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REPORT OF THE COMMITTEE APPOINTED TO MEMORIALIZE CONGRESS AND STATE LEGISLATURES REGARDING THE CULTIVATION OF TIMBER AND THE PRESERVATION OF FORESTS.

THE Special Committee appointed at the twenty-second meeting of this Association, to memorialize Congress and State Legislatures regarding the cultivation of timber and the preservation of forests, would respectfully report:—

That a bill, identical in its provisions with that prepared by the Sub-committee mentioned in our report at the Hartford meeting, and which had been favorably received by the House Committee upon Public Lands, in the Forty-third Congress, was again introduced upon the motion of the Honorable Mark H. Dunnell, of Minnesota, early in the first session of the Forty-fourth Congress, and received the same reference as before.

The Chairman of your Committee now reporting was invited to present its claims before the House Committee upon the Public Lands, and the full time of one of their sessions was spent in considering its provisions. Although several of the members expressed opinions favorable to the subject, the Committee made no report, and in view of the issues then pending, on the eve of a presidential election, it soon became apparent that the occasion would not be favorable for the inauguration of new measures.

Upon this, an amendment embracing some of the features of the proposed bill was offered by Mr. Dunnell, and through his efforts was incorporated in an appropriation bill then pending, under which the Commissioner of Agriculture was directed to appoint a person to prepare a Report which was to be by him transmitted to Congress,—upon “the amount of consumption, importation and exportation of timber and other forest products—the probable supply for future wants—the means best adapted to the preservation and renewal of forests—the influence of forests

upon climate — and the measures that have been successfully applied in various countries for the preservation and restoration of forests.”

The bill embracing this provision became a law on the 15th day of August, 1876 ; and a few days after a commission was granted to Dr. Franklin B. Hough, one of the Committee now reporting, for the execution of this duty.

No instructions were given, beyond those recited in the act, but in a conversation had with the Hon. Frederick Watts, then Commissioner of Agriculture, the latter expressed the wish that the researches should be made as thorough and practicable as the means afforded would allow.

Under this authority, various circulars were addressed to several classes of persons whose business or studies were thought to afford occasion for knowing facts of public interest having reference to Forestry, and the replies received in answer to these evinced a general willingness, on the part of those addressed, to aid in the collection of information of practical value in their several lines of business, or fields of observation. Among the subjects of inquiry were :—the production and use of charcoal for metallurgy,—the use of wood for ties and other purposes, by railroads,—the production and consumption of bark and other tanning materials,—the results of tree-planting in the prairie states,—experiments in the introduction of species not indigenous, and statements of the distribution, relative size, and abundance of native timber trees.

With respect to the importation and exportation of forest products, the Reports upon Commerce and Navigation, which have been published annually since the organization of the present government in 1789, afford all the statistics that we can ever expect to have ; and although changes in the headings of tables (sometimes made unavoidable by changes in the revenue laws), prevent some important commodities from appearing in continuous order through the whole period, these reports nevertheless afford the data for most instructive generalizations. The opportunity was improved to its fullest extent, and tables were carefully prepared, not only showing year by year the statistics reported, but various summaries by coasts and grand divisions, and by countries and colonies, with the view of ascertaining how these exports were affected by time, the exhaustion of material, or the opening

up of new sources of supply, or of new foreign markets, or the changing vicissitudes of trade, and the fluctuating exigencies of supply and demand.

In respect to the measures adopted for the maintenance of supplies in foreign countries by the cultivation of forests, inquiries were addressed to the Forest Administration of several European governments, and in every instance a courteous and sufficient reply was received, either in the way of written statements, or by the sending of documents affording the desired information, or by reference to official reports within reach.

A circular in the German language was addressed to each of the Schools of Forestry, and Societies of Foresters in the countries where that language is chiefly used. These embrace the greater number of these schools and societies that exist. From nearly every one of these replies were received, either as written memoranda, or printed reports, affording the facts desired.

Early in December last, a Report was presented to the Honorable William G. LeDuc, now Commissioner of Agriculture, and after due examination it was transmitted by him to the President, and laid before Congress. It was referred in each House to the Committee upon Agriculture, the manuscript going first to the House of Representatives.

The House Committee, after spending several weeks in examining the subject-matter and estimating its extent, and cost of publication, unanimously reported in favor of printing an edition of 100,000 copies. Their estimates included the statistical portion, and fixed the size of the volume at 1,100 pages, which included an allowance for numerous graphic illustrations, chiefly relating to the tabular part.

The Report then went before the House Committee upon Printing, where, from motives of economy, it was decided to omit for the present the statistical tables, and to limit the extent to 650 pages. Under this restriction, the edition was fixed at 25,000 copies, and in this form it passed the Senate Committees, and without further change was ordered for printing.

The restrictions upon the extent of the volume rendered it necessary to omit altogether the articles upon Forest Administrations and upon Forest Associations in Europe, and to condense other portions which were deemed essential to a satisfactory report. The law under which the appointment was made has not therefore

been fully complied with, and another Report will be presented at the next session of Congress, in which other subjects specified in the statute will receive attention.

It may be proper upon this occasion to notice some points in reference to the cultivation of forests within the United States, and to compare the conditions existing here with those found in European countries where the greatest attention has been given to this subject.

The lands devoted to forest culture in Europe may be divided into four classes, according to the tenure of their title:—

1. Lands owned by the government, including in some countries separate crown-estates, appanages assigned to members of royal families, and lands set apart for certain public uses.
2. Lands belonging to communes and other local municipalities.
3. The property of churches, ecclesiastical establishments, and public institutions.
4. Private estates.

Among the first duties of an intelligent government is the protection of its own property against waste, and the maintenance of its value. If it affords supplies needed in the public service, measures should be taken, if possible, for their renewal; and in proportion as these supplies are essential to the public welfare, or difficult to procure from abroad in time of need, the task becomes one of great responsibility, and a proper subject of timely provision and careful attention.

Hence in every country in Europe where the government owns forest-lands, systems of management, protection and renewal have been adopted to greater or less extent. These systems vary in different countries; in some being little more than prohibitions against trespass and waste, while in others they include a most careful attention to every circumstance affecting the welfare of the growing forest-systems of inspection to insure strict adherence to the plans that may take a century or more to mature, and the most thorough provision for renewal, when this growth shall have been taken off at its full period.

In respect to the second and third of the classes we have mentioned, the care bestowed by the forest administration varies according to circumstances; in some cases amounting to absolute control, and in others to a mere general supervision of the local authorities in charge, and a consent to measures that they may

propose. The woodlands belonging to communes and local public bodies are very often burdened with rights of common usage, originating in ancient customs or special grants, and more or less embarrassing to the forester. The inhabitants of a commune may have rights of pasturage, or of feeding swine, or of gathering leaves and acorns, or of cutting wood for building purposes or fuel; and some of these wants *must* be supplied, or great hardship will be endured.

The management of these common rights renders it necessary to establish rules according to circumstances, and involves systems of regulation that have no interest beyond the jurisdiction where they apply. In many cases the government has found it necessary to terminate by purchase, or otherwise, certain common rights that interfere with the future welfare of a forest, such as those of pasturage, or the gathering of leaves, seeds, and fruits.

As a general rule, the Forest Administration has no concern with private woodlands. To this there are a few exceptions, as, for example, where a belt of forest along a frontier is deemed necessary as a means of defense, or along a river liable to inundation, where materials should be at hand for repairing embankments. More recently, the fixing of sand-dunes, the erosion of torrents, the interception of violent winds, or the malarious emanations, and other cases affecting the general interest, or the public health, have come to be regarded as proper subjects of regulation by government, although the lands may belong to private owners.

But with these exceptions the owners of woodlands generally have the right to clear or plant as they please, unless forbidden on the ground that a public injury may ensue. They may determine the species planted, fix the period of cutting to suit their own interest, and deal with their own as they may think proper, so long as it does not affect the rights of others.

It has been remarked very generally, and in all countries, that individual proprietors are jealous of interference by public authority with the rights that they regard as their own; and even where advanced ideas in respect to forest management prevail, as in Prussia, it is only within a very recent period that measures have been taken for restricting these rights, upon appeal to the public authorities, where the particular interests of others were concerned, and for uniting under one control the management of adjacent woodlands belonging to many private owners, although a

minority in interest might dissent. In fact, the case is scarcely different with woodlands than with cultivated fields bearing annual crops, and it would doubtless prove as difficult to control the planting of private woodlands generally, as it would be to prescribe the kind of grain that should be sown in fields, or to regulate the time of harvest.

Turning from this view to the conditions that prevail with us, we find but two classes of landed property to consider, in relation to forest culture:—

1. The Public Lands owned by the general government, and in some instances by states.

2. Private Lands, including those granted to corporations, and managed by their trustees, being as fully under their control as if held by individuals.

With respect to the Public Lands, the most that can be attempted at present, is to establish regulations for the prevention of waste, and perhaps systems of leasing, or of selling timber rights, as in Canada,—the title of the land still remaining with the government, with a remote and uncertain chance of its escaping fire and waste until another crop of timber shall have grown. Measures tending to ensure reproduction can readily be applied in such cases, and the most approved methods of restoration, as practiced in Europe, may be adopted—the main question to be considered being that of the cost, and the profit of the enterprise.

It is also clearly within the power of government, in all future sales of timber lands, to annex a requirement, as a condition of the title, that a certain percentage shall forever be kept in woodland. It may also, in selling prairie land, require that a part shall be planted with timber, and be kept forever devoted to this use. These conditions would be evidently as valid as those in which mineral reservations are made and other conditions are imposed.

As to placing any new restrictions upon lands already held by private owners, this is wholly impracticable by any proceeding short of resumption of title under right of eminent domain, and payment to the owners of the full value. The re-purchase of land and its cultivation by the government as forest, would scarcely find favor with the statesmen of our day.

Since forest products are bulky, and must necessarily reach the markets by water navigation, or by roads easily guarded, their exportation beyond the limits of a given district can be readily

controlled. Against local use and waste, it is most difficult to provide, and with a public sentiment favoring this common use, laws, however stringent, can scarcely be enforced.

As regards private lands, including lands in charge of directors or trustees, the future prospects of forest culture appear to depend upon interest alone, and these owners will manage their estates as they find it to their present advantage or future profit. It is reasonable to suppose that they will be quite as jealous of this right as they have shown themselves to be in countries where less personal freedom is enjoyed, and that the time is very remote in which any public authority may dictate when a given field shall be planted with timber trees, or when it shall be cleared. Fortunately we are wholly free from the embarrassment arising from rights of common usage that have so grievously tried the patience of European foresters, as the title of our private lands is absolutely vested in the owners.

We regard the time as near, when the question of planting for profit will very generally engage the attention of the owners of land, not only in the prairie regions, where the want of timber is among the first that is felt, but also in the older portions of the country, where the supply of woodlands was formerly in excess, and where habits of improvidence and waste must be discontinued, and methods of economy and prudent forethought must be learned.

The discussions that have been had in Agricultural and Horticultural societies, and through the public press, have done something, and should hereafter do much more, towards bringing this subject prominently into notice. In the State of Minnesota a State Forestry Association has been incorporated by law, and means have been placed at its disposal for stimulating competition by way of premiums,—not forgetting in this to excite emulation among the children of the public schools, and rivalry between counties, in the work of forest tree planting, and the formation of avenues of shade trees along the highways.

In many villages in Connecticut and other eastern states, Village Improvement Associations have been formed, in some of which the benefits sought are not limited to the material adornment of their localities, but to certain other means of intellectual culture and social refinement, which tend so much to add enjoyment to life, and to elevate and improve the condition of society generally.

The tendency of increasing prices in any class of commodities naturally leads to inquiries into the means by which the supply may be enlarged, and cannot fail to impress the important truth that seasonable provision should be made against coming wants. When this fact comes to be generally realized, we cannot but hope that the owners of land will see it to their interest to provide against future wants by timely investment in sylviculture, sufficient at least for their own use, and that incorporated companies will find in this an inviting field for investment for market-supply.

In this work of promoting forest-culture, something may doubtless be done by State governments, but rather in the way of incidental encouragement than by direct control. They can offer premiums to be dispensed by agricultural and other societies; they can exempt planted woodlands from taxation, or from increased assessment on account of forest growth, and they can enact laws for protecting woodlands against careless fires and other avoidable injuries; they can require and regulate the planting of trees along the highways, and in places where the public interest demands; they can provide for some instruction upon the principles and methods of sylviculture, to be taught in the public schools, and can aid the higher institutions of the state in a more thorough course of instruction in this department of applied science; they can establish experimental stations, and encourage or direct inquiries tending to the discovery and dissemination of knowledge of practical value, and they can provide general laws for the formation of companies for planting and improving waste lands by forest culture.

In respect to Forestry as taught in special schools in Europe, we have to remark, that while everything relating to methods and management,—the influences that favor or retard the growth of trees, or that affect the quality of their wood,—and every means by which labor can be lightened, or profits increased, has immediate value to us. We have little to learn from their forest jurisprudence, their codes, or methods of administration, because their laws and circumstances are altogether different from ours.

At present we could give no employment to a class of men having the qualifications of those that graduate at the first-class Forest academies. We need a more general practical knowledge among the greater number, rather than the higher special training of a few.

The experience of schools of Forestry in Europe is not without interest to us, and we should avail ourselves of the lesson which it teaches without going through the process of proving.

In most cases these institutions are under the control of government, and are intended to qualify candidates for the State Forest Service, in which, when once admitted after thorough instruction and due probation, they are sure of employment through life, with provision for support when their working days are over. In some cases, schools of lower grade are maintained by associations of land-proprietors for the fitting of young men as foresters upon private estates, and aspirants for this employment can generally gain admission to the government schools. In all of these institutions practical labor in the nursery and the forest, frequent excursions under the guidance of the professors, and occasional journeys for more varied and general observation, form a regular and necessary part of the course, and tend in eminent degree to qualify the student for the practical application of the precepts of his lectures, and the lessons of the class-room.

These schools may be divided into three classes:—

1. Separate schools of Forestry, distinct from those giving other instruction, as at Neustadt-Eberswalde and at Münden in Prussia, and at Nancy in France.

2. Schools of Agriculture and Forestry, as at Hohenheim in Wurtemberg, and at the Imperial High School of Agriculture and Forestry at Vienna.

3. Separate departments of Forestry in Universities and Polytechnic institutions, as at the Polytechnic School at Zurich, and the Forest-Institute in the University of Giessen.

The tendency in Europe is apparently towards the abandonment of the first of these in favor of the second or third. Thus recently the Forest Academy at Mariabrunn, near Vienna, has been merged in the new institution we have just named in the Capital, and that at Aschaffenburg in Bavaria is being incorporated with the University of Munich. It is claimed by the advocates of this consolidation, that several of the branches of instruction required in the course upon Forestry, such as mathematics, chemistry, natural history, climatology, drawing, surveying, etc., are amply provided for in the University; that better laboratories, museums, and libraries, can be maintained and be made more widely useful in the larger institutions, and that the student while following his

special course, cannot fail of gaining a broader view of science by contact with what is going on around him, than he could if his horizon was bounded by the precincts of an isolated forest academy. Moreover, the students in other branches of the University would get some knowledge of Forestry from what might come under their notice in that department, and the wider acquaintance thus formed would prove advantageous to all classes. A small number of special professors would be sufficient to equip any existing University for this service, and a large saving would be realized in the general result.

No school of Forestry has yet been established in Great Britain. The government has hitherto arranged for sending to the schools in France or Germany such young men as aspire to employment in the India service, but the measure has been strongly urged of adding to one or more of the existing universities the facilities needed for securing this instruction at home. The Rev. John Croumie Brown, of Haddington, Scotland, has been particularly active in calling public attention to this important measure. We have, in our own country, the means for carrying this idea, as it may be adapted to our wants, into happy effect. Besides our colleges and universities, there is in every state of the Union a separate institution, or a department in one previously existing, in which, through the bounty of Congress, provision has been made for instruction in Agriculture and the Mechanic Arts; and upon these should naturally devolve the task of giving such a course of practical instruction in sylviculture as may prove most useful to the country and best adapted to our national wants.

There is not a college in the country in which a few practical lectures upon the importance of tree-culture, and some of the principles that should govern in the selection of kinds and their care and cultivation could not be given with advantage before the graduating class. The young men going out from these institutions become in greater or less degree centres of influence, and if impressed with the importance of the subject, they might in many ways promote the diffusion of correct ideas among those with whom they might come to dwell.

It cannot be doubted but that the American farmer learns much from example. His ideas of domestic architecture, of improved methods of cultivation, of the value of new implements of husbandry, or in any departure from the routine of former ways, are

largely derived from what he sees in successful application around him. A good example becomes a model for his imitation, and in this way a neatly planted avenue of trees along the highway, or a thrifty and well kept grove, may often suggest the benefits that he can also enjoy, and so the example is repeated, to the manifest profit of the owner, and to the general good.

Your committee has not hitherto attempted to memorialize the State governments upon the subject with which it is charged, deeming it as first desirable to collect information upon the existing legislation of the several states, and to gather the results of experience as affording suggestions worthy of attention. The existing laws for the encouragement of tree-culture in the different states are presented in full in the Congressional Report above alluded to (pages 200 to 213), and excepting those relating merely to the planting of trees by the roadside, or to the protection of trees planted for ornament, they may be briefly stated as follows :

In *Illinois*, the Board of Supervisors, or Court of County Commissioners in any county, may offer a bounty of ten dollars per annum for three years for every acre planted with forest trees. They are not to be set more than ten feet apart, and must be kept properly cultivated.

In *Iowa*, the sum of one hundred dollars per annum is exempted from taxation for ten years, for every acre of forest trees planted and cultivated, the trees being not over eight feet apart. The Board of Supervisors may increase the exemption to 500 dollars per acre, except for state taxes.

In *Maine*, cleared land, if planted with forest trees, is exempted from taxation for twenty years, the trees being set not less than 2,000 to the acre, and kept in thriving condition.

In *Minnesota*, a bounty of two dollars per acre is offered for ten years for planting forest trees (excepting the black locust) on prairie land, the total sum in one year not exceeding twenty thousand dollars in the state.

In *Missouri*, a like bounty is offered for fifteen years, the allowance to begin three years after planting, and the grove being kept in growing condition, certificates and proofs being renewed annually.

In *Nevada*, a state bounty of ten dollars per acre for twenty years is offered for planting done within ten years after the passage of the act (of 1877), the payments commencing two years after planting.

In *Wisconsin*, every land owner having five acres or more of land, who shall reserve from the natural growth, or who shall plant, not over a fifth part of the area in tree-belts, is exempted from taxation on lands thus occupied, until the trees become twelve feet high, and after that he is to have a premium of two dollars per annum per acre. The position and width of the belts, kinds of timber allowed, etc., are prescribed in the act.

In *Kansas* and *Nebraska*, after an experience in the offering of bounties and exemption from taxation, the laws for this object have been repealed. We are not informed as to the reasons that led to the repeal in *Kansas*, but in *Nebraska* a revised constitution forbade all exemptions of private property from taxation, and thus rendered the previous law a nullity. It is, however, understood that opportunities for evasion and fraudulent claims were too often afforded, and it was believed by some that the benefits of arboriculture were so manifest that they did not need the stimulus of a reward.

There are various questions affecting the interests of sylviculture that come within the province of state legislation, and upon which uniformity is desirable. These will be duly considered by the Committee, and when agreed upon will be submitted as their recommendation to State Legislatures.

Trusting that its proceedings thus far will meet the approval of the Association, the Committee respectfully asks for a continuance of its powers for the further prosecution of the labors with which it has been charged.

FRANKLIN B. HOUGH,

*For the Committee.*

*From the Proceedings of the American Association for the Advancement of Science;  
St. Louis Meeting, August, 1878.*

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# REPORT

UPON

# FORESTRY.

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\_\_\_\_\_  
BY FRANKLIN B. HOUGH.

CHAIRMAN OF THE COMMITTEE.  
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