

# HOUSE . . . . No. 1063

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## The Commonwealth of Massachusetts.

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### REPORT OF THE COMMISSION FOR THE INVESTIGATION OF THE METHODS OF CONSERVING AND EQUALIZING THE FLOW OF WATERS IN THE RIVERS AND STREAMS OF THE COMMONWEALTH.

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BOSTON, Jan. 14, 1914.

*To the Honorable the Senate and the House of Representatives.*

The special commission, designated by chapter 129 of the Resolves of 1913 to investigate and report what legislation, if any, is expedient or advisable to better conserve the waters and provide for the utilization and equalization of the flow thereof in the rivers and natural streams of the Commonwealth, respectfully submits the following report:—

The authorizing resolve is as follows:

*Resolved,* That the chairman of the board of harbor and land commissioners, the chairman of the board of gas and electric light commissioners and the attorney-general are hereby created a commission to investigate and report to the general court on or before the second Wednesday of January, nineteen hundred and fourteen, what legislation, if any, is expedient or advisable to better conserve the waters and provide for the utilization and equalization of the flow thereof in the rivers and natural streams of the commonwealth. The commission shall hold such public hearing at such times and places as it may appoint for the purpose of hearing parties interested, and may employ such engineers and other assistants as may be necessary to carry out the purpose of this resolve. The commission shall submit its report with such recommendations as it deems advisable, together with such draft or drafts of proposed legislation, if any, as it may deem necessary to carry such recommendations into effect. The commission may expend from the treasury of the commonwealth, with the approval of the governor and council, a sum not exceeding five thousand dollars. [*Approved June 16, 1913.*]

In compliance with the provisions of this resolve the commission has made various investigations. Public hearings were held in Springfield, Greenfield, Pittsfield and Boston. At these hearings, which were largely attended, the important questions involved were freely discussed and a very active interest in the subject was manifested. Everywhere it was recognized as one of great importance to the manufacturing, agricultural and general community interests of the Commonwealth.

Water conservation, as now understood, has hitherto been given virtually no consideration in legislation in this State. Even the authority given to certain officers who are charged with the supervision of dams and other similar structures entirely lacks recognition of the conservation principle.

This authority looks chiefly to securing sufficient strength in the structures allowed, to hold the waters impounded, but gives no attention to the equally important subject of the proper method of developing and regulating the flow.

Although the statutes of recent years contain numerous instances of grants to persons and corporations to take and use water, the State is still handling this great natural resource, in the main, in accordance with the so-called mill act of colonial times, which, though amended in various ways, still continues the riparian owner as the chief factor in the field, with little regard to the broader public interest which now demands consideration.

There is reason to believe further that, due to this vagueness of governmental supervision and the difficulties incident to the strict application even of the existing law, many riparian owners have assumed the right to increase and otherwise alter the obstructions placed in the rivers and streams, with too little regard for the restrictions and limitations in their original grants.

Certain of the practices of cities and towns in securing water supplies have given rise to confusion. Protests have reached this commission that the larger cities and towns, by virtue of legislative permission, are seizing water sources in towns too weak to successfully resist them. The Legislature, it is true, demands recommendation or advice on all such

petitions from the State Board of Health, but that board, of necessity, is confined primarily to questions as to the healthfulness of the water source desired or the general availability of the supply, so that in the main the criticism that our water supply systems are being developed on a piecemeal basis is justified.

Not only is there an absence of effective public control or regulation of the more sizable streams and great ponds of the State, either to conserve their use or prevent their abuse, but there is an almost absolute lack of adequate and reliable information regarding the water resources of the State.

The area of the ponds and great ponds throughout the Commonwealth has only been established so far by the roughest calculation. The actual water power being developed, or the potential water power which may be developed, are both unknown to us, and even the number, size and extent of use of the dams and reservoir dams the State over has never been compiled so as to be available for a study of the conservation problem. No adequate surveys or studies of our water resources have been made, and none is likely within the time which the urgency of the subject requires, unless some special provision is made.

The attempt to secure a complete list of permits issued and dams now existent upon the rivers met with only a qualified success after various sources of information had been canvassed, and the accuracy of such lists as were secured brought with them no guarantee of their completeness and gave but scant information as to the present condition of the structures or the character or extent of the use made of them.

Impressed with the necessity of having this information in hand, because the essential basis of any sound legislation must be a thorough knowledge of existing conditions, the tax assessment books in various communities were reviewed. A page by page examination was made to ascertain the names and addresses of the owners and users of water-power privileges, and information was sought directly from these persons. By this means, supplemented by field work, a complete tabulation could be built up. Owing to the great number of such persons and amount of detail involved, it has been impossible

to complete the task; but a substantial part of certain of the western counties have been covered, and a tabular statement of this information has been prepared.

Incomplete and partial as this is, it vividly illustrates the great value of the water used and the great loss now suffered through the lack of equalization and proper utilization as referred to in the resolve.

For information as to the streams, resource was had to the work of stream measurement now being carried on under a joint appropriation from the State and federal governments, but due, apparently, in a large measure to the smallness of the appropriation, this work is yet far from completion; descriptive data of the more important rivers, as to their length, source, etc., have been taken from that source and is ready for publication.

A somewhat fuller investigation was attempted of the hydro-electric power developments in Massachusetts and the other New England states. The totals secured so far contain valuable suggestions as to the developed and undeveloped power of certain streams.

Inasmuch as for some years the only authoritative table of water-power development has been that prepared under the direction of the United States Bureau of Corporations, collected in 1911 and printed in 1912, in its report on Water Power Developments, the commission has followed that form and has brought that tabulation, as far as it refers to New England, down to date. The important feature is that by the new investigations we have materially increased the total of developed and undeveloped horse powers credited to Massachusetts.

Since the completion of this and other tables the commission has been in the steady receipt of new information, suggestions and outlines of work accomplished, and new works planned in our own and other New England states, all of which will be readily available for any further study of the problem.

In addition to collating the statutes relating to water rights in Massachusetts, in other states and countries, as well as

those of the national Congress, a study has been made of various court decisions of importance in this relation.

In the other New England states, in New York, Pennsylvania, in the province of Ontario, the use and development of water power is already a highly important subject for consideration.

Practically nothing on these lines has been done in this State. Yet the facts are that, among the New England states, Massachusetts to-day stands next to Maine in the amount of water power actually developed, and probably also in the total undeveloped power. Manufacturers throughout the State, located on a water course or in reasonable reach of a hydro-electro transmission line, are becoming vitally interested in this subject, and are anxious to know what policy respecting it is to be assumed by the State.

This policy can only be safely determined and suitable legislation devised upon a basis of adequate and reliable information to which sound business principles must be applied. Facts as to existing utilization are valuable, and when more fully collected something like real knowledge of our water resources will be had. To-day it must be admitted that of the undeveloped power of the streams and possibilities of their utilization but little is officially known.

Such knowledge is of the greatest importance. It necessarily involves a more comprehensive study of the rivers and streams of the State than has yet been made. Similar work is now being carried on in other states. It seems to be of equal importance here. In pursuing it advantage may well be taken of the great mass of material gathered by various public authorities, but which needs to be systematically collated.

The Harbor and Land Commission, which has succeeded to the work of the State Topographical Survey Commission, has a large amount of valuable information as to the topographical features, including contour, etc., throughout the State, which can readily be utilized by means of additional surveys, carried on with an eye to conservation requirements.

The State Board of Health, through its engineering department, in its oversight of the development of streams,

ponds and lakes for municipal water purposes, has also gathered a large amount of data, which is of value.

The United States geological survey work in this territory, and its studies as to the flow of the various rivers and streams, which it is establishing through gaging stations, is also of great value and will be of material assistance in the event of an inquiry.

It can thus be seen there is already at hand a large amount of information which, although gathered for a variety of different purposes, can, if connected up and supplemented by surveys made for conservation purposes, forward the work of reaching conclusions as to the value of our streams and their possibilities.

In view of the limited amount of the appropriation for its use, the commission has assumed that the Legislature did not intend to authorize so broad an inquiry as now seems imperative. Neither did it seem expedient to use any portion of the appropriation to inaugurate an engineering inquiry which could have no results of practical value except as a part of a more extended investigation.

Before any legislation, either general or special, is attempted, a systematic and thorough study of the subject should be made, with perhaps special attention to certain particular streams where this can be done to advantage.

The principal source of the prosperity of this Commonwealth is to be found in the successful conduct of its manufacturing industries. The steady advance in the cost of coal, both present and prospective, emphasizes in a marked way the importance of utilizing to its highest efficiency every natural source of power. From the census of 1909 it appeared that of the 1,175,071 horse power used in this State for manufacturing purposes, 185,996 horse power is credited to the water wheels, and there is reason to believe that several times this amount of water power is annually wasted. If this power can be economically conserved and used it will add immeasurably to the wealth of the State and its citizens.

If subsequent inquiry shall justify the expectations of many who are greatly interested in this matter, it will be essential to consider whether the proper conservation measures shall

be undertaken directly by the State or by private enterprises, under such safeguards and general requirements as may be necessary in the public interest.

An assuredly satisfactory choice between these two methods can only be made when more is known as to the water resources themselves.

In view of the immense importance of the water resources of the State in the development of power, which is now largely secured by the use of coal transported at a heavy cost, the commission recommends that the Legislature provide a complete and comprehensive investigation of all our water resources, to secure the proper basis for a report for the utilization of this valuable and neglected asset of the Commonwealth. This can be undertaken by such existing board or boards, or by this commission, as the Legislature, may think advisable, if adequate provisions are made for carrying it on.

In the opinion of the commission this work can be most economically and efficiently continued if no suspension occurs pending the determination of the legislative attitude relating to the principal features of this report.

A large part of the present appropriation remains unexpended and could be so utilized. The commission therefore recommends that its authority to continue its investigation be extended until further action of the Legislature upon this report.

It submits herewith two resolves which cover the matter of extensions and authorizations as suggested.

WM. S. McNARY,

*Chairman Harbor and Land Commission.*

FORREST E. BARKER,

*Chairman Gas and Electric Light Commission.*

JAMES M. SWIFT,

*Attorney-General.*

## SUGGESTED LEGISLATION.

## RESOLVE FOR EXTENSION.

1 *Resolved*, That the members of the commission created by chapter  
2 one hundred and twenty-nine of the resolves of the year nineteen  
3 hundred and thirteen be continued as such commission to carry out  
4 the provisions of said resolve until further action of the present leg-  
5 islature, and said commissioners shall be paid from the treasury of  
6 the commonwealth such compensation as shall be approved by the  
7 governor and council.

RESOLVE FOR AN INVESTIGATION OF NATURAL RESOURCES  
OF THE STATE.

1 *Resolved*, That the members of the commission created by chapter  
2 one hundred and twenty-nine of the resolves of the year nineteen  
3 hundred and thirteen be continued as such commission to investigate  
4 and report to the general court on or before the second Wednesday  
5 of January, nineteen hundred and fifteen, what legislation, if any,  
6 is expedient or advisable to better conserve the waters and provide  
7 for the utilization and equalization of the flow thereof in the rivers  
8 and natural streams of the commonwealth. The commission may  
9 hold such public hearings at such times and places as it may appoint  
10 for the purpose of hearing parties interested, and may employ such  
11 engineers and other assistants as may be necessary to carry out the  
12 purposes of this resolve. The commission shall submit its report,  
13 with such recommendations as it deems advisable, together with  
14 such draft or drafts of proposed legislation, if any, as it may deem  
15 necessary to carry such recommendations into effect. The com-  
16 mission may expend from the treasury of the commonwealth with  
17 the approval of the governor and council a sum not exceeding  
18 and shall be paid such compensation as shall be approved by the  
19 governor and council.