NATIONAL CONSERVATION COMMISSION SUBMITS ITS INVESTIGATION REPORT

GIFFORD PINCHOT GIVES REPORT OF THE COMMISSION

Joint Committee of Six From State Conservation Committees Will Assist in the Great Work.

FUTURE GENERATIONS MUST BE CONSIDERED

Blessed With Unsurpassed Natural Resources, Says Commission, This Country Has Been Slow to Awake.

The national conservation commission, appointed in May, 1908, to make an inventory of the natural resources of the United States and recommend measures for their conservation, has made its report to President Roosevelt.

In transmitting the report to congress the president sent a special message commending the work of the commission and declaring that its subject was of the utmost importance to this generation and to posterity.

The report reads as follows:

The President, the White House:

Sir—Herewith I have the honor to place in your hands the report of the national conservation commission, created by you June 8, 1908, to inquire into and advise you as to the condition of our natural resources and to co-operate with other bodies created for similar purposes by the states.

The mass of material which constitutes the inventory has been summarized under the direction of the secretaries of the respective sections of the commission so as to assemble the most salient points of the inventory.

In view of the peculiarly valuable contributions and services rendered by experts of the several executive departments, the commission at its closing session unanimously adopted the following resolutions:

"Whereas, The commission, in the discharge of the duties committed to it, has been greatly aided by the patient labors and the ability and zeal of its secretary and the secretary of each of its four sections and of the experts in the government service, who lent their assistance in the collection of statistical and other data necessary to the elucidation and proper understanding of the subjects dealt with and to the preparation of its report; therefore,

"Resolved, That the commission hereby makes cordial acknowledgment of its obligation to the gentlemen referred to and tenders them its thanks."

In addition, I desire to call your special attention to the spirit and devotion of the gentlemen without whose services the making of the national inventory would have been impossible.

In its co-operation "with other bodies created for similar purposes by the states" the national conservation commission has had most valuable assistance.

The report herewith submitted was unanimously approved by the joint conservation conference. Further action was taken by the conference in authorizing a joint committee on co-operation, to be composed of six members of state conservation commissions and three members of the national conservation commission, with its chairman and secretary. This committee is to devise ways and means for effective co-operation between all forces working for the conservation of natural resources. By this action the conservation movement enters the field of definite constructive work, for which its labors in ascertaining the country's present status and future outlook were simply preparatory.

Very respectfully,

GIFFORD PINCHOT,
Chairman.

Report of the National Conservation Commission.

The duty of man to man, on which the integrity of nations must rest, is no higher than the duty of each generation to the next, and the obligation of the nation to each actual citizen is no more sacred than the obligation to the citizen to be, who in turn must bear the nation's duties and responsibilities.

In this country, blessed with natural resources in unsurpassed profusion, the sense of responsibility to the future has been slow to awaken. In the growth of the country and gradual development of the natural resources there have been three noteworthy stages. The first stage was that of individual enterprise for personal and family benefit. It led to the conquest of the wilderness.

The next stage was that of collective enterprise, either for the benefit of communities or for the profit of individuals forming the communities. It led to the development of cities and states and too often to the growth of great monopolies.

The third stage is the one we are now entering. Within it the enterprise is collective and largely co-operative and should be directed toward the larger benefit of communities, states and the people generally.

In the first stage the resources received little thought. In the second they were wastefully used. In the stage which we are entering wise and beneficial uses are essential, and the checking of waste is absolutely demanded.

The waste which most urgently requires checking varies widely in character and amount. The most reprehensible waste is that of destruction, as in forest fires; uncontrolled flow of gas and oil, soil wash and abandonment of coal in the mines. This is attributable, for the most part, to ignorance, indifference or false notions of economy, to rectify which is the business of the people collectively.

Nearly as reprehensible is the waste arising from misuse, as in the consumption of fuel in furnaces and engines of low efficiency, the loss of water in floods, the employment of ill adapted structural materials, the growing of ill chosen crops and the perpetuation of inferior stocks of plants and animals, all of which may be remedied.

Reprehensible in less degree is the waste arising from nonuse. Since the utilization of any one resource is necessarily progressive and dependent on social and industrial conditions and the concurrent development of other resources, nonuse is sometimes unavoidable. It becomes reprehensible when it affects the common welfare and entails future injury. Then it should be rectified in the general interest.

Natural resources are of no avail without men and women to develop them, and only a strong and sound citizenship can make a nation permanently great. We cannot too soon enter on the duty of conserving our chief source of strength by the prevention of disease and the prolongation of life.

Waste reduced and resources saved are the first, but not the last, object of conservation. The material resources have an additional value when their preservation adds to the beauty and habitability of the land. Ours is a pleasant land in which to dwell. To increase its beauty and augment its fitness cannot but multiply our pleasure in it and strengthen the bonds of our attachment.

Minerals.

The mineral production of the United States for 1907 exceeded $2,000,000,000 and contributed 65 per cent of the total freight traffic of the country. The waste in the extraction and treatment of mineral products during the same year was equivalent to more than $300,000,000.

The production for 1907 included 395,000,000 tons of bituminous and 85,000,000 tons of anthracite coal, 166,000,000 barrels of petroleum, 45,000,000 tons of high grade and 11,000,000 tons of low grade iron ore, 2,500,000 tons of phosphate rock and 869,000,000 pounds of copper. The values of other mineral products during the same year included clay products, $162,000,000; stone, $71,000,000; cement, $56,000,000; natural gas, $50,000,000; gold, $90,000,000; silver, $37,000,000; lead, $39,000,000, and zinc, $26,000,000.

The available and easily accessible supplies of coal in the United States aggregate approximately 1,400,000,000,000 tons. At the present increasing rate of production this supply will be so depleted as to approach exhaustion before the middle of the next century.

The known supply of high grade iron ores in the United States approximates 3,840,000,000 tons, which at the present increasing rate of consumption cannot be expected to last beyond the middle of the present century. In addition to this, there are assumed to be 59,000,000,000 tons of lower grade iron ores which are not available for use under existing conditions.

The supply of stone, clay, cement, lime, sand and salt is ample, while the stock of the precious metals and of copper, lead, zinc, sulphur, asphalt, graphite, lead, zinc, sulphur, asphalt, graphite, quicksilver, mica and the rare metals cannot well be estimated, but is clearly exhaustible within one to three centuries unless unexpected deposits be found.

The known supply of petroleum is estimated at 15,000,000,000 to 20,000,000,000 barrels, distributed through six separate fields having an aggregate area of 3,900 square miles. The production is rapidly increasing, while the wastes and the loss through misuse are enormous. The supply cannot be expected to last beyond the middle of the present century.

The known natural gas fields aggregate an area of 9,000 square miles, distributed through twenty-two states. Of the total yield from these fields during 1907, 400,000,000,000 cubic feet, valued at $62,000,000, were utilized, while an equal quantity was allowed to escape into the air. The daily waste of natural gas—the most perfect known fuel—is over 1,000,000,000 cubic feet, or enough to supply every city in the United States of over 100,000 population.

Phosphate rock, used for fertilizer, represents the slow accumulation of organic matter during past ages. In most countries it is scrupulously preserved. In this country it is extensively exported, and largely for this reason its production is increasing rapidly. The original supply cannot long withstand the increasing demand.

The consumption of nearly all our mineral products is increasing far more rapidly than our population. In many cases the waste is increasing more rapidly than the number of our people. In 1776 but a few dozen pounds of iron were in use by the average family. Now our annual consumption is over 1,200 pounds per capita. In 1812 no coal was used. Now the consumption is over five tons and the waste nearly three tons per capita.

While the production of coal is increasing enormously, the waste and loss in mining are diminishing. The chief waste is in imperfect combustion in furnaces and fire boxes.

With increasing industries new mineral resources become available from time to time. Some lignites and other low grade coals are readily gasified and, through the development of internal combustion engines, check the consumption of high grade coals. Peat is becoming important. It is estimated that 14,000,000,000 tons are available in the United States. Its value is enhanced because of distribution through states generally remote from the fields of coal, oil and natural gas.

The building operations of the country now aggregate about $1,000,000,000 per year. The direct and indirect losses from fire in the United States during 1907 approximated $450,000,000, or one-half the cost of construction. Of this loss four-fifths, or an average of $1,000,000 per day, could be prevented, as shown by comparison with the standards of construction and fire losses in the larger European countries.

So far as the ores are taken from the mines and reduced to metals, these resources are capitalized, but after thus being changed to a more valuable form they should be so used as to reduce to a minimum the loss by rust, electrolytic action and other waste.

There is urgent need for greater safety to the miner. The loss of life through mine accidents is appalling, and preventive measures cannot be taken too soon.

The national government should exercise such control of the mineral fuels and phosphate rocks now in its possession as to check waste and prolong our supply.

Lands.

The total land area of continental United States is 1,900,000,000 acres. Of this but little more than two-fifths is in farms, and less than one-half of the farm area is improved and made a source of crop production. We have nearly 6,000,000 farms; they average 146 acres each. The value of the farms is nearly one-fourth the wealth of the United States. There are more than 300,000,000 acres of public grazing land. The number of persons engaged in agricultural pursuits is more than 10,000,000.

We grow one-fifth of the world's wheat crop, three-fifths of its cotton crop and four-fifths of its corn crop. We plant nearly 50,000,000 acres of wheat annually, with an average yield of about fourteen bushels per acre; 100,000,000 acres of corn, yielding an average of twenty-five bushels per acre, and 30,000,000 acres of cotton, yielding about 12,000,000 bales.

We had on Jan. 1, 1908, 71,000,000 cattle, worth $1,250,000,000; 54,000,000 sheep, worth $211,000,000, and 56,000,000 swine, worth $339,000,000. The census of 1900 showed $137,000,000 worth of poultry in this country, which produced in 1899 293,000,000 dozen eggs.

There has been a slight increase in the average yield of our great staple farm products, but neither the increase in acreage nor the yield per acre has kept pace with our increase in population. Within a century we shall probably have to feed three times as many people as now, and the main bulk of our food supply must be grown on our own soil.

The area of cultivated land may possibly be doubled. In addition to the land awaiting the plow, 75,000,000 acres of swamp land can be reclaimed, 40,000,000 acres of desert land irrigated and millions of acres of brush and wooded land cleared. Our population will increase continuously, but there is a definite limit to the increase of our cultivated acreage; hence we must greatly increase the yield per acre. The average yield of wheat in the United States is less than fourteen bushels per acre, in Germany twenty-eight bushels and in England thirty-two bushels.

The greatest unnecessary loss of our soil is preventable erosion. Second only to this are the waste, nonuse and misuse of fertilizer derived from animals and men.

The losses to farm products due to injurious mammals is estimated at $130,000,000 annually, the loss through plant diseases reaches several hundred million dollars, and the loss through insects is reckoned at $659,000,000. The damage by birds is balanced by their beneficent work in destroying noxious insects. Losses due to the elements are large, but no estimate has been made of them. Losses to live stock from these causes are diminishing because of protection and feeding during winter. The annual losses from disease among domestic animals are: Horses, 1.8 per cent; cattle, 2 per cent; sheep, 2.2 per cent, and swine, 5.1 per cent. Most of these farm losses are preventable.

There is a tendency toward consolidation of farm lands. The estimated area of abandoned farms is 16,000 square miles, or about 3 per cent of the improved land. The causes of abandonment differ in different parts of the country. Where most prevalent it is caused principally by erosion and exhaustion of the soil.

The product of the fisheries of the United States has an annual value of $57,000,000. Fish culture is carried on by the nation and states on an enormous scale. Most of the more important food species are propagated, and several species are maintained in that way. Fish from forest waters furnish $21,000,000 worth of food yearly, a supply dependent on the preservation of the forests.

Our wild game and fur bearing animals have been largely exterminated. To prevent their complete extinction the states and the United States have taken in hand their protection, and their numbers are now increasing. Forest game yields over $10,000,000 worth of food each year. With game birds the story is much the same.

Each citizen of the United States owns an equal undivided interest in about 375,000,000 acres of public lands, exclusive of Alaska and the insular possessions. Besides this, there are about 235,000,000 acres of national forests, national parks and other lands devoted to public use.

Good business sense demands that a definite land policy be formulated. The national conservation commission believes that the following will serve as a basis therefor:

First.—Every part of the public lands should be devoted to the use which will best subserve the interests of the whole people.

Second.—The classification of all public lands is necessary for their administration in the interests of the people.

Third.—The timber, the minerals and the surface of the public lands should be disposed of separately.

Fourth.—Public lands more valuable for conserving water supply, timber and natural beauties or wonders than for agriculture should be held for the use of the people from all except mineral entry.

Fifth.—Title to the surface of the remaining nonmineral public lands should be granted only to actual homemakers.

Sixth.—Pending the transfer of title to the remaining public lands they should be administered by the government, and their use should be allowed in a way to prevent or control waste and monopoly.

The present public land laws as a whole do not subserve the best interests of the nation.

Forests.

Next to our need of food and water comes our need of timber.

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 and cold. Woodlands make for the fiber, health and happiness of the citizen and the nation.

Our forests now cover 550,000,000 acres, or about one-fourth of the United States. The original forests covered not less than 850,000,000 acres.

Forests publicly owned cover one-fourth of the total forest area and contain one-fifth of all our standing timber. Forests privately owned cover three-fourths of the area and contain four-fifths of the standing timber. The timber privately owned is not only four times that publicly owned, but is generally more valuable.

Forestry is now practiced on 70 per cent of the forests publicly owned and on less than 1 per cent of the forests privately owned, or on only 18 per cent of the total area of forests.

The yearly growth of wood in our forests does not average more than twelve cubic feet per acre. This gives a total yearly growth of less than 7,000,000,000 cubic feet.

We have 200,000,000 acres of mature forests, in which yearly growth is balanced by decay; 250,000,000 acres partly cut over or burned over, but restocking naturally with enough young growth to produce a merchantable crop, and 100,000,000 acres cut over and burned over upon which young growth is lacking or too scanty to make merchantable timber.

We take from our forests yearly, including waste in logging and in manufacture, 23,000,000,000 cubic feet of wood.

Since 1870 forest fires have destroyed a yearly average of fifty lives and $50,000,000 worth of timber. Not less than 50,000,000 acres of forest is burned over yearly. The young growth destroyed by fire is worth far more than the merchantable timber burned.

One-fourth of the standing timber is lost in logging. The boxing of long leaf pine for turpentine has destroyed one-fifth of the forests worked. The loss in the mill is from one-third to two-thirds of the timber sawed. The loss of mill product in seasoning and fitting for use is from one-seventh to one-fourth.

We take from our forests each year, not counting the loss by fire, three and a half times their yearly growth; we take forty cubic feet per acre for each twelve cubic feet grown; we take 260 cubic feet per capita, while Germany uses thirty-seven and France twenty-five cubic feet.

We tax our forests under the general property tax, a method abandoned long ago by every other great nation. Present tax laws prevent reforestation of cut over land and the perpetuation of existing forests by use.

Great damage is done to standing timber by injurious forest insects. Much of this damage can be prevented at small expense.

To protect our farms from wind and to reforest land best suited for forest growth will require tree planting on an area larger than Pennsylvania, Ohio and West Virginia combined. Lands so far successfully planted make a total area smaller than Rhode Island, and year by year, through careless cutting and fires, we lower the capacity of existing forests to produce their like, again or else totally destroy them.

The preservation by use under the methods of practical forestry of all public forest lands, either in state or federal ownership, is essential to the permanent public welfare. In many forest states the acquirement of additional forest lands as state forests is necessary to the best interests of the states themselves.

The conservation of our mountain forests, as in the Appalachian system, is a national necessity. These forests are required to aid in the regulation of streams used for navigation and other purposes. The conservation of these forests is impracticable through private enterprise alone, by any state alone or by the federal government alone. Effective and immediate co-operation between these three agencies is essential. Federal ownership of limited protective areas upon important watersheds, effective state fire patrol and the co-operation of private forest owners are all required.

The true remedy for unwise tax laws lies not in laxity in their application nor in special exemption, but in a change in the method of taxation. An annual tax upon the land itself, exclusive of the value of the timber, and a tax upon the timber when cut are well adapted to actual conditions of forest investment and are practicable and certain. It is far better that forest land should pay a moderate tax permanently than that it should pay an excessive revenue temporarily and then cease to pay at all.

Forests in private ownership cannot be conserved unless they are protected from fire. We need good fire laws, well enforced. Fire control is impossible without an adequate force of men whose sole duty is fire patrol during the dangerous season.

The conservative use of the forest and of timber by American citizens will not be general until they learn how to pactice forestry.

We shall suffer for timber to meet our needs until our forests have had time to grow again. But if we act vigorously and at once we shall escape permanent timber scarcity.

Waters.

The sole source of our fresh water is rainfall, including snow. From this source all running, standing and ground waters are derived. The habitability of the country depends on these waters. Our mean annual rainfall is about thirty inches, the quantity about 215,000,000,000,000 cubic feet per year, equivalent to ten Mississippi rivers.

Of the total rainfall over half is evaporated, about a third flows into the sea, and the remaining sixth is either consumed or absorbed. These portions are sometimes called respectively the fly-off, the run-off and the cut-off. They are partly interchangeable. About a third of the run-off, or a tenth of the entire rainfall, passes through the Mississippi. The run-off is increasing with deforestation and cultivation.

Of the 70,000,000,000,000 cubic feet annually flowing into the sea less than 1 per cent is restrained and utilized for municipal and community supply. Less than 2 per cent (or some 10 per cent of that in the arid and semiarid regions) is used for irrigation. Perhaps 5 per cent is used for navigation and less than 5 per cent for power.

For municipal and community water supply there are protected catchment areas aggregating over 600,000 acres, and over $250,000,000 are invested in waterworks, with nearly as much more in the appurtenant catchment areas and other lands. The population so supplied approaches 10,000,000, and the annual consumption is about 37,500,000,000 cubic feet. The better managed systems protect the catchment areas by forests and grass. The water is controlled and the storm product used, but there is large waste after the water enters the mains.

For irrigation it is estimated that there are $200,000,000 invested in dams, ditches, reservoirs and other works for the partial control of the waters and that 1,500,000,000,000 cubic feet are annually diverted to irrigible lands, aggregating some 20,000 square miles. Except in some cases through forestry, few catchment areas are controlled and few reservoirs are large enough to hold the storm waters. The waste in the public and private projects exceeds 60 per cent, while no more than 25 per cent of the water actually available for irrigation of the arid lands is restrained and diverted.

None of our rivers are navigated to more than a small fraction even of their effective low water capacity.

The water power now in use is 5,250,000 horsepower; the amount running over government dams and not used is about 1,400,000 horsepower; the amount reasonably available equals or exceeds the entire mechanical power now in use or enough to operate every mill, drive every spindle, propel every train and boat and light every city, town and village in the country. While the utilization of water power ranks among our most recent and most rapid industrial developments, little effort has been made to control catchment areas or storm waters in any large way for power, though most plants effect local control through reservoirs and other works. Nearly all the freshet and flood water runs to waste, and the low waters which limit the efficiency of power plants are increasing in frequency and duration with the increasing flood run off. The direct yearly damage by floods since 1900 has increased steadily from $45,000,000 to over $238,000,000. The indirect loss through depreciation of property is great, while a large loss arises in impeded traffic through navigation and terminal transfers.

The freshets are attended by destructive soil erosion. The soil matter annually carried into lower rivers and harbors or into the sea is computed at 780,000,000 tons. Soil wash reduces by 10 or 20 per cent the productivity of upland farms and increases channel cutting and bar building in the rivers. The annual loss to the farms alone is fully $500,000,000, and large losses follow the fouling of the waters and the diminished navigability of the streams.

Through imperfect control of the running waters lowlands are temporarily or permanently flooded. It is estimated that there are in mainland United States about 75,000,000 acres of overflow and swamp lands requiring drainage, that by systematic operation these can be drained at moderate expense and that they would then be worth two or three times the present value and cost of drainage and would furnish homes for 10,000,000 people.

A large part of that half of the annual rainfall not evaporated lodges temporarily in the soil and earth. It is estimated that the ground water to the depth of 100 feet averages 16 2-3 per cent of the earth volume, or over 1,400,000,000,000,000 cubic feet, equivalent to seven years' rainfall or twenty years' run-off. This subsurface reservoir is the essential basis of agriculture and other industries and is the chief natural resource of the country. It is probable that fully 10 per cent of this rich resource has been wasted since settlement began. The water of the strata below 100 feet supplies artesian and deep wells, large springs and thermal and mineral waters. It can be controlled only through the subsurface reservoir.

Except through agriculture and forestry little general effort is made to control the annual cut-off, although some farmers in arid regions claim to double or triple the crop from given soil by supplying water just when needed and withholding it when not required.

Within recent months it has been recognized and demanded by the people, through many thousand delegates from all states assembled in convention in different sections of the country, that the waterways should and must be improved promptly and effectively as a means of maintaining national prosperity.

The first requisite for waterway improvement is the control of the waters in such manner as to reduce floods and regulate the regimen of the navigable rivers. The second requisite is development of terminals and connections in such manner as to regulate commerce.

In considering the uses and benefits to be derived from the waters the paramount use should be water supply. Next should follow navigation in humid regions and irrigation in arid regions. The development of power on the navigable and source streams should be co-ordinated with the primary and secondary uses.

Broad plans should be adopted providing for a system of waterway improvement extending to all uses of the waters and benefits to be derived from their control.

National Efficiency.

Since the greatest of our national assets is the health and vigor of the American people, our efficiency must depend on national vitality even more than on the resources of the minerals, lands, forests and waters.

Our annual mortality from tuberculosis is about 150,000. Stopping three-fourths of the loss of life from this cause and from typhoid and other prevalent and preventable diseases would increase our average length of life over fifteen years.

If we count the value of each life lost at only $1,700 and reckon the average earning lost by illness as $700 per year for grown men, we find that the economic gain from mitigation of preventable disease in the United States would exceed $1,500,000,000 a year. In addition we would decrease suffering and increase happiness and contentment among the people. This gain, or the lengthening and strengthening of life which it measures, can be secured through medical investigation and practice, school and factory hygiene, restriction of labor by women and children, the education of the people in both public and private hygiene and through improving the efficiency of our health service, municipal, state and national. The national government has now several agencies exercising health functions which only need to be concentrated to become co-ordinated parts of a greater health service worthy of the nation.

We greatly need a more complete inventory of our natural resources, and this cannot be made except through the active co-operation of the states with the nation.

The permanent welfare of the nation demands that its natural resources be conserved by proper use. To this end the states and the nation can do much by legislation and example. By far the greater part of these resources is in private hands. Private ownership of natural resources is a public trust. They should be administered in the interests of the people as a whole. The states and nation should lead rather than follow in the conservative and efficient use of property under their immediate control. But their first duty is to gather and distribute a knowledge of our natural resources and of the means necessary to insure their use and conservation.

Finally the conservation of our resources is an immediate and vital concern. Our welfare depends on conservation. The pressing need is for a general plan under which citizens, states and nation may unite in an effort to achieve this great end. The lack of co-operation between the states themselves, between the states and the nation and between the agencies of the national government is a potent cause of the neglect of conservation among the people. An organization through which all agencies, state, national, municipal, associate and individual, may unite in a common effort to conserve the foundations of our prosperity is indispensable to the welfare and progress of the nation. To that end the immediate creation of a national agency is essential.

Gifford Pinchot, chairman; W. J. McGee, secretary, section of waters; Overton W. Price, secretary, section of forests; George W. Woodruff, secretary, section of lands; J. A. Holmes, secretary, section of minerals.

Attest: Thomas B. Shipp, secretary to the commission.

Police Constable, H. Coles, stationed at Ealing, London, holds the record among humane officers, having recently brought his nine-hundredth case of cruelty to horses before the Brentford bench. Fines amounting to more than $10,000 have been imposed on drivers in these cases.