS, HARMON, President Knox Sand & Transfer Co.; Vice-President Empire Marble Co.
KREIS, JNO. A., Vice-President Appalachian Marble Co.
KREIS, SAM'L F., President Kreis-Keener Shoe Co.; President Appalachian Marble Co.
KUHLMAN, J. F., Plumber.
KUHLMAN, N. B., Treasurer Mono Service Cream Co.
KUHLMAN, W. D., Vice-President Kuhlman-Chambliss Co.

KUHLMAN, W. L., Knoxville Boiler Works.
KYLE, C. M., Firm of Kyle-Gettys Co.
LANE, J. BROWN, Firm of Lane Bros.
LANE, JOHN P., Firm of Lane Bros.
LANE, SAM L.
LATHAM, W. M., Produce.
LAYMAN, S. J., With Woodruff Hardware Co.
LEA, J. D., Secretary-Treasurer Sullivan & Underwood.
LEACH, GEO., Knoxville Fire Department.
LEAHY, DENNIS G., City Recorder; Vice-President E. B. Mann Undertaking Co.
LEIGHTON & Co. (Jeff, Ky.)
LEEK, J. M., Firm of J. M. Leek & Co.
LEONHARDT, C. T., Secretary-Treasurer Knoxville Cotton Mills.
LEMON, HUGH M., Lemon Transfer Co.
LEMON, J., Martin Transfer Co.
LENOIR, W. F., Secretary-Treasurer Knoxville Tinware Co.
LEVY, MARGARET S.
LEWIS, J. E., President and Treasurer The M. M. Newcomer Co.
LEWIS, J. T., Firm of Lewis & Adeock.
LEWIS, W. R., Boiler Inspector.
LICHTENWANGER, J.
LIEBOWITZ, A. L. (New York.)
LINDSEY, H. B., Firm of Lindsey, Young & Donaldson, attorneys.
LINK, DR. W. F., Physician.
LIPPNER, L., Meat Market.
LITTLE, F. S., Vice-President Little Bros. Co., clothing manufacturers.
LITTLE, N. T., President Little Bros. Co.
LITTLEFIELD, H. E., President Littlefield & Steere Co., candy manufacturers.
LIVESY, GEO., Retail grocer.
LOBENSTEIN, MAX, Traveling salesman.
LOGAN, J. M., General Manager Logan-Maphet Lumber Co.
LOGAN, N. E., With J. E. Lutz & Co.; Secretary Cherokee Country Club.
LONES, C. E., Physician.
LONES, F., Knoxville Fire Department.
LONG, H., Knoxville Fire Department.
LONG, J. F., Plumber.
LONGMIRE, J. P., Proprietor Holston Barber Shop.
LOTSPEICH, CHAS. C., Proprietor Lotspeich Pharmacy.
LOTSPEICH, E. S., 2nd Vice-President Hazen & Lotspeich Co.
LOTSPEICH, R. N., Secretary-Treasurer Appalachian Mills.
LOVELL, R. A., Proprietor sanitarium.
LOWE, J. L., Wholesale druggist.



MEMBERS BOARD OF DIRECTORS, APPALACHIAN EXPOSITION, 1911

1—A. L. Wilhite
 2—J. L. Deaver
 3—Ben H. England
 4—D. E. Tate
 5—C. H. Harvey
 6—J. H. Anderson
 7—L. B. Audigier

8—C. S. Cornell
 9—F. B. Stuart
 10—N. B. Kuhlman
 11—D. C. Chapman
 12—J. E. Briscoe
 13—D. A. Rosenthal
 14—J. G. Crumbliss

15—M. F. Flenniken
 16—C. A. Nickerson
 17—T. B. Cox
 18—W. L. Murphy
 19—W. J. Savage
 20—A. H. Steere
 21—Lynn Hayes

LOWE, F. E., President Lowe-Hord Hardware Co.

LOY, H. A., Knoxville Fire Department.

LOWMAN, L. P., Firm of Webb & Lowman.

LUCKEY, C. E., Firm of Luckey, Andrews & Fowler, attorneys; Vice-President Peoples' Telephone Co.; Vice-President Knoxville Brick Co.

LUSK, W. A., Traveling salesman.

LUTTRELL, J. CHURCH.

LUTTRELL, MRS. S. B.

LUTTRELL, S. B., Firm of S. B. Luttrell & Co.; President Mechanics Bank & Trust Co.

LUTZ, CHAS. O., With J. E. Lutz & Co., fire insurance.

LUTZ, J. E., President J. E. Lutz & Co.

LYONS, W. L., President Cruze-Lyons-Hayes Co., hardware and builders' supplies.

LYNN, H. W., Insurance.

MADDEN, J. P., President East Tennessee Packing Co.

MADRON, BENJAMIN, Knoxville Fire Department.

MAHAN, E. C., Secretary and Treasurer Southern Coal & Coke Co.

MAHAN, T. B., Vice-President Southern Coal & Coke Co.

MANN, ARTHUR G., Secretary-Treasurer E. B. Mann Undertaking Co.

MANNING, GEO. H., Treasurer Tennessee Mill Supply Co.

MAPLES, C. F., Maples Lumber Co.

MAPLES, H. H., Knoxville Fire Department.

MARLIN, L. J., With Woodruff Hardware Co.

MARSH, HAL G., Traveling salesman.

MARSHALL, WM. I., With W. W. Woodruff Hardware Co.

MARTIN, H. C., General Agent Penn. Mutual Life Insurance Co.

MASTERS, J. F., President Masters Patent Flooring Co.

MASTERSON, R. E., Knoxville Fire Department.

MAY, FRANK, Merchandise broker.

MAYNARD, EDWARD, Maynard & McMillan, fire insurance.

MAYNARD, JAMES, Attorney at Law; President Brookside Mills.

MAYO, D. R., Seedsman.

MORGAN, PROF. H. A., University of Tenn.

MCANNALLY, L. J., Salesman.

MCBATH, W. T. (Louisville, Tenn.)

McCOY, W. J., Photographer.

McCALLIE, B. A., Secretary Callahan Construction Co.

McCALLIE, T. O., Firm of McCallie Bros.

McCALLIE, R. A., Firm of McCallie Bros.

McCAMPBELL, SAMUEL S., Proprietor McCampbell Horse & Mule Market.

McCARGO, R. W., Manufacturers' Agent.

McCOLLISTER, IRA B., Chemist, Sanford, Chamberlain & Albers Co.

McCONNELL, T. G., Firm of Cornick, Frantz, McConnell & Seymour, attorneys.

McCORMICK, SETH T., Vice-President Holston Box & Lumber Co.

McCOWN, DR. R. M., Physician.

McCoy, WALTER, Cashier Mechanics Bank & Trust Co.

McCrary, H. C., Railroad contractor.

McCREARY, DR. W. L., Physician.

McDANIEL, T. P., Firm of McDaniel & Ault.

McDONALD, W. L., Cashier Knoxville Railway & Light Co.

McDOWELL, J. R., Contractor.

McDOWELL, MRS. J. R.

McGUIRE, ROGER.

McINTOSH, JAMES, Knoxville Fire Department.

McINTYRE, W. M.

McKINNEY, CHAS. J., President Hough & Spradlin Co., railroad contractors.

McKINNEY, T. L., Agent New York Life Insurance Co.

McKINNEY, W. S., Assistant Cashier Union National Bank.

McLEMORE, E. L., With Haynes-Henson Shoe Co.

McMANUS, CHAS. S., President Sterling Coal & Coke Co.; Fork Ridge Coal Co.; Vice-President The Bank of Middleborough, Ky.

McMILLAN, ALEX., Real estate and insurance.

McMILLAN, ALEX. JR., With Alex McMillan Co.

McMILLAN, E. E., President McMillan & Hazen Co., wholesale shoes; Vice-President Third National Bank; Vice-President Standard Knitting Mills.

McMILLAN, HENRY, G., Firm of Maynard & McMillan, fire insurance.

McMILLAN, H. P., Groceries.

McMILLAN, JOHN E., Cashier Third National Bank.

McNICHOLS, R. T. P., Art store.

McCLANAHAN, FRANK, Manager Collins Co.

McCLELLAND, MRS. HANNA.

McCLOUD, ASHLEY.

McCLUNG, CHAS. J., Vice-President C. M. McClung & Co., wholesale hardware.

McCLUNG, C. M., President C. M. McClung & Co.



PRESS COMMITTEE, APPALACHIAN EXPOSITION, 1911

- | | |
|-----------------------------|---------------------------|
| 1—J. A. Dunn | 8—Geo. H. Freeman |
| 2—Frank L. West | 9—Joe L. Baker, Secretary |
| 3—Chas. V. Patton | 10—Earl Crew |
| 4—Henry Atkin | 11—Lester Barnis |
| 5—Geo. W. Ford | 12—Clyde B. Emert |
| 6—Wiley L. Morgan, Chairman | 13—Linley Hancock |
| 7—S. H. Cottrell | 14—Roy N. Emert |

McCLUNG, HUGH L., Vice-President T. E. Burns Co.
McCLURE, J. S., Firm of Bickley, McClure & Co., wholesale clothing.
McCLURE, W. K., Real estate.
McCULLY, GEORGE, President McCully Hat Co.
McNEW, ED.
McNUTT, L. A., With W. W. Woodruff Hardware Co.
McNUTT, S. H., Vice-President Cowan, McClung Co., wholesale dry goods.
McTEER, GEO. P., City Commissioner of Water Works and Parks.
McTYE, J. B., Contractor.
MALONEY, FRANK (Nashville, Tenn.)
MALONEY, G. E., Firm of Gibbs & Maloney, real estate.
MARLIN, L. J., With W. W. Woodruff Hardware Co.
MEAD, FRANK S., President Ross and Republic Marble Companies.
MEBANE, A. S., Firm of Vance Furniture Co.
MEEHAN, THOMAS.
MELINDY, DR. A. R., Dentist.
MELLEN, DR. GEO. F., Farmer; contributing editor The Sentinel.
METCALF, DR. G. A., Veterinary surgeon.
METLER, JACOB, Farmer.
MICHAELS, T. M., Lumber manufacturer.
MILLER, G. M., With Market Hardware & Harness Co.
MILLER, HOWARD M., Miller Coal Co.
MILLER, DR. S. R., Physician.
MILLER, PROF. W. E., Superintendent city schools.
MILTON, GEO. F., Editor and Proprietor The News, Chattanooga.
MITCHELL, A. E., Firm of Steinmetz & Mitchell, attorneys.
MUNSKY, S. K., Secretary Southern Extract Co.
MITCHELL, W. L., Secretary-Treasurer Broadway Mfg. Co., lumber.
MITCHELL, JOSEPH, Proprietor Mitchell's Cafe.
MIZNER, H. S., President Lonsdale Face Brick Co.
MONDAY, W. R., President Empire Marble Co.; Vice-President Gray Eagle Marble Co.; Vice-President Fenton Construction Co.
MOON, J. N., Attorney at Law.
MOONEY, R. E., Cashier City National Bank.
MONCRIEF, J. A., President Knoxville Tinware Co.
MOORE, CHAS. M., Coal operator.

MOORE, J. N., Firm of Saylor & Moore, attorneys.
MOORE, JAS. T., President Knoxville City Iron Works.
MOORE, W. C.
MOORE, W. S., Knoxville Boiler Works.
MOORES, PROF. C. A., University of Tennessee.
MORGAN, CHAS. C., With W. W. Woodruff Hardware Co.
MORGAN, WILEY L., Managing Editor Knoxville Sentinel; member Board of Directors, Appalachian Exposition, 1911.
MORRELL, CHESTER, Firm of Culton & Morrell, attorneys.
MORRELL, N. B., Knoxville Engraving Co.
MORRIS, PROF. THOS. D., University of Tennessee.
MORRIS, ABE (New York.)
MORRIS, JACOB (Dry goods, New York.)
MORSE, C. A., Loans and real estate.
MORTON, BEN A., President the H. T. Hackney Coal Co.; Broadway Coal Co.; Vice-President Cadellac Sales Co.; Secretary-Treasurer Riverside Lumber Co., member Board of Directors Appalachian Exposition, 1910 and Board of Directors National Conservation Exposition.
MOUNTCASTLE, R. E. L. (Estate.)
MULLINS, R. G., Proprietor Mullins Coal Co.; Knoxville Bottling Works.
MULVANIA, MAURICE, Professor, University of Tennessee.
MURPHY, FRANK, Justice of the Peace.
MURPHY, INGE.
MURPHY, J. M., Secretary-Treasurer Knoxville Carpet & Decorating Co.
MURPHY, W. L., Lumber (Jacksonville, Fla.)
MYERS, ROY V., Firm of Myers & Whaley, engineers.
MYNDERSE, C. N., Secretary Alex A. Scott Brick Co.
MYNDERSE, W. E., Firm of Doll & Mynderse, real estate; member Forestry Committee, National Conservation Exposition.
NANCE, S. L., Firm of Caldwell, Nance & Co.
NANNEY, J. P., Vice-President Knoxville Lumber & Mfg. Co.
NASH, DR. W. S., Physician.
NAST, ANNIE LAURA (New York City.)
NELSEN, H. O., Nelsen Iron Works.
NEW, JOS. M., Knoxville Fire Department.
NEWCOMER, M. M., Vice-President and General Manager The M. M. Newcomer Co., department store.
NEWGENT, E. C., Cashier Knox County Bank & Trust Co.



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CHAIRMEN OF COMMITTEES, WOMAN'S BOARD, 1911

- | | |
|--------------------------|----------------------------------|
| 1—Mrs. William A. Lowry | 10—Mrs. Percy Lockett, President |
| 2—Mrs. R. K. Gibson | 11—Mrs. L. D. Tyson |
| 3—Mrs. Wiley Morgan | 12—Mrs. Stokeley Mitchell |
| 4—Mrs. L. B. Audigier | 13—Mrs. Chas. T. Cates, Jr. |
| 5—Mrs. George Mellen | 14—Mrs. J. D. Varnell |
| 6—Mrs. J. F. Craft | 15—Mrs. H. H. Ingersoll |
| 7—Mrs. George Denney | 16—Mrs. T. Asbury Wright |
| 8—Mrs. Will D. Wright | 17—Mrs. T. S. Webb, Jr. |
| 9—Mrs. Ben S. Boyd | 18—Mrs. George Milton |
| 19—Mrs. George W. Baxter | |

NEWMAN, B. L., Bookkeeper Union National Bank.

NEWMAN, J. R., Knoxville Fire Department.

NEWMAN, DR. R. H., Physician.

NEWMAN, J. H., Life Insurance.

NEWMAN, S. B., President S. B. Newman Co., printers.

NEWTON, W. T., Jeweler.

NICKERSON, C. A., President Nickerson Mfg. Co.; member Board of Directors Appalachian Exposition, 1911.

NICKERSON, MARCUS F., Vice-President Nickerson Mfg. Co.

NORMAN, C. A., President Knoxville Carpet & Decorating Co.

OBERN, JNO. E., President & Treasurer Southern Extract Co.

OGDEN, E. W., President Knoxville Printing & Box Co.; Knoxville Lithographing Co.; Treasurer Journal & Tribune Co.; member Child Welfare Committee, National Conservation Exposition.

OGDEN, JAS. H., Secretary-Treasurer Chavannes Lumber Co.

OGLE, A. R., Contractor.

OLDHAM, GEO. E., Secretary Builders Exchange.

OLIVER, WM. J., President Appalachian Exposition, 1910; President Wm. J. Oliver Manufacturing Co., contractors equipment and plows; President K. S. & E. Railway Co.

OPPENHEIM, ELI (Baltimore.)

OPPENHEIMER, DR. R. P., Physician; Vice-President The McTeer Co.

ORNDORFF, D. B., Phonographs and supplies.

ORR, B. F., Secretary-Treasurer Knoxville Furniture Co.

OSTER, GEO. D., Druggist.

OZBOURN, PETER, With Knoxville Real Estate Exchange.

PANEL, CHAS. H., Treasurer Rowe Transfer Co.

PARKER, FRED, With Cruze-Lyons-Hayes Co.

PARKER, M. A., Real Estate.

PARHAM, CHAS. L., President Bell Laundry; Secretary-Treasurer Riverside Woolen Mills.

PARSONS, H. A. E., Secretary-Treasurer W. W. Woodruff Hardware Co.

PELIHAM, W. C., Treasurer A. Greenwood & Co.

PETERS, GEO. L., Vice-President Peters & Bradley Mill Co.

PETERS, G. W., President and General Manager Peters & Bradley Mill Co.

PETERS, W. H., Traveling salesman Gillespie, Shields & Co.

PETERS, WM. E., Secretary-Treasurer Peters & Bradley Mill Co.

PITNER, J. M., With D. M. Rose & Co., lumber manufacturers.

PITNER, W. A., With D. M. Rose & Co.

PETTWAY, J. H., Secretary-Treasurer Hazen, Trent & Harrell Co.

PETTWAY, M. H., Merchandise broker.

PICKLE, G. W., Firm of Pickle, Turner & Kemmerly, attorneys.

PICKLE, R. H., Manager Teachers' Protective Agency.

PLEMING, C. J., Secretary-Treasurer Knoxville Railway & Light Co.

PLESS, H. A., Royal Coal & Coke Co.

POST, ED D., Signs.

POST, FRANK H., Frank H. Post & Co.

POST, O. C., With Gaut-Ogden Co.

POWERS, H. H., Vice-President Powers Clothing Co.

POWERS, REV. J. PIKE, President Powers Clothing Co.; member Board of Directors City National Bank; Chairman Transportation Committee Appalachian Exposition, 1910.

POWERS, J. PIKE, JR., Attorney at Law.

POWERS, L. C.

PREVOST, MRS. J. W.

PRICE, G. L., President Daniel Briscoe Co., wholesale dry goods; member Board of Directors National Conservation Exposition.

PRICE, J. J., President and General Manager Knoxville Furniture Co.

PRESTON, FRANK, Vice-President Haynes-Henson Shoe Co.

PROSSER, BROWN, Vice-President Hickory Coal Co.

PRYOR, T. L., Vice-President Knoxville Table & Chair Co.

RABUCHIN, L., Clothing.

RAHT, ALMA H.

RAMBO, S. R., Real Estate; member Board of Directors Appalachian Exposition, 1911.

RANDELL, C. E., Secretary-Treasurer Knoxville Stove Works.

REBORI, F., Fruit stand.

REED, J. J., President J. J. Reed Coal Co.

REEDER, R. A., Secretary Cureton-Kennedy & Calloway.

REEP, F. C., Secretary-Treasurer C. W. Henderson Co.

REXICH, JACOB, Groceries.

REYNOLDS, H. M. C.

RHEA, W. L.



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VICE-PRESIDENTS, WOMAN'S BOARD, 1911

- 1—Mrs. Sam McKinney, 3rd Vice-President
- 2—Mrs. Hugh Sanford, 2nd Vice-President
- 3—Mrs. R. B. Parker, Secretary
- 4—Mrs. R. K. Gibson, 1st Vice-President

RICHARDS, JNO., Loans.
RICHARDS, DR. W. H., Dentist.
RICHARDSON, C. W., Groceries.
RICHMOND, DR. W. D., Physician.
RITTER, J. H.
ROBBINS, J. ALBERT, Real Estate.
ROBERTS, CHAS. M., Attorney at Law.
ROBERTS, F. A., Secretary and Treasurer Daniel Briscoe Co.
ROBERTS, J. M., Secretary Little Bros. Co.
ROBERTSON, W. F., Secretary The H. T. Hackney Coal Co.
RODDY, JAS. P., Secretary-Treasurer Roddy-Goodman Co., candy manufacturers and bottlers Coca-Cola.
RODGERS, COWAN, President Rodgers & Co., automobiles.
ROGERS, CHAS. M., Assistant Cashier Mechanics Bank & Trust Co.
ROGERS, HASSON A., Agent Employers Liability Assurance Co.
ROGERS, JESSE L., Attorney at Law.
ROSE, DAN M., President D. M. Rose & Co., lumber manufacturers.
ROSE, T. H., With D. M. Rose & Co.
ROSENBECK, C. A., Wall paper and paints.
ROSENTHAL, D. A., Druggist; Vice-President Holston National Bank.
ROSS, W. C., President Knoxville Knitting Mills and Riverside Lumber Co.; Vice-President C. C. Cullen & Co. and Brown-Ross Shoe Co.
ROTACH, JOHN, Firm of Schaad & Rotach, furniture manufacturers.
ROTH, C. F., Roth Coal Co.
ROURKE, M. F., Plumbing.
ROWE, W. T., President Rowe Transfer Co.
RULE, J. M., President Whittle Trunk & Bag Co., manufacturers.
RULE, WM., Editor Journal & Tribune.
RUSSELL, JNO. P., Retail Shoes.
RUSSELL, WM. L., Vice-President Union National Bank.
RUTHERFORD, E. P., With Sterchi Bros.
RUTHERFORD, C. C., With Sterchi Bros.
RYNO, J. H., President Barber & Ryno, architects.

SAMS, CAPT. W. J., Knoxville Fire Department.
SANDBERG, O. G., Secretary-Treasurer Hall Stephenson Co.
SANFORD, A. F., President and General Manager Journal and Tribune; Vice-President Sanford, Chamberlain & Albers Co. and Sanford-Day Iron Works.
SANFORD, E. J. (Estate.)
SANFORD, HUGH W., Secretary and Treasurer Sanford-Day Iron Works.
SANSOM, R. H., Attorney at Law.

SAVAGE, W. J., President W. J. Savage Company, mill and mine machinery, etc., Commissioner Buildings and Grounds, National Conservation Exposition; member Board of Directors Appalachian Expositions, 1910-11.
SAXTON, HARRY N., JR., President Knoxville Saw Mill Co.
SAXTON, NESBITT L., Vice-President Knoxville Saw Mill Co.
SAYLOR, J. W., Attorney at Law.
SCOTT, J. A., Scott Mill Co.
SCARBOROUGH, W. W., President W. W. Scarborough Co., garden and field seeds, fruits, etc.
SCARBOROUGH, W. C., With Hope Bros.
SCHARRINGHAUS, E. H., Manager Gillespie, Shields & Co., wholesale clothing; Chairman Promotion Board, National Conservation Exposition.
SCHUBERT, NICHOLS, Lumber.
SCHLEY, G. P., President Coal Creek Mining & Mfg. Co.
SCHMIDT, C. R., With Alex McMillan Co.
SCHONBRUN, A., Dyeing establishment.
SCHMID, A. A., With Alex McMillan Co.
SCHWARTZ, L., Fruit store.
STUBLEY, GLEN, With Stublely Printing Co.
SCOTT, ALEX A., President Alex A. Scott Brick Co.
SCOTT, DAVID D. (Greeneville, Tenn.)
SEILAZ, VICTOR, Proprietor Star Steam Laundry; Seilaz Cafe.
SEMONES, W. S., Treasurer and Manager Square Drug Company.
SHARP, F. B., Druggist.
SEAHORN, E. A., Architect.
SENSABAUGH, W. M., Secretary Swan-Sullins-Brandau Co.
SCHAAD, JAS., Firm of Schaad & Rotach.
SHARP, C. B., Groceries.
SHARP, JAS., Salesman W. W. Woodruff Hardware Co.
SHAW, WM. G., Firm of Jacob & Shaw, veterinary surgeons.
SHEA, JNO. F., Treasurer Maples & Shea Lumber Co.
SHEARER, D. R., Vice-President and General Manager Acme Electric Co.
SHELTON, H. P.
SHIELDS, S. G., Firm of Shields, Cates & Mountcastle, attorneys.
SHIELDS, W. S., President City National Bank; 1st Vice-President Knoxville Railway & Light Co. and firm of Gillespie, Shields & Co., Member of Board of Directors, National Conservation Exposition.
SHIVERS, B. L., With Miller Store Co.
SELLERS, W. N., Justice of the Peace.
SIMMONDS, H. M., Firm of McMillan, Sim-



VICE-PRESIDENTS, NATIONAL CONSERVATION EXPOSITION

1—J. W. Brownlee
2—C. H. Harvey

3—Hu M. Johnston
4—Don Carlos Ellis

monds & Pettway, Fire Insurance; President C. M. Cowan & Co.
SIMMONDS, R. H., Fire insurance.
SIMPSON, C. F., Market Hardware & Harness Co.
SIMPSON, F. G., Knoxville Fire Department.
SIMPSON, R. B., Treasurer and General Mgr. Knoxville Table & Chair Co.
SIMPSON, W. M., Market Hardware & Harness Co.
SKAGGS, ELI C., Vice-President Knoxville Savings Bank.
SLATERY, WM., Secretary Lenoir City Co.
SMART, GEO. H., Superintendent Lighting Department, Knoxville Railway & Light Co.
SMITH, A. L., Secretary and Treasurer Knoxville Nursery Co.
SMITH, B. L., Knoxville Storage Co.
SMITH, B. L., Secretary-Treasurer Chastain, Smith & Vestal Co.
SMITH, CHAS. H., Attorney at Law.
SMITH, C. POWELL, With J. Allen Smith & Co.
SMITH, J. ALLEN, President J. Allen Smith & Co., flour mills; President Knoxville Board of Commerce.
SMITH, LEONIDAS D., Attorney for Southern Railway Co.
SMITH, W. N., W. N. Smith, furniture.
SMYTHE, T. H., Appalachian Peanut Co.
SNEAD, J. W.
SONNER, JNO. L., Druggist.
SPENCE, COL. CAREY F., Secretary-Treasurer Appalachian Exposition, 1911; Postmaster, Knoxville; President Spence Trunk & Leather Co.; Colonel Third Regiment National State Guards.
SPIRO, JACOB, Vinegar manufacturer.
SPRANKLE, B. H., Real Estate.
STAIR, A. J., Contractor.
STAIR, JAS. M., Contractor.
STALEY, J. P., Justice of the Peace.
STANDIFER, W. D., Retail cigars.
STARKWEATHER, J. W., President Victoria Marble Co.
STARKWEATHER, R. H., Vice-President Victoria Marble Co.
STAUB, JNO. P., President and General Manager Knoxville Foundry & Machine Co.
STEGALL, E. H., Vice-President Cherokee Coal Co.
STEPHENSON, R. J., Vice-President Hall & Stephenson, furniture.
STEPHENSON, T. I., President and General Manager Knoxville Iron Co.
STEER, A. H., Vice-President Littlefield & Steere Co.; member Board of Directors Appalachian Exposition, 1911.

SHIVERS, B. L., Soda water.
STEVENS, J. H., President J. H. Stevens Co.
STERCHI, EARL H., Firm of Knoxville Outfitting Co.
STERCHI, J. CAL, President Proctor Furniture Co.
STERCHI, W. H., President American National Bank; President Knoxville Outfitting Co.
STERCHI, J. G., President Sterchi Bros., Furniture; Vice-President Appalachian Exposition, 1911.
STERLING, O. P.
STONE, JAS. R., Supt. Empire Marble Co.
STORRS, W. H., Manager Coal Creek Mining & Mfg. Co.
STRIPLING, R. R., Secretary and Manager W. W. Scarborough Co.
STRONG, COL. B. R.
STUART, J. G., Treasurer and manager Alex A. Scott Brick Co.
STUART, J. B.
SMART, J. B., Supt. Mono Service Cream Co.
STUBLEY, R., Stublely Printing Co.
SULLINS, W. B., Treasurer Swan-Sullins-Brandau Co., wholesale grocers.
SUFFRIDGE, ALBERT, Druggist.
SULLIVAN, J. W., President Sullivan & Underwood.
SUDDARTH, B. F., Assistant Chief Knoxville Fire Department.
SUTTLE, H. H., Firm of Suttle & Beeler, pants manufacturers.
SUSONG, JACOB A., President Davis & Susong Co.
SULLINS, LUTRELL.
SWAB, DANIEL COOPER (Hartrauft, Tenn.)
SWAN, CHAS. H., Firm of Swan Bros., bakers.
SWAN, GEO. P., Firm of Swan Bros.
SWAN, J. A., Vice-President and General Manager Swan-Sullins-Brandau Co.
SZABO, J. M., Merchant tailor.
TALLEY, J. C., President Knoxville Table & Chair Co.
TALLEY, J. E., Secretary Knoxville Table & Chair Co.
TARVER, S. H., Vice-President Beek-Tarver Co., agricultural machinery and implements.
TATE, D. E., Firm of Claiborne, Tate & Cowan; member Board of Directors Appalachian Exposition, 1911.
TATE, HUGH M., Firm of Green, Webb & Tate, attorneys.
TATE, J. N., J. N. Tate & Co.



Photos by Knaffl & Brakebill.

DIRECTORS, NATIONAL CONSERVATION EXPOSITION

1—W. A. Knabe
 2—Dr. C. H. Gordon
 3—W. J. Savage

4—W. P. Tarver
 5—G. L. Price
 6—W. B. Townsend

TATE, O. M., Secretary and Treasurer Haynes-Henson Shoe Co.; Treasurer Appalachian Exposition, 1910.

TYLER, A. J., Vice-President Rowe Transfer Co.

TAYLOR, W. P., Firm of Woods & Taylor.

TAYLOR, ALFRED W., Superintendent Bradstreet Co.

TEDFORD, W. D., Secretary-Treasurer The McTeer Co.

TERRY, W. C., Real estate.

THOMAS, B. T., Thomas & Turner, building contractors.

THOMAS, C. M., President Cowan, McClung Co., wholesale dry goods.

THOMAS, H. M., Secretary Cowan, McClung Co., wholesale dry goods.

THOMAS, MRS. LUCY M.

THOMAS, JESSE, Treasurer Cowan, McClung Co.; Vice-President Appalachian Exposition, 1910.

THOMAS, MAT G., Vice-President Appalachian Mills.

THOMPSON, A. W., Secretary-Treasurer House-Hasson Hardware Co.

THOMPSON, C. MORTIMER, City Building Inspector.

THOMPSON, J. E., Commercial Photographer.

THOMPSON, J. EDGAR.

THOMPSON, L. F., Manager Ingersoll-Sargent Drill Co.

THOMPSON, W. L., Firm of W. L. Thompson & Co.

THRASHER, H. H., Firm of Thrasher & Gunter, contractors.

TINDELL, V. C., Secretary and Manager Merchants' Protective Association.

THORNBURG, J. M., Firm of Powers & Thornburg, attorneys.

TILLEY, J. O., Secretary The M. M. Newcomer Co.

TITTSWORTH, R. F., Osteopath.

TODD, JAS. C., President Square Drug Co.

TOMS, J. J., Real estate.

TOWNSEND, GEO. B., Secretary-Treasurer Holston Box & Lumber Co.

TOWNSEND, W. B., President Holston Box & Lumber Co.; Townsend Lumber Co.; member Board of Directors National Conservation Exposition.

TRENT, W. F., Vice-President Hazen, Trent & Harrell Co.

TRENT, H. G., With Sterchi Bros.

TRENT, W. L., With Sterchi Bros.

TROTTER, GEO. M., County Tax Assessor.

TURNER, JOHN, Thomas & Turner, contractors.

TURNER, W. R., Firm of Pickle, Turner & Kennerly, attorneys.

TYSON, COL. L. D., President Appalachian Exposition, 1911; President Knoxville Cotton Mills, Poplar Creek Coal Co., East Tenn. Iron Co., and Knoxville Spinning Co.

UNDERWOOD, W. C., Vice-President Sullivan & Underwood.

VANCE, C. K., President Vance Furniture Co.

VAN DEVENTER, HORACE, Clerk U. S. Supreme Court.

VAN DEVENTER, HUGH F.

VAN DEVENTER, FAYETTE F., Manager Van Deventer Building, and Walker Vehiele Co.

VAN GILDER, ALBERT, Vice-President Merchants Bank.

VAN GILDER, ROGER, Cashier Merchants Bank.

VARNELL, J. D., Treasurer Anderson, Dulin, Varnell Co.

VESTAL, E. M., Vice-President Vestal Lumber Co.

VESTAL, H. A., Vice-President Chastain, Smith & Vestal Co.

VESTAL, J. PARK, President Vestal Lumber Co.

WADE, E. R., Merchandise broker.

WARDREIF, A. J., Contractor.

WALDNER, M. A., With Claiborne, Tate & Cowan.

WALKER, J. F., Prop. J. F. Walker Co.

WALLBRECHT, WM., New South Brewing & Ice Co.

WALSH, EDWIN, Firm of Walsh & Ely.

WALTERS, MAT, Groceries.

WARD, CLAS. O., Real estate.

WARWICK, J. R., Plumber.

WARWICK, W. L., Proprietor Warwick Restaurant.

WATERS, LOUIS C., Architect.

WARTERS, JAS. President Bean, Warters & Co., printers.

WATSON, ALLAN, Insurance.

WATSON, IRA G., Retail dry goods.

WATSON, S. P., Secretary-Treasurer Aeme Electric Co.

WEAVER, DR. J. D., Physician.

WEBB, CREW, Firm of Webb & Lowman.

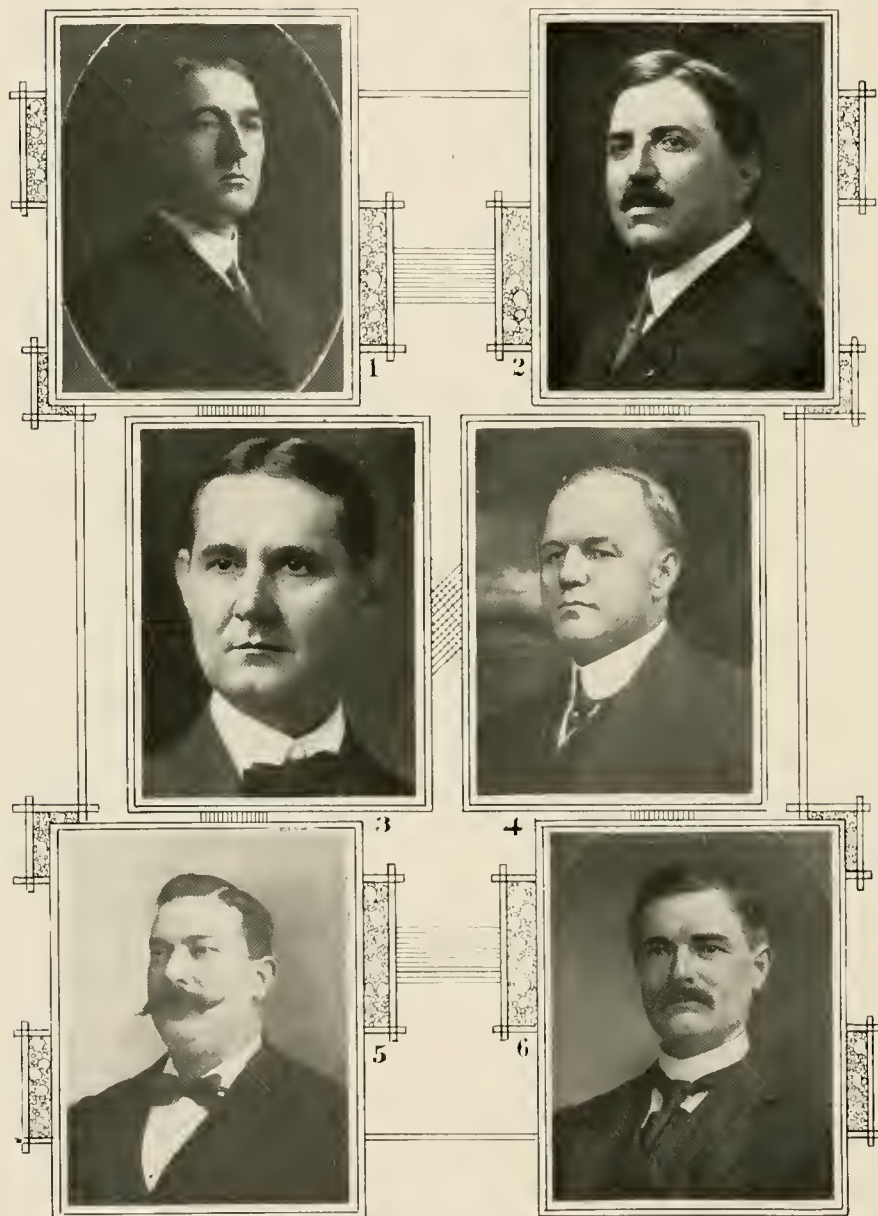
WEBB, D. C., Judge Knox County Juvenile Court.

WEBB, T. S., JR., Firm of Webb & Brown.

WEISS, F. A., President Holston Underwear Mills.

WILLARD, J. E., Cashier Kuhlman-Chambliss Co.

WELLS, A. L., Deputy Sheriff.



DIRECTORS, NATIONAL CONSERVATION EXPOSITION

1—Edward Henegar
2—B. A. Morton
3—S. V. Carter

4—W. S. Shields
5—W. R. Johnson
6—R. S. Hazen

WHALEY, WM., Firm of Myers & Whaley, engineers.

WHITE, ALBERT, Vice-President Knoxville Engraving Co.

WHITE, C. R., Vice-President Ahler Plumbing Co.

WHITE, D. I., Secretary C. C. Cullen Co.

WHITE, E. J., Secretary Ahler Plumbing Co.

WHITE, ED T., Merchant tailor.

WHITE, J. C., White Mantel & Tile Co.

WHITTLE, O. H., Supt. Whittle Trunk & Bag Co.

WHITTLE, P. D., Treasurer W. W. Scarborough Co.

WHITTLE, W. O., Cashier Union National Bank.

WIDENER, MISS M. E., Secretary-Treasurer Hinton Laundry Co.

WIGGINS, W. L., Vice-President Wiggins & Daily Co., retail groceries.

WILHITE, A. L., Manager Wilhite Piano Co.; member Board of Directors Appalachian Exposition, 1911.

WILLIAMS, H. C., Secretary Greenwood Advertising Co.

WILLIAMS, JAMES R., Editor Masonic Tidings.

WILLIAMS, L. A., Proprietor Commercial Engraving Co.

WILLIAMS, P. J., Proprietor Home Steam Laundry.

WILLIAMS, R. I., Vice-President A. Greenwood & Co.

WILSON, PROF. M. W., Superintendent Knox County Schools.

WILSON, S. R., With Rand Powder Co.

WITT, J. L., Assistant Secretary Ahler Plumbing Co.

WITT, JAS. P., Vice-President Chavannes Lumber Co.

WOOD, H., With Gillespie, Shields & Co.

WOODRUFF, W. W., President W. W. Woodruff Hardware Co.; Vice-President East Tennessee National Bank.

WOODRUFF, W. W., JR., Vice-President W. W. Woodruff Hardware Co.

WOODS, ROY S., Firm of Woods & Taylor.

WOODWARD, O. C., President E. T. Audubon Society.

WORLEY, J. PARKS, State Revenue Agent.

WRIGHT, I. C., Retail dry goods.

WRIGHT, JAMES B., Attorney Louisville & Nashville Railroad Co.

WRIGHT, RICHARD G., President Wright Hardware Co.; Vice-President American National Bank.

WRIGHT, HON. T. ASBURY, President National Conservation Exposition; Vice-President Mechanics Bank & Trust Co.; member firm of Wright & Jones, attorneys.

WILEY, O. C., Firm of O. C. Wiley & Co., photographers' supplies, etc.

WRINKLE, J. A., Circuit Court Clerk.

YOUNG, A. W., Superintendent Knoxville Gas Co.

YOUNGBLOOD, C. E., Knoxville Fire Department.

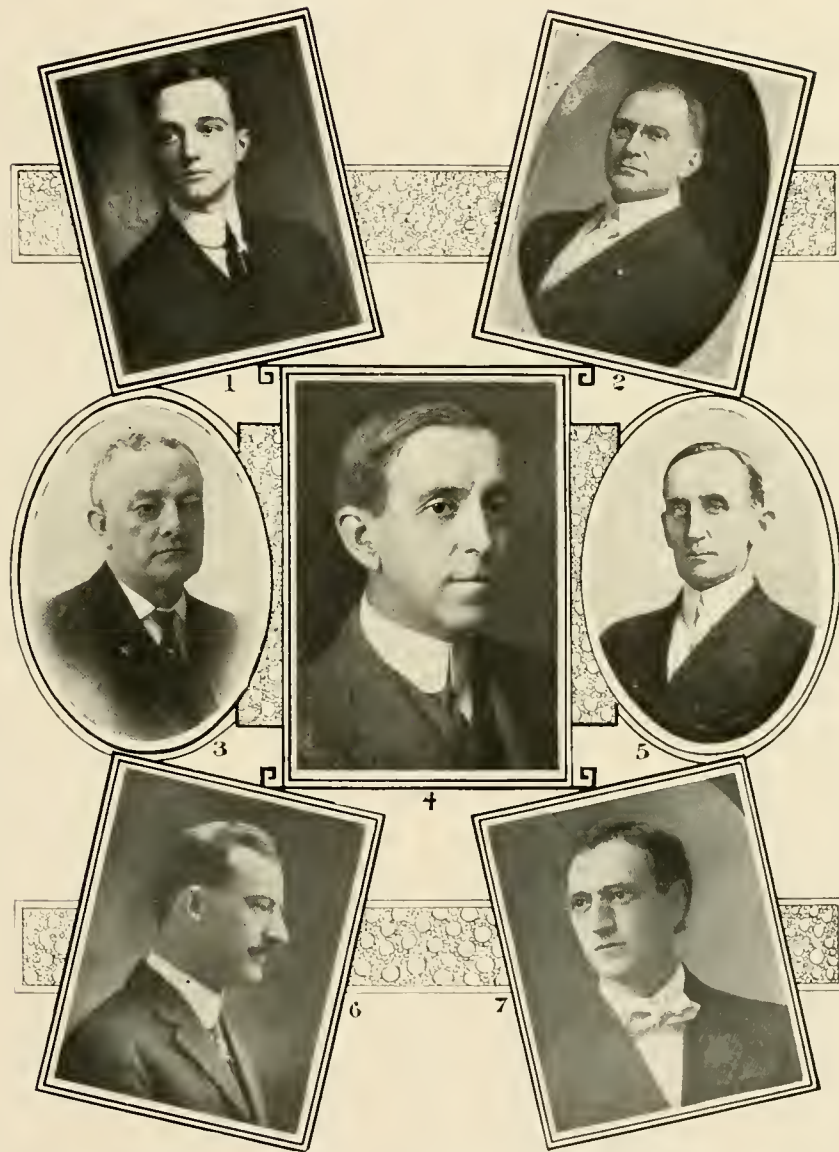
YOUNGBLOOD, H. J.

YULE, JOHN, Produce, etc.



MEMBERS OF ADVISORY BOARD, NATIONAL CONSERVATION EXPOSITION

- 1—Luke Lea, U. S. Senator, Tennessee
- 2—Duncan U. Fletcher, U. S. Senator, Florida
- 3—Chas. S. Barrett, President Farmers' Educational and Co-operative Union
- 4—John H. Wallace, Jr., Commissioner Fish and Game, Alabama
- 5—Miss Julia C. Lathrop, Head of Children's Bureau, U. S. Department of Labor
- 6—Philander P. Claxton, U. S. Commissioner of Education
- 7—Logan W. Page, Director U. S. Office of Public Roads
- 8—Joseph E. Ransdell, U. S. Senator, Louisiana
- 9—Joseph A. Holmes, Director U. S. Bureau of Mines
- 10—Bradford Knapp, U. S. Department of Agriculture



HEADS OF DEPARTMENTS, NATIONAL CONSERVATION EXPOSITION

- 1—J. L. Bowles, Director of Industrial Exhibits
- 2—W. F. Allen, Auditor
- 3—H. W. Wright, Amusements
- 4—James B. Young, Director of Publicity
- 5—John A. Jones, Superintendent of Live Stock and Agriculture.
- 6—E. E. Rall, Chairman Department of Education
- 7—J. A. Switzer, Chairman Department of Waters



NEGRO DEPARTMENT

The negro departments of the two Appalachian Expositions were successfully conducted by Dr. H. M. Green, Chairman, and his committees. This department of the National Conservation Exposition was under the management of Prof. Hu G. Fagg, Chairman, and was managed in a way that was highly creditable to his associates and to his race.

It is worthy of note that the Negro Building was designed by a negro architect, built by a negro contractor and negro workmen, with money subscribed by negro citizens of Knoxville. A list of the subscribers follows.

The exhibits made in the building covered nearly all of the industries in which members of the race are engaged, embracing domestic science, shop work, agriculture, horticulture, gardening, blacksmithing, moulding, basket making, drawing, painting, photography, etc. The displays were well arranged, attractive and instructive, comparing favorably with those of other buildings. Exhibits from schools and colleges were also shown.

THE MEN AND WOMEN WHO FINANCED THIS IMPORTANT FEATURE OF THE EXPOSITION:

George Armstrong, Maggie Archer, C. S. Amerine, R. S. Brabson, G. E. Burk, W. W. Burk, J. G. Beck, John Banks, Sadie Baker, Clarence E. Burke, Minnie Burke, Tom Clay, Lewis Carter, Sarah L. Cobb, William Cobb, J. S. Cobb, S. H. Carter, S. Dickson, T. D. Davidson, Tom Dickson, Mary J. Davis, W. D. Edington, Dr. H. M. Green, O. C. Gardner, Chas. H. Hoard, Hattie Harper, Cal Johnson, Lewis Kilgore, Mattie Lane, Susie Lacy, Flora Manson, R. Moyers, Parthena Mitchell, Oliver McCarr, Minnie Nelson, D. W. Perkins, Robert Tea, Rebecca Tate, C. R. Woods, A. R. Wheeler.

WHAT THE EXPOSITION BUILDERS ACCOMPLISHED

THE VIEWS OF MEN AND WOMEN WHO MADE A CAREFUL STUDY OF THE ED-
UCATIONAL FEATURES.

The National Conservation Exposition, as an educational enterprise, made a strong appeal to all visitors who came to profit by the lessons taught by exhibits in the various departments devoted to conservation. A number of leading ministers of Knoxville found in the exposition and its objects appropriate material for special sermons, and the following extracts, of great interest and value from the thoughts conveyed, contain endorsements of exposition plans and purposes, and of the manner in which they were carried out, that were highly gratifying to its builders who had labored hard and faithfully to make the affair all that its name implied. What higher commendation could be given than the following from a sermon by Dr. A. R. Lambert, pastor of the First M. E. church? His subject was "Conserving Spiritual Forces." Of the exposition he said:

"A visit to the National Conservation Exposition ought to suffice to cause any intelligent citizen's heart to beat quicker; whilst more than ordinary local pride takes possession of him.

"It has been my privilege to see many expositions throughout the country, and I am frank to say that none have exceeded in interest our own. The moving spirits in this exposition are worthy of the highest commendation, since they have become responsible for a display of natural resources, belonging to our state, which when developed, must place Tennessee among the foremost states of the union.

"To the right, as you enter the Land building, may be seen this motto: 'He who would transmit to posterity the old spring, must safeguard the fountain head!'

"Walking through this building a most elaborate diagram is spread out before one; and everywhere one finds stressed, in most comprehensive exemplification, the value of conserving the resources, abundant, at our very door.

"And what a lesson herein exemplified, touching the importance of safeguarding the fountain head of our holy religion. If the impression of the lad, at mother's knee, in the years ago, be conserved; and, through the years, if he clings to the old faith, his habits in life will be correct; his life work a blessing to humankind; and, at the last, like Dr. MacClure, in 'Beside the Bonnie Brier Bush,' who after forty years of benefaction in his last hour was heard lisping: 'Now I lay me down to sleep,' etc., he shall pass hence, leaving behind a blessed memory.

“Deforestation—One of the most striking lessons to be learned at the exposition, in my judgment, is that most striking illustration of the result of deforestation, stripping the land of forest trees, without reforesting them again. As a result of this folly last spring we had such floods as this country has never known. The trees of the forests, which aforesaid held back the rainfall, allowing it to gradually find its way to the streams and rivers, being a minus quantity, floods which devastated large areas of country, resulted.

“In like manner, in the spiritual realm, rash spirits have sought to eliminate the eternal verities from our faith, the divinity of Jesus Christ, the inspiration of the Bible, the miraculous element in the life work of Jesus, etc. But once these are gone, there is left naught beside the man-made element, which cannot withstand the storms of life.

“The man who does not recognize and cling to the eternal verities, God, the soul, heaven, hell, is destined to become whelmed when the testing time comes.

“Limitless Resources.—Walking beside some friends through the various buildings of the exposition, (I have not been down ‘Joy street’ yet and I am not in a hurry to go down until I have digested ‘the feast of fat things’ in the exposition proper.) I heard again and again this expression ‘What limitless resources we have in Tennessee.’ And it seems to me that herein lies our greatest hazard, the danger of useless waste of our resources.

“Riding out across country, some months ago, I was utterly amazed to see a young forest of hardwood trees felled, which could not have realized to the owner one-third of their value, five or ten years hence. New England is slowly waking up to the fact that her worn out farms, now forsaken for lands in the far west, or south, had they been properly fed by composts and fertilizers, might today be fertile as the garden of Eden.

“And what a sermon to be found herein on ‘The Unused Increment.’ What a lot of valuable resources, men and women of ability, talent, which ‘is going to waste,’ in all our churches. If the unused, idle resources of our churches could but be harnessed up, what a transformation would be wrought in Knoxville in the near future.

“A More Intelligent Appreciation.—It is a deplorable fact that a small contingent of our citizens are inclined to minimize the great exposition in our midst, and perchance because of the fact that about all that appeals to them is the spectacular, the vaudeville performances, etc. And a number of times, I have been tempted to retort (but a preacher must be mindful always of the—shall I say amenities, niceties, eternal fitness of things?) but I have been greatly tempted to retort: not

more exposition, but more brains, my friend, more brains to appreciate a really great exposition whose name 'The National Conservation Exposition,' is most timely."

In a sermon on the First Exposition of Conservation, Rev. George R. Stuart, at the Church Street M. E. Church, South—taking his text from Ecclesiastes, 5: 9, "The profit of the earth is for all"—said in part:

"The book of Ecclesiastes is to show the vanity of sublunary things. From a view of all earthly and sensual pleasures, the author draws a conclusion that to fear God and keep His commandments is the whole of wisdom and happiness, and the duty of man. Many people have misconstrued this book because of seeming contradictions in teaching. The author in some places states the arguments of the sensualist, and then replies to them; through the dialogue misconstructions occur. The book abounds in scraps of philosophy and short proverbs, after the manner of the book of Proverbs. The text is a statement in a paragraph, warning against the perversion of judgment and of justice in a province, and the oppression of the poor, ending in the text that the profit of the earth is for all; the king himself is served by the field. The meaning of the text is that the earth is the Lord's, and its profits are for His children, from the highest to the lowest, from the peasant to the king. No class, no age has a right to squander the products of earth for selfish ends. 'The profit of the earth is for all.'

"God made the earth as a home, for His children. He filled it with useful things, the cereals, fruits and vegetables; animals, fishes and fowls; medicinal herbs, coal and oil; timber, stone and soil. These are for the comfort and happiness of His children, and are to be so used as to be best conserved for the good of all. He has filled His world full of beautiful things: trees, shrubs, and vines; the grasses, ferns and mosses; the many-hued flowers, the variegated foliage, the birds of rich plumage, the fish and graceful animals; the springs, rocks, rivers and lakes. The earth is full of beauty. God created this for a world of beauty for His children. These utilities and beauties are to be preserved and conserved through ages. The commercial spirit of the age for selfish ends is devastating the earth. First, the forests have been mutilated and destroyed. The ornamental and flowering trees, vines, shrubs and saplings have been ruthlessly destroyed in the hurry to mark it merchantable timber. There is scarcely a forest from valley to mountain in the once beautiful Tennessee country, that has not been ruthlessly destroyed. A careful and intelligent culling of merchantable timbers would have left to coming generations the wealth and beauty of the forests. The sublime and rugged cliffs have been mutilated and destroyed without reference to coming generations. The birds and animals have been slaughtered for wanton pleasure

and one of carelessness. There is scarcely left in the mountains of Tennessee or in any other section an ornamental bird, or a graceful animal.

"The fields and the farms have been worn out, impoverished, and handed down from generation to generation more and more impoverished. The same spirit, that of commercialism, has destroyed the bodies of men. For commercial purposes, there have been placed on the market injurious medicines, devitalizing dopes and destroying liquors. Our great exposition is an intelligent, moral effort to teach the people of the state of Tennessee and adjoining states the great lesson of conservation and preservation. In one department is a great school for making trees, with lessons for training and culture. In another department is the association for the preservation of birds, with pictures of their beauty, habits and utility. In another department, there is a lesson of preserving the soils, and in still another the care of children, and so throughout the whole exposition.

"The exposition by its exhibits, teaches us the results of genius and enterprise and culture, and this stimulates the youth of our land to higher attainments. It cultivates unselfish patriotism, and inspires industry and promotes intelligence."

Many pages of this volume could be filled with favorable comments made by prominent people who came here from all sections of the country. The following are given as expressing the views of thousands of exposition visitors:

"The South, by this exposition, has led the way for the rest of the country in the matter of teaching the necessity of conserving our natural resources. The exposition is a great exposition. There has been none like it in history. I wish every person in the North might see it."—Alfred H. Beers, former Commander-in-Chief, G. A. R.

"The conservation of human life is the best of all conservation work. The National Conservation Exposition teaches how human life may be conserved better than anything I ever have seen. The lessons taught by this really great exposition are many; every one would be the better for learning them. Knoxville and the men behind the National Conservation Exposition have done themselves proud. I was both surprised and delighted with what I saw. It teaches the lesson of conservation in all of its many branches, clearly and forcefully."—Miss Mabel Boardman, President American Red Cross Society.

"A great exposition in every sense of the word. Not only the best by far ever held in the South, but in many respects one of the greatest expositions ever held anywhere. It is an exposition, instructive and interesting."—William B. Wilson, U. S. Secretary of Agriculture.

"For years I have been a great traveler. I have been up and down this country more than once and I have made it a rule to write for my papers my impressions of different things and different events. That is what I am going to do about your conservation exposition. And I have something to write about! Never in all my life have I seen anything to even approach the exposition that is now being held in your progressive city.

"Tell me all about it. Tell me how you happened to adopt the idea of a con-

ervation exposition. Tell me who financed it. Tell me what it cost. I want all the information about this really marvelous undertaking of these Southern business men that I can get hold of.

"If there is anything that typifies the spirit of the new South better than this great exposition could, I have failed to see it or to hear of it. I am amazed at what I have seen. As far as my efforts can accomplish it, I am going to see to it that as many people as I can reach learn more about this exposition.

"I have spent a good part of the day in looking over your exhibits. They are wonderful and they express, one and all, the idea that is dominating the entire exposition. The whole thing has made an appeal to me that is striking. I am going so far as to say that in my opinion the National Conservation Exposition is a long way ahead of any other exposition ever held in this or any other country. It is not the largest, but, following out the idea upon which it was founded, it is the most comprehensive, and it teaches lessons that all of us would be the better for knowing."—H. E. Paine, Manufacturer and Publisher, Scranton, Pa.

"This is what I call a real exposition. Out in my city they are figuring on an exposition themselves, but I think that we have much to learn from Knoxville in the way of putting on an exposition with an idea behind it."—Julius Kahn, of San Francisco, Member of Congress.

"Really wonderful exhibits go to make up the National Conservation Exposition. It is a pity that every citizen of Tennessee and the South, who is able to think, cannot see these exhibits. As to the health exhibit, I have no hesitation in saying that none in this country has approached that now in place at Knoxville."—Dr. Olin West, State Director of Rural Sanitation.

"Grateful should every true American feel toward Tennessee for the patriotic spirit that prompted the holding of this National Conservation Exposition. The national scope upon which it was planned and the successful manner in which it has been conducted evidences the liberality of your people and the boundless resources of the South. The genius who conceived this exposition and the master mind that developed it deserves the commendation of a grateful people."—Judge Robert T. Daniel, Griffin, Ga.

"When I behold so many citizens of the United States coming from various parts of the country to this exposition, and to your fair city seated on a mount, the beautiful prophecy of Isaiah occurs to my mind: 'Arise, be enlightened, O Jerusalem, for thy light is come, and the glory of the Lord is risen upon thee. Lift up thine eyes around about and see. All these are gathered together, they are come to thee. Thy sons shall come from afar, and thy daughters shall rise up at thy side. Then shalt thou see and abound and thy heart shall be enlarged when the multitude of the sea shall be converted to thee, the strength of the people shall come to thee.'"—Cardinal Gibbons.



