

MAINE STATE LEGISLATURE

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Seventieth Legislature.

SENATE.

No. 12

STATE OF MAINE.

IN THE YEAR OF OUR LORD ONE THOUSAND NINE
HUNDRED AND ONE.

AUGUSTA, JANUARY 23, 1901.

To the President of the Senate and Speaker of the House:

I have the honor to herewith transmit the report of the Topographic Commission of the State of Maine which was made to the Governor and Council and by them ordered to be placed before the Legislature:

Very respectfully,

Your Ob't Servant,

BYRON BOYD,

Secretary of State.

To His Excellency, John F. Hill, Governor of Maine:

Sir: The sixty-ninth Legislature by act, Public Laws of 1899, chapter 99, authorized a topographic survey of the State, together with the preparation and completion of a topographic map. The act reads as follows:

AN ACT to authorize a Topographic Survey of the State in Co-operation with the United States Geological Survey.

Be it enacted by the Senate and House of Representatives in Legislature assembled, as follows:

Section 1. That the governor be and is hereby authorized to appoint a commission, to consist of three citizens of this State, qualified by education and experience for such service, to confer with the director or the representative of the United States geological survey and to accept its co-operation with this State in the preparation and completion of a contour topographic survey and map of this State, which is hereby authorized to be made. Said commission shall serve without pay, but all its necessary expenses shall be approved by the governor and paid out of the State treasury. Said commission shall have power to arrange with the director or representative of the United States geological survey concerning this survey and map, its scale, method of execution, form and all details of the work, in behalf of this State, and may accept or reject the work executed by the United States geological survey. And it is hereby provided that said map shall accurately show the outlines of all townships, counties and extensive wooded areas, in this State, as existing on the ground at the time of the execution of these surveys; the location of all roads, railroads, streams, canals, lakes and rivers, and the location and height of all dams; and shall show by contour lines the elevation and depression of the surface of the country.

Sect. 2. Said commission may expend for the prosecution of this survey a sum equal to that to be expended upon the same work by the United States geological survey, not to exceed at the rate of twenty-five hundred dollars (\$2,500) annually for the years 1899 and 1900, and the governor is hereby authorized to draw his orders on the State treasury for such portions thereof as may be required from time to time, from moneys not otherwise appropriated, upon receipt of vouchers signed by not less than two members of the commission.

Sect. 3. For the purpose of making the surveys hereinbefore provided for, it shall be lawful for the persons employed in making the same to enter upon all lands within the boundaries of this State, but this act shall not be construed as authorizing any unnecessary interference with private rights.

In accordance with the above act, His Excellency Llewellyn Powers, then governor, appointed Leslie A. Lee of Brunswick; William Engel, of Bangor and Charles S. Hichborn, of Augusta, as a board to carry out its provisions.

These commissioners having duly qualified met in Bangor on the twentieth day of May, 1899, for formal organization. Leslie A. Lee was elected chairman and Charles S. Hichborn, secretary and treasurer. The commissioners then proceeded to perform the duties of their office, and beg to present herewith a report on the work which has been accomplished.

Correspondence at once entered upon with the Honorable Charles D. Walcott, director of the United States Geological Survey, at Washington, resulted in the making of a contract between the State and the survey, a copy of which is given below.

AGREEMENT between the Topographic Survey Commission of the State of Maine and the Director of the United States Geological Survey of the Co-operative Topographic Survey of the State.

1. The preparation of the map shall be under the supervision of the director of the United States Geological Survey, who shall determine the methods of survey and map construction.

2. The order in which in point of priority different parts of the State shall be surveyed shall be agreed upon in detail between said commission and said director.

3. The work shall be based upon the triangulation of the United States Coast and Geodetic Survey, and, wherever this triangulation is deficient, it shall be supplemented by said co-operative survey.

4. The survey shall be executed in a manner sufficiently elaborate to prepare a map upon a scale of 1:62,500, exhibiting the hydrography, hypsography and public culture and including all town and county boundary lines as established and marked by the State laws at the time of its completion in form similar to the sheets already completed in said State. The preliminary

field maps shall be on such a scale as said director shall select to secure accuracy in the construction of the final map.

5. The hypsography shall be shown by contour lines with vertical intervals of twenty feet, and the heights of important points shall be determined, marked upon fixed bench marks and furnished to the said commission.

6. The outlines of wooded areas shall be represented in manuscript upon proofs of the engraved map.

7. For convenience, the United States Geological Survey shall, during the progress of the field work, pay the salaries of the persons employed therein, while the traveling, subsistence and field expenses shall be paid for the same time by the State. For office work on the map the salaries shall be divided between the two agreeing parties in such a way as to equalize all expenses, provided that the total cost to the State of Maine of the field and office work for the years 1899 and 1900 shall not be more than five thousand dollars (\$5,000), and, provided that the United States Geological Survey shall expend an equal amount.

8. During the progress of the work free access to the field sheets and records of the topographers and draughtsmen shall be afforded the State commissioners for examination and criticism; and should they deem that the work is not being executed in accordance with this agreement, then the said commissioners may, on formal notice, terminate this agreement.

9. The resulting map shall fully recognize the co-operation of the State of Maine.

10. When the work is completed, the State commissioners shall be furnished by the United States Geological Survey with photographic copies of manuscript sheets; and when the engraving is completed and at all times thereafter when desired, the said commission shall be furnished by the said survey with transfers at cost from the copper plates of the sheets for use in printing editions of said maps.

CHARLES D. WALCOTT,

Director United States Geological Survey.

LESLIE A. LEE,

WILLIAM ENGEL,

C. S. HICHBORN,

Topographic Survey Commissioners.

Washington, D. C., May 25, 1899.

OUTLINE OF PLAN OF WORK.

The State of Maine is fortunate in having its extended and irregular coast line surveyed with minute accuracy by the United States Coast and Geodetic Survey. The results obtained by this organization afford an admirable starting point for a topographic survey. In the opinion of the commission the usefulness of its work would be greater and more immediate in the developing the natural resources of the State if it were carried into the interior as rapidly as possible. Hence it was decided to begin near the mouth of the Penobscot river and work towards the north. Such a plan would combine economy with accuracy.

PERSONNEL OF THE FIELD PARTIES.

Mr. H. M. Wilson, geographer, of the United States Geological Survey, has had general charge of the work. The field party was under Mr. E. B. Clark, topographer, until August, 1900, when he was forced to retire by reason of illness. He was replaced by Mr. W. H. Lovell, topographer. These men have long been engaged in similar work in different parts of the country, and stand high in their profession.

The necessary primary triangulation was performed by W. T. Griswold and S. S. Gannett, of Washington. The number of assistants has varied from time to time according to the needs. The principal men employed have been Robert Coe of Washington, and J. W. Edgerly, Thomas T. Whittier, B. B. Alexander, J. H. Madden and E. I. Davis of this State. Temporary laborers were secured in the immediate vicinity of the work.

FIELD WORK.

During the season of 1899 the headquarters of the field party were at Bucksport. Proceeding on the coast survey lines a detailed survey was made and the topography completed of an area amounting to about 426 square miles, sufficient to cover two sheets or quadrangles of the final map. During the same time primary triangulation was accomplished for the region about Bangor and Orono.

During the season of 1900 the headquarters were at Bangor. Some work also was done in the vicinity of Castine. The total area completely surveyed was about 640 square miles. This will

be mapped on three sheets. Triangulation sufficient for five more sheets north of Bangor and Orono was also finished during the season.

MAPS.

The ultimate purpose of a survey like this is the making of a complete and accurate map of the State. As projected it is to appear in separate sheets or quadrangles. Each sheet is approximately sixteen and one-half by twenty inches and represents the topography of 215 square miles. The scale is nearly one mile to one inch and differences of elevation are shown by contour lines, one for every twenty feet of height. Each sheet is engraved on copper and printed in three colors—black for all artificial features, as roads, railways, houses, etc.; blue for all water features, as lakes, rivers, etc.; and brown for contour lines representing the surface relief, or the shape and slopes of the hills, valleys, etc. Each sheet is named from the principal town included in it. The Bucksport and Orland sheets are printed and copies are presented with this report. The Bangor, Orono and Castine sheets are now being engraved in Washington. These will be printed and ready for distribution during the present year. The area covered by the five sheets is 1,066 square miles.

Besides the above the United States Geological Survey has, in previous years, surveyed and mapped on twenty-two sheets an area of 3420 square miles, at no cost to the State. Thus there will be available for use during the present year, twenty-seven sheets, representing an area of 4486 square miles. The portions of the State thus covered are shown on the accompanying chart.

During the progress of the surveying the topographers make careful maps of all forest areas, with notes on the kind and character of the timber. A copy of these maps in manuscript accompanies this report. Should it be thought desirable an edition of them can be prepared for public use at a small expense for color printing.

The ordinary maps can be obtained of the director of the United States Geological Survey, at Washington, at a cost of five cents each, or in quantities of one hundred or more at two cents each.

FINANCIAL STATEMENT.

This commission assumed charge of the work on the understanding that the sum named by the Legislature in the act authorizing the survey, viz: five thousand dollars, was available for the prosecution of the survey. When the first bills under our contract became due in the latter part of August, 1899, it was learned that through some inadvertence the necessary amount had been omitted from the appropriation bill. Though thus left without resources from the State, it was evident that such was not the intention of the Legislature, but that, on the other hand, the act having been passed unanimously, they desired and expected that there should be no delay in the progress of the survey. Clearly only one course was open to the commissioners. The contract having been signed, the faith of the State having been pledged and the bills having been contracted, they at once determined to keep that faith unbroken and to pay all bills when due, themselves providing the money necessary therefor, trusting to the action of the present Legislature for reimbursement.

EXPENDITURES.

1899.			
Sept.	2.	Paid J. F. Pierce for books as per voucher	\$ 1 80
Sept.	2.	Paid E. B. Clark, surveyor, traveling expenses	19 50
Sept.	2.	Paid E. B. Clark, surveyor, field expenses to July, as per voucher	290 49
Sept.	2.	Paid Robert Cole, levelman, services July, as per voucher	70 00
Sept.	2.	Paid J. H. Madden, traverseman, services July, as per voucher	60 00
Sept.	2.	Paid J. W. Edgerley, rodman, services, July, as per voucher	40 00
Sept.	2.	Paid E. B. Clark, subsistence and field expenses, July	317 49
Sept.	2.	Paid Thomas Swazey, rodman, services July as per voucher	9 68
Sept.	2.	Paid E. B. Clark, traveling expenses, per voucher	12 53

Sept. 2.	Paid W. T. Griswold, subsistence and field expenses, as per voucher.....	\$135 67
Sept. 2.	Paid ditto for ditto.....	140 71
Sept. 2.	Paid J. H. Madden, traversman, services, August, as per voucher.....	60 00
Sept. 2.	Paid J. W. Edgerley, levelman, services, August, as per voucher.....	50 00
Sept. 2.	Paid Thomas T. Whittier, rodman, services, August, as per voucher.....	38 71
Sept. 14.	Paid express on stationery.....	60
Sept. 14.	Paid E. B. Clark, subsistence and field expenses, as per voucher.....	378 08
Sept. 14.	Paid Thomas Swazey, services to August 31st, as per voucher.....	25 00
Sept. 14.	Paid E. B. Clark, traveling expenses as per voucher.....	8 35
Sept. 19.	Paid W. T. Griswold, field expenses, as per voucher.....	133 54
Oct. 10.	Paid E. B. Clark, field expenses, as per voucher.....	290 08
Oct. 10.	Paid Thomas Swazey, services to September 30, as per voucher.....	25 00
Oct. 10.	Paid W. T. Griswold, traveling expenses, as per voucher.....	12 50
Oct. 10.	Paid E. B. Clark, traveling expenses, as per voucher.....	23 90
Nov. 16.	Paid Thomas Swazey, services to October 31st, as per voucher.....	25 00
Nov. 16.	Paid J. H. Madden, services to October 31st, as per voucher.....	60 00
Nov. 16.	Paid Thomas T. Whittier, services to October 17th, as per voucher.....	21 94
<i>1900.</i>		
June 11.	Paid Robert Coe, services to June 1st, as per voucher.....	70 00
June 11.	Paid J. W. Edgerley, services to June 1st, as per voucher.....	50 00
June 14.	Paid B. B. Alexander, services to June 1st, as per voucher.....	45 16

June 11.	Paid E. I. Davis, services to June 1st, as per voucher	\$30 00
June 14.	Paid E. B. Clark, field expenses, as per voucher	299 73
June 14.	Paid Lemuel Nichols, horse hire, as per voucher	66 37
June 14.	Paid Thomas Swazey, services, as per voucher	8 87
June 14.	Paid F. B. Googins, horse hire, as per voucher	33 75
June 14.	Paid E. B. Clark, traveling expenses, as per voucher	34 62
July 27.	Paid E. B. Clark, field expenses, as per voucher	328 89
July 27.	Paid Lemuel Nichols, horse hire, as per voucher	59 14
July 27.	Paid E. B. Clark traveling expenses, as per voucher.....	26 30
July 27.	Paid F. B. Googins, horse hire, as per voucher	35 00
July 31.	Paid B. B. Alexander, services, July, as per voucher.....	50 00
July 31.	Paid J. W. Edgerley, services, July, as per voucher	50 00
July 31.	Paid, E. I. Davis, services July, as per voucher	30 00
Aug. 17.	Paid E. B. Clark, field expenses, as per voucher	274 57
Aug. 17.	Paid E. B. Clark, traveling expenses, as per voucher	7 10
Aug. 17.	Paid F. B. Googins, horse hire, as per voucher	35 00
Aug. 17.	Paid Lemuel Nichols, horse hire, as per voucher	41 56
Aug. 30.	Paid S. S. Gannett, field expenses, as per voucher	58 77
Aug. 30.	Paid S. S. Gannett, field expenses, as per voucher	51 04

Aug. 30.	Paid S. S. Gannett, field expenses, as per voucher	\$15 90
Sept. 11.	Paid B. B. Alexander services, August, as per voucher	50 00
Sept. 11.	Paid J. W. Edgerley, services, August, as per voucher	50 00
Sept. 11.	Paid E. I. Davis, services, August, as per voucher	30 00
Sept. 29.	Paid telephone charge.....	40
Sept. 29.	Paid E. B. Clark field expenses, as per voucher	355 19
Sept. 29.	Paid W. H. Lovell, field expenses, as per voucher	36 22
Sept. 29.	Paid Lemuel Nichols, horse hire, as per voucher	14 00
Oct. 3.	Paid J. W. Edgerley, services, September, as per voucher	50 00
Oct. 3.	Paid E. I. Davis services, September, as per voucher	30 00
Oct. 3.	Paid B. B. Alexander, services, September, as per voucher.....	50 00
Oct. 3.	Paid W. H. Lovell, field expenses, as per voucher	178 45
<i>1901.</i>		
Jan. 2.	Paid express to Washington, as per voucher	66
Jan. 2.	Paid expenses of the commissioners, as per voucher	110 31
		<hr/>
		4907 57
	Interest on advances represented by above payments figured at 3 1-2 per cent.	169 51
		<hr/>
		\$5077 08
	The amount expended by the United States Geological Survey in the prosecution of the work is.....	\$5354 00

THE UTILITY OF A TOPOGRAPHIC MAP.

While there is a general interest manifested in the work of surveying and mapping the State, it should be emphasized that this is not the final end in view. Its purpose is to open the way for a full and complete development of all natural resources. For this a topographic map is essential and fundamental. There is scarcely an important industry in the State that will not at some time gain valuable information from the map. It will become indispensable in obtaining a knowledge of undeveloped water power, of sites hitherto unoccupied for manufacturing purposes, of forest resources, and aid in the preparation of plans for a suitable water supply for cities and towns. It is useful in laying out new electric roads and railroads, as well as in the construction of highways. Moreover it represents the first step to be taken in the exploitation of the economic geology of the State. This is the proper function of the United States Geological Survey. With a map as a basis they will put parties in the field to study and report upon the extent and distribution of building materials, useful minerals, clays and ores. They will also make a hydrographic survey of the rivers and other streams. All this will be done without any expense to the State, and yet the probable return to Maine is beyond computation.

This commission has, ever since its establishment, been in receipt of letters of inquiry concerning matters of economic importance. These relate to water power, building stones, peat, feldspar, mica, magnesite and other useful minerals. Maps are bought by tourists, bicyclists and summer visitors. They have also been used in the buying and selling of real estate by non-residents.

In the light of these facts, it seems clear that a topographic survey is not to be considered as a luxury, but rather as an investment which is sure to bring ample returns.

LEGISLATION.

The commissioners ask that the sum of \$5,077.08 be appropriated to reimburse them for their expenditures during the past two years.

For the continuance of the survey, they recommend an appropriation of the sum of five thousand dollars, to be expended during the years 1901 and 1902.

Respectfully submitted,

LESLIE A. LEE,
WILLIAM ENGEL,
C. S. HICHBORN,

Topographic Commissioners of the State of Maine.

AUGUSTA, MAINE, January 18, 1901.

STATE OF MAINE.

IN SENATE, January 23, 1901.

On motion by Mr. WHITE of Androscoggin, laid on table to be printed.

KENDALL M. DUNBAR, *Secretary*.