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THE STATE FORESTS

Forest Fires—Their Danger to Life and Property—Systems of Protection in Use in other Countries and States—Water Power Should Be Conserved—A Water Storage Law Recommended—Waste Lands Should Be Reforested—Official Licensed Guides Should Be Created—Repeal the Forest Preserve Condemnation Law.

Report by the Committee on Forests of the New York Board of Trade and Transportation.

NEW YORK, December 16, 1903.

To the New York Board of Trade and Transportation :

At the meeting of the New York Board of Trade and Transportation held June 24, 1903, the following resolution was adopted, viz.:

Resolved: That the Committee on Forests be requested to investigate the methods taken for the protection of forests from fire in this and other countries and report the same to the Board at its October meeting, together with such recommendations as to the means that should be taken in this State for the better protection of its forests from fire in the future, and such other recommendations as the committee may deem proper in regard to the Forest Preserve.

Pursuant to instructions, the Committee on Forests submits the following report.

The systems chiefly prevailing for the prevention of forest fires in India, in the French colonies and in Conti-

mental Europe where the subject of forestry for many years has been engaging the serious attention of statesmen, political economists and practical foresters, are: 1st.—A thorough policing by trained foresters or rangers of the wooded regions under supervision. 2d.—In addition to the main or wider roads, a network of fire-rides or lanes, penetrating and crossing the territory under management in every direction necessary to carry out the purposes in view.

As each of these is complementary to the other, it is evident that where the natural features of the region are favorable to the working of both systems at the same time, the possibility of forest fires causing any serious loss, or of making any headway is reduced to a minimum.

The following extracts furnished by the Bureau of Forestry at Washington from a report upon forestry investigations in the United States Department of Agriculture refer to forest protection in Prussia, and show in a manner the oversight and efficiency exercised by the authorities of that country in this respect;

“In this country the greatest danger to the forest, besides the indiscriminate cutting, is to be found in fires. How little this scourge of American forests is known in Germany may appear from the statistics of fires in the government forests of Prussia (representing 60 per cent. of the German forest area), 56 per cent. of which are coniferous, which show that railroading may be carried on without the necessity of extra risks, if proper precautions are provided. During the years 1882-1891 there had occurred 156 larger conflagrations—96 from negligence, 53 from ill-will, 3 from lightning, and only 4 from locomotives. Seven years out of ten are without any record of fire due to this last cause.

“From 1884 to 1887 fires occurred in Prussia on 3,100 acres, but only 1,450 were wholly destroyed, *i. e.*, 380 acres per year, or 0.005 per cent. of the total area of government forests. In Bavaria during the years 1877-1881 only 0.007 per cent. of the forest area was damaged by fire, and the loss represented only 0.02 per cent. of the forest revenues. During the unusually hot and dry summer of 1892 only 49 fires, damaging more or less 5,000 acres, occurred.



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“ Besides the thorough police organization and the compartment system, which permits not only ready patrolling but also ready control of any fire, the system of safety strips described in the report of this Division for 1892, where a fuller discussion of this subject may be found, prevents the spread of fire from locomotives.

* * * * *

“ In Prussia the maps of the districts are made on the scale of 1/5,000 in portfolio sheets, representing a careful survey by theodolite of the boundaries of the district, the permanent differences of soil and occupancy (roads, waters, fields, meadows, moors, etc.), and the division of the district into smaller units of management. This kind of map, of which only three copies are made, is then, for purposes of use in daily routine, reduced to a scale of 1/25,000 on one sheet, and printed. The first matter of interest that strikes us on these blank or base maps is the division lines by which the district is divided into parcels or compartments. In the plain these lines divide the district into regular oblong compartments (Jagen) of about 60 to 75 acres each, with sides of 100 and 200 yards, respectively, separated by openings or avenues which we may call ‘rides’ (Gestell schneisse), so that the whole makes the appearance very much like the map of an American city regularly divided into blocks. The rides (from 8 to 40 rods wide) running east and west and north and south are lettered, the former, broader ones (main avenues) with capital letters, the latter (side avenues) with small letters, while the compartments are numbered. In the forest itself at each corner a monument of wood or stone indicates the letters of the rides and the numbers of the compartments, rendering it easy to find one’s way or direct any laborer to any place in the forest. The rides are often used as roads and serve also the purpose of checking fires, etc.

“ In the hill and mountain districts this regular division becomes impracticable and the lines of compartments conform to the contour, while the opening of the avenues is restricted to those which can readily be transformed into roads; roads, indeed, determining the division lines wherever practicable.”

“ The German forests are under close supervision of government authorities so that all particulars, such as planting, cutting, and even the gathering of brush has been with the

consent and under the supervision of the government officials. There is, in consequence, no opportunity for advantage to be taken by those who make use of the forest, and, as may be seen from the quotations, there are few opportunities for fires to start, and there are very small losses from fires."

A system of roads or fire rides for fire prevention approaching in any degree to such a comprehensive and perfect one as that just sketched it would be impossible to introduce and make effectual in the forests of this State owing to the topography of the regions under discussion. Their surface is broken up by a chaos of mountains and lesser elevations, while this general irregularity in certain sections is still more marked by numerous ravines, gorges, passes and precipitous ascents. Again, the introduction of any system of fire lanes or trails for the purpose of preventing fires or fighting them advantageously, into the State property in the Forest Preserve would be met by this obstacle, that the State forests are not massed in a single area. Of various areas and shapes these woodlands are distributed throughout the Preserve, some of those in the Adirondacks being so scattered and isolated as to be completely surrounded by those owned by corporations, clubs and individuals.

Providing for a system of fire lanes and trails, therefore, is out of question at present. The other alternative is feasible, and provision should be made to maintain a body of paid rangers to patrol all of our forests during those months when they are most liable to take fire. A common system of fire protection should be applied to the great areas of woodlands of the Catskills and Adirondacks and to those of Long Island, and to this end an understanding should be arrived at between the State authorities and the owners of forest lands other than the State's.

It is well understood that the fires this year in our State forests, estimated to have caused a loss of upwards of \$3,000,000, and which it is said cost some \$50,000 to put

out, were due to a lack of preventive measures at a time of unusual drought and when watchfulness over the wooded sections of the State was most necessary.

Numerous fires broke out in various parts of the Preserve. For a few weeks these were kept within control by the employment of bodies of fire fighters. Fanned by the high winds that rose after they were started, these fires grew rapidly and became unmanageable until they were extinguished by rains that fortunately fell in the month of June. Had this drought continued these fires would have spread and united as those at Miramichi, and the loss of human life might have been great.

The fire at Miramichi, New Brunswick, in 1825, destroyed in a few hours, its progress was so swift, a region of forest covering an area of nearly 6,000 square miles. Upwards of 300 persons lost their lives, and thousands of wild beasts and domestic animals perished in the woods and settlements, and gave forth from their putrescent carcasses such effluvium and stench as to make the burnt sections and the surrounding country deadly dangerous from the contagion engendered. "Myriads of salmon, trout, bass and other fish poisoned by the alkali formed by the ashes precipitated into the waters, lay dead and floundering and gasping on the scorched shore and beaches, and the countless variety of wild fowl shared a similar fate." But great as this calamity was, that at Peshtigo in 1871 in Wisconsin, was still more awful. Covering an area of twice that of the State of Rhode Island, more than 1,000 persons perished in its seas of fire. About this time also a fire swept across the entire State of Michigan, cutting a swathe in its forests of 180 by 40 miles, an area equal to almost that of the State of New Jersey. By this several hundred lives were sacrificed. Ten years later the same State had a second visitation of fire in which 500 lives were lost. Then came in 1894 the fire near Hinckley, Minn. It is estimated that about \$25,000,000 worth of property was destroyed, and 500 persons perished by this calamity. By it also some thousands were made homeless.

In our own State it is estimated that at certain times during the summer season there are more than 100,000 visitors in the Catskill and Adirondack regions occupying the various cottages and private camps and finding accommodations at the numerous hotels and boarding houses. It is also to be observed that the presence of this multitude of health and recreation seekers corresponds in time with the period when the forests are generally suffering from prolonged heat and drought, and, therefore, in the fittest condition to take fire. Moreover, the probability of fires breaking out in many places at the same time is increased by the many and numerous uses of fire for the household and other purposes of this great host of campers, their guests and boarders. But this likelihood of fires is further increased by the well-recognized fact that a large number of such persons are without any sense whatever of responsibility as to the serious consequences that may follow a fire due to neglect or carelessness on their part.

Besides these causes fires are often due to malicious purposes, to the careless use of matches thrown away and not extinguished, from the smoking of pipes, cigars and cigarettes, to fires left by campers, hunters or fishers, to sparks and other burning material that escape in the clearing of lands, and the burning of brush and stubble in preparing ground for cultivation; to fires purposely started to secure employment in putting them out again, one of the causes, it is charged, for some of the recent fires in our State Forest Preserve, while others are said to have been due to the sparks and coals from locomotives running through the Preserve.

A knowledge of the above facts and others of a like character induces your Forestry Committee to bring before you the subject of the security of our State forests—the question of how far the existing system for their protection is proof against some great conflagration that would devastate them—one that would not only inflict a very serious and burdensome loss of property upon the entire

community, but a loss that would be irreparable and deplorable beyond expression, and which could not fail to be an ineffaceable reproach upon this great commonwealth—the loss of a large number of human lives.

Without a doubt because of the surpassing natural attractions of the Catskills and Adirondacks as health and pleasure resorts, representatives are always to be found there from every section of the State and from every State of the Union during the summer season, and when it is borne in mind that egress from the Adirondack forests is confined to limited railroad facilities, with stations many miles from the most frequented resorts, approached only over narrow mountain roads, paths and trails, the contemplation of the possible loss of human life that would be caused by such a fire as swept the forests of Wisconsin, Minnesota and Canada, is appalling in the extreme. The possibility of such a disaster demands from the State authorities and the Legislature the enactment of such laws as human foresight and vigilance can provide against its occurrence.

The special object of the fire lane is to check the incipient ground fire. For this reason these lanes are kept bare of all vegetation—of trees, underbrush, rank grasses, and indeed, as far as possible, of any combustible material.

The ground fire, the most common of forest fires, consumes such material as it finds upon the forest floor, as dead boughs and branches, withered grasses, dried leaves mosses and litter of all kinds, and in particular that most dangerous and inflammable litter due to lumbering and the refuse of the saw mill. At the same time such a fire may become so hot as to destroy the tender undergrowth, young trees and so scorch the older and larger timber as to seriously injure if not kill some of it.

A fire, however, of this character if promptly attended to is easily halted and extinguished, or it may burn itself out when it has reached the bare earth of the fire lane for lack of fuel, as the fire lane is often an effectual barrier to

the further advance of the ground-fire. If not checked the ground-fire often grows to such dimensions as to pass altogether beyond the control of human agency.

Once having obtained sufficient headway, it rapidly increases its area of ravage, fanned as it is by the drafts of its own creation. Powerful currents of air are set in motion. From the surrounding atmosphere there is an inward rushing of air to take the place of the hot and rarefied currents ascending over the regions of the burning forests. These in their turn bear aloft shoals of sparks, red hot cinders, embers, and the larger materials loosened from the blazing trees. Carried forward by the winds and sometimes borne across streams and broader sheets of water, these fiery particles and fire brands are scattered broadcast, and in a season of long-continued drought, falling among the dry foliage, underbrush and the tinder-like *débris* of the wind or lumber slash start new fire centres and advance and enlarge the zone of devastation.

Thus the ground-fire so insignificant at its beginning often develops into the giant conflagration, the dreaded and uncontrollable top-fire. Unlike the ground-fire, the top or crown fire as it runs and leaps along the forest tops, descends, seizes upon, and converts by the intense heat it generates, the green living timber into fuel for its own consumption, multiplies its powers for destruction, and often leaves behind it nothing but the wasted, charred and blackened landscape.

In certain regions of the State the evils to be looked for arising from fires are of the gravest nature. In the more level sections lands that have been denuded of their covering may in time be clothed with forest. But the steepness of the acclivities and the scantiness of the soil in many parts of these mountains would preclude a second growth of vegetation of any kind whatever. The slides of McComb, Colden, Marcy, the Gothics and of other elevations bare of all plant life, the hanging precipices of Wallface Mountain and Dix's Peak, to which no vegetation can cling, are omi-

nous of the conditions to which fires would reduce this and other sections of the Adirondack Preserve. A fire of any magnitude there would dry up their life-giving springs, overwhelm their streams and lakes with the debris of burning mountains, and transform the wild and picturesque beauty and grandeur of their scenery, now so generally recognized and appreciated into the very "abomination of desolation."

The probability of this is also largely increased by the topography of the region itself, its plexus of waters being a unique one, presenting natural conditions unknown elsewhere upon this continent or in the Old World.

Its thousand ponds and lakes, strung together like pearls on the threads of its gleaming brooks and rivers, are in the main but small bodies filling the depressions and narrow passes between the steep mountain slopes, some of them being simply pools of water held in the pockets of the rock. The necessity, then, of exercising an unflinching vigilance over these elevations to preserve them from fire and its consequent evils will be the better understood from the following reasons: The soft-wood forests crowning them find for the most part an uncertain foothold upon a comparatively thin stratum, in some localities a mere veneer of soil. This rests in its turn upon a rock much of which has been worn and smoothed down by the grinding processes of the glaciers which ages ago covered this region. The support which the soft woods receive from the hard woods, it will be seen, prevents the former from sliding down and precipitating themselves upon the sections below. As fires will often attack the hard woods first, by reason of their more open growth and dryness, so their destruction will be the occasion of landslides and avalanches from among the evergreens above.

The likelihood of such irreparable disasters by fire is emphasized by those which have already taken place from the steepness of the acclivities. This is made manifest by the huge areas of barren rock to be seen from almost any of

the Adirondack peaks, as well as by the cases of the Edmunds' Ponds and those of the Ausable, Lakes Colden and Avalanche and other bodies of water which have been partially filled or severed by the debris poured into them from the enclosing steeps.

Should our wooded elevations in a season of prolonged drought be ravaged by fires of any great magnitude it would be, considering the relation which this Commonwealth bears to the rest of the Union, not only a State but a national calamity.

A catastrophe of this character could not fail to deal a mortal blow at some of the industries that have given to it in the past and assure it now its commanding mercantile position. Not only this, but the necessity of developing others, if that were possible, to conform to the new conditions imposed upon it by their destruction, would arise. What is more serious still, this would happen at a time when competition between the most advanced nations and communities has not only reached a stage unprecedented in the history of the commercial world, but must grow more severe, owing to the progressive, intelligent and forceful character of all those now engaged in the direction and development of this mercantile rivalry.

This unrivalled commercial position which the State has profited from for so many decades is to be traced in a large measure back to its system of waterways which are dependent for their existence upon its watersheds. To this system is to be attributed that splendid chain of cities extending through the State which, for their population and the varied industries centered in them, has no parallel elsewhere in our country. It is this system also that has developed and maintained its vast agricultural interests and created a home market for its home products thus giving the State an independence enjoyed by none of its sister States. To its watersheds we must look for the protection and prosperity of its enormous manufacturing industries, employing more capital and using more water horse-power than those of any other State.

Water-power, when properly conserved and utilized, is the cheapest of all power for manufacturing purposes. Water flows continuously by the force of gravitation. The development of its power goes on without the expense that follows coal from the mine to the furnace, an expense that must increase with deeper mining.

In connection with this subject of water and water power, it is an interesting fact to note that the natural features of the State are of that character that it possesses through them the incomparable advantage of having the supreme control of all its water sources.

In the possession of these and its labyrinth of brooks and streams, of lakes and ponds of various areas and altitudes, all going to constitute an unsurpassed and natural system for water storage, water precipitation and water-power production, the State holds the keys to the vast treasure-house of its own immense water-power resources now but comparatively little drawn upon or developed.

As to their commercial value, their possibilities for the evolution of mechanical energy and the creation of industrial wealth, some realization, however inadequate it must be at present, may be formed by a consideration of the agencies at work in producing them—the sun and the ocean, the former the greatest of motors, drawing upon the deep exhaustless reservoirs of the latter, and replenishing the run-off, the evaporation and other waste of our rivers. By this constant interchange between the land and the seas, their powers and their wealth-producing capabilities are renewed and go on forever.

Of the latter it is estimated that if the State stored its river powers and leased them, they would bring it an annual revenue from \$15,000,000 to \$18,000,000, a sum equal to an invested capital of from \$300,000,000 to \$360,000,000 at 5 per cent. interest. While such figures indicate only to a degree the magnitude of our water-power resources, they make evident the necessity of providing for some far-reaching and comprehensive system of legislation and

administration that will protect the interests the community at large has in them.

This view of the subject is confirmed and strengthened by the obvious capabilities of the water-system of the State for the production of electric power—a force which, as yet developed to but to a limited extent by our industries, gives certain promise of being a more valuable asset for it than even its water-powers.

Again, steam is losing the advantages it once possessed over water-power. Already the successful utilizing of some of our water courses for the generation of electricity points to the general application of this subtle and powerful agent as a motive power in the progress of the various arts and industries that go to promote and assure the welfare of the community. The near future will witness the transmission over long distances of electric energy developed from dynamos driven by the water-power of our streams, and to such a degree that coal will be utilized for the production of power only when found in the neighborhood of the workshop or mine. Thus a new and increased value attaches to our rivers and their tributaries; another source of wealth has been discovered existing in them which cannot fail to add to our material prosperity if wisely conserved. In their perpetual flow is to be found a power whose potential forces it is impossible to estimate, as their availability for administering to the multiplying conveniences, necessities and pleasures of our complex civilization appears to be without limit.

Your Committee believe that the foregoing general remarks will have almost universal approval, and this brings us to the consideration of the plan upon which the development of the water and electrical power within our State may be undertaken. Such a development of water power and electrical power as is possible in this State, and such a construction as will best promote the advancement of our industrial interests, would be too vast to be undertaken by ordinary individuals or corporations. Indeed it would be

opposed to public policy, in our judgment, to permit any corporation to undertake such development or to exercise the domination over the industrial development of the State which the control of the water powers upon our rivers and water courses would give it. The most precious interests of the State are involved. Not only for water power, electrical power and industrial development will these waters be needed, but, in the near future, the growing and vast population of our cities will demand, and must have, the pure, potable waters of our forest regions for their daily uses. It is the part of wisdom and foresight, therefore, to oppose any and all plans of development of water power and electrical power which will enhance the control by corporations or individuals of the water powers of this State, and it is the duty of the State, in our judgment, to devise and inaugurate a comprehensive plan of water-power and electric-power development under State control and management. Such plan should take into consideration the interests of the State as a whole, and, whilst conserving and promoting such interests, should liberally compensate individuals for sacrifices which may be required of them for the general good. The cost should be borne by the State except, possibly, by localities affected, and in such instances should be fairly distributed. The broadest powers of the State will be of necessity exercised, and these, upon official initiative, should be first approved by the Governor and State Engineer, and, finally, by legislative enactment after proper and thorough investigation as to plans and cost.

In concluding our consideration of the systems in use in other countries and states for the protection of forests against fire as such may be adapted to the State of New York we summarize as follows:

1st. Fire lanes, as used in other countries, are not generally adapted to the forest regions in New York State.

2d. All successful systems of forest fire prevention in other countries and states include a more or less thorough

policing of the regions under supervision, and the providing of proper means of access to different parts of the forest. The elaboration of such system of policing requires a careful consideration of local conditions in our own State.

The Committee, therefore, recommends the adoption of a thorough system of policing by rangers, guards, or fire-wardens, as they are termed in the various countries which have such systems.

Your Committee has referred to the fact that conflagrations in the forests are frequently caused by the imperfectly extinguished or smoldering camp fires left by inexperienced and careless campers. We regard this as an important source of danger, and, therefore, recommend that camping parties shall be required by law to employ official guides licensed by the State; that such guides shall be held responsible for the perfect extinguishing of camp fires of parties or individuals under their guidance; that official guides shall be given the powers of constables and provided with a suitable shield or insignia of their office; that licenses shall be issued annually to such guides by the State upon evidence of the good character of applicants and of their possessing the necessary experience to qualify them, and that their compensation shall be fixed by law at such maximum sum per diem as is now charged by competent guides.

This plan, if adopted, will give official status to the guides; it will prevent irresponsible and inexperienced persons from pretending to knowledge of the craft they do not possess; it will insure the comfort and safety of campers, and the guides will become a very important factor in preventing infractions of the laws of the woods, not only in respect to fires, but in other respects also.

With respect to fires caused by locomotives, the most practical course seems to be to hold the railroad companies responsible for the damage done. To insist that they shall use spark arresters, or shall burn oil, or shall do

any other specific thing, as now provided by law, under penalty of a paltry fine, has not in the past been sufficient to prevent the starting of fires by locomotives. The absence of specific directions in law or fines and penalties would not prevent railroads from using whatever precautions seem to them best, but, on the contrary, would tend to make them exceedingly careful.

We recommend the development of the existing, but unused, water power of the State and its utilization under a proper and equitable system, controlled by the State, for the extension of our manifold industries, and as a measure of relief of such sections of the State as suffer from the evils of flood, and that this be done upon the lines indicated in the foregoing report.

These two questions may be practically combined, and a proper system of water-power development may be so designed that it will to a large degree remove the evils of flood.

The Board of Trade and Transportation in the Legislature of 1903 opposed and defeated the Water Storage Commission Bill for reasons which were then clearly stated, and which need not be herein repeated.

We believe that the whole influence of this Board should be directed to securing proper legislation on these subjects.

We request the attention of the Board to the fact that the State owns only about a quarter of the 200,000 acres of the waste lands within the boundaries of the Adirondack Park.

The State should not only reclaim its own, but where these denuded woodlands belong to others, and can be purchased at a reasonable price, as many of them can now be, it would be a profitable and beneficent plan for it to buy and reforest them.

The efforts of the Forestry, Fish and Game Commission to plant some of these burnt and waste areas with seedling trees, and so in time to reforest them, are to be commended. These and the plans of the Commission to establish nurseries



for the raising of seedlings for both the Catskills and Adirondacks, ought to be encouraged by the appropriation of sufficient funds to carry on this work of reclamation.

The individual cannot be expected to enter upon any large scheme of forest planting and growth. His life is too brief for such an undertaking. On the contrary, the State exists and lives on, transmitting from one generation to another its prosperity and the various benefits that proceed from it to every class of its citizens.

Whilst the State has hesitated to resume its former policy of extending the Forest Preserve, there can be no valid objection to the purchase and reforestation of the waste lands as herein suggested and which we recommend.

The powers of condemnation by the State of private lands within the Forest Preserve, as provided by law are, in the opinion of your committee, unnecessarily drastic and inequitable. These powers wholly ignore the rights of individuals and work great and unnecessary hardship and deprivation to the citizen. This law has been in force several years and stands as a menace to every land owner and a cloud upon every title within the limits of the Forest Preserve, covering in part fourteen counties, and we recommend that the act be repealed.

Respectfully submitted,

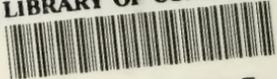
EDMUND P. MARTIN,
PETER F. SCHOFIELD,
HENRY S. HARPER,
JAMES MACNAUGHTON,

Committee on Forestry,

New York Board of Trade and Transportation.

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