Second Biennial Report

OF THE

STATE FORESTER

OF THE

State of Colorado

Fort Collins, Colorado

1914

Fort Collins, Colo., Nov. 30, 1914.

To His Excellency, Honorable Elias M. Ammons, Governor of Colorado:

Sir:

I have the honor to transmit to you the Second Biennial Report, covering the transactions of the office of State Forester under the act approved May 27th, 1911.

Respectfully submitted,

B. O. LONGYEAR,

State Forester.

FORESTRY IN COLORADO

ORGANIZATION OF COUNTY FIRE WARDENS.

The work of visiting the county seats of the forty-two counties in the state which contain forested lands so as to acquaint the county officers concerned in the control of forest fires with the law, as specified in Sections 1280 and 1281, the Revised Statutes of 1908. was not completed at the end of the first biennial period ending November 30th, 1912. In order to complete this work, Special Deputy I. W. Bennett was retained by contract for this purpose.

In all, forty-two counties were visited and lists of deputy sheriffs appointed and to be appointed were obtained from thirty-eight counties. The Boards of County Commissioners of fourteen counties passed resolutions agreeing to co-operate with the National Forest Service and do their part, financially and otherwise, to assist in forest fire control. The total list of deputies, including the sheriffs, is 550. Copies of State Forestry Laws and Instructions for County and State Fire Wardens have been distributed in all these counties. Deputy Sheriff Forest Service badges have been distributed to the number of 340.

Following the close of the biennial period 1910-12, none of the appropriation for carrying on the State Forestry work was available during the first fifteen months. This made it impossible to continue the work of organization except through correspondence. This has been found at best rather unsatisfactory.

The duties of Chief Fire Warden in each county are merely incidental to the regular duties of the sheriffs of these counties. This makes it difficult to sustain a good degree of intrest in forest fire control through correspondence only, and this part of our work can be made effective only through continuous personal conference with these officials. It is hoped that during succeeding years our appropriation will be regularly available, for in this way it will be possible to keep in touch with the situation in each county and encourage in every way possible the carrying out of the law by those who are committed to this work.

Counties that have adopted resolutions concerning the work of county forest fire control: (See First Biennial Report, page 10.)

Larimer	Pitkin	Mineral	San Juan
Pueblo	Boulder	Garfield	Jackson
Jefferson	Huerfano	Ouray	Montrose
Douglas	Custer	Montezuma	Hinsdale

Forest Badges delivered to—

Gunnison	16	Hinsdale	12
Ouray	20	Montrose	18
Delta	6	Mesa	12
Jackson	25	Custer	12
Saguache	20	Rio Grande	12
Mineral	12	Conejos	20
Costilla	6	Larimer	30
San Juan	6	La Plata	20
Montezuma	20	Dolores	12
San Miguel	20	Eagle	12

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FOREST FIRE REPORTS.

In the Autumn of 1913 and the early Summer of 1914, the following fire report blanks were sent to the sheriffs of the counties concerned with the control of forest fires:

STATE OF COLORADO

DEPARTMENT OF FORESTRY

Forest Fire Report No. ____ by the Sheriff or other fire warden of the County of _____, to the State Forester.

I report as follows on a forest fire which occurred in this County, _____, 19___.

Discovered or reported by_____

Starting point of fire_____

Length of time fire burned_____

Area Burned Over	Timb'r'd (acres)	Open (acres)	Estimated Damage
Public Lands			$
Forest Reserves			$
Private Lands			$
Total			$

Cause of fire:

Total cost of fighting the fire, $_____

Remarks:

The sheriffs of the following counties have filled out and returned a report:

Archuleta	Fremont	Lake	Rio Blanca
Boulder	Garfield	Las Animas	Rio Grande
Chaffee	Gilpin	Mesa	Routt
Clear Creek	Grand	Mineral	Saguache
Conejos	Gunnison	Montrose	San Miguel
Costilla	Hinsdale	Montezuma	Summit
Custer	Huerfano	Ouray	Teller
Delta	Jackson	Park	
Douglas	Jefferson	Pitkin	
El Paso	Larimer	Pueblo	

Only forest fires outside of the National Forests have been reported on in this way. All of the other fires occurring within the state are mainly within the National Forests where they are handled and reported upon by the Forest Service.

The following fires in Larimer County have been reported through Forest Supervisor H. N. Wheeler: During 1913 there were twelve fires outside of the National Forest, the largest one being in the vicinity of Rist Canyon which the sheriff believes burned over about one section (640 acres) and cost the county between $200. and $300. to suppress. In Boulder County only three fires of any consequence occurred, one in Boulder Canyon which burned 15 or 20 acres, cost $25, to suppress; another near Allen's Park burned about 40 acres; the third one on the north side of the middle St. Vrain burned 15 to 20 acres.

Another fire in this County has been reported through Forest Supervisor Simpson as having occurred on November 12th along the right of way of the Rocky Mountain Railroad between Fraser and Stephens' Mill. It was caused by sparks from a logging engine. This fire was brought under control through the combined efforts of the County Fire Warden with a crew of three men and the Forest Service with eight men. In addition to this, Mr. J. B. Stephens' mill and logging crew of about 35 men helped in the puting out of this fire. The total cost to the County Fire Warden, $3.15. No estimates of the damage caused by this fire have been submitted.

In Grand County, the following fire was reported through Forest Supervisor Alva A. Simpson. This fire occurred upon private lands, two and one-half miles south of Fraser outside the National Forest. It burned over about 80 acres of slash left by the logging operations of Mr. Fred Feltch of the Fraser River Timber Company. No costs in the control of this fire were submitted.

In Rio Grande County, three fires were reported for 1913 by Sheriff J. Frank Goad. Two of these occurred on National Forest

land, and were handled by National Forest officers at a total cost of $9.86. In neither case was the cause definitely known. The third fire occurred partly on National Forest land and partly on private land, and burned 3,800 feet of timber and 80 acres of grass land. Cost of extinguishing this fire, $80.31, the whole of which was paid by the Forest Service.

In Gilpin County, one fire was reported for 1913 by Sheriff A. S. Gundy. This fire was extinguished by Forest Ranger Ray Clark. and the cause and estimated damage is not given.

In Montezuma County three or four small fires were reported by Sheriff G. Sam. Todd. These were along the railroad, started by sparks from the engine, and extinguished at a cost of $15.

In Gunnison County one fire was reported by Sheriff Pat Hanlon for 1913. This started in Stubbs Gulch and burned over about one acre, and was probably caused by campers. The cost to extinguish the fire was $3.50.

In Douglas County Sheriff George Nickson reported one fire six miles south of Castle Rock which was caused by the railroad, and was extinguished at a cost of $16.50.

In Teller County one fire was reported by Sheriff Henry von Phul. Two acres of privately owned timber in Eclipse Gulch were burned, the fire caused by sparks from a locomotive. The damage was slight.

CO-OPERATIVE PROJECT WITH FOREST SERVICE

FOREST SERVICE PROJECT

L-39

Experiments With Engelmann Spruce, Lodgepole Pine and Alpine Fir Fence Posts

This project which was concerned with the preservative treatment of the above species of timber, was fully outlined in the First Biennial Report, Page 19.

According to that project, the 270 posts employed in this experiment were set upon the college farm and put into actual service. The first lot of these posts consisting of 109 pieces, was set two years ago. An inspection was made of these posts at the end of the second year. Although the time has been relatively short for decay to make much progress, still there is a marked difference already evident between the treated and the untreated posts. Those which were treated with crude oil, however, show, if anything, a

greater rate of decay than those which were set without any treatment. Only about 4 per cent of the treated posts show any decay. In such cases, it is mostly confined to one side of the post and apparently has started from a deep crack or other defect.

That any decay whatever should appear in the treated posts is evidently due to the character of the preservative used. This was gas tar from one of the local gas factories, and although a good timber preservative in itself, yet it was of such thick consistency that but little penetration could be secured by the open tank method. Although decay has made considerable progress in a number of the untreated posts, it is still too early to determine exactly the comparison between the treated and the untreated posts. No exact data can therefore be published concerning this experiment as to the merits of the treatment given. In a general way, however, it is safe to state that the treatment as given will be effective in prolonging the life of posts from 50 to 100 per cent.

STATE FORESTRY PROJECT
PRESERVATIVE TREATMENT OF FENCE POSTS
STATE FORESTRY INVESTIGATION
PROJECT NO. 1.

On account of the lack of funds during the first half of the biennial period just closed, and the uncertainty of the finances for this work, the carrying on of this project has been greatly interfered with as originally planned. A considerable number of posts from elm, ash, soft maple, box elder and cottonwood trees growing on the College Campus, however, have been prepared for treatment, and will be handled under this project.

A light portable saw mill has been purchased for working up material too large for round posts. In this way it will be possible to utilize the trunks of large cotonwoods up to 30 inches in diameter by sawing them into square posts with a two-inch taper toward the top. This mill has just been recently installed on the college farm, and in connection with the treating plant which was erected three years ago, will enable us to do effective work upon this project.

During the winter of 1913 and 1914, the farm department of the College purchased 1,200 split Idaho Cedar posts which were treated in the timber-treating plant under the direction of the State Forester. These posts have also been included under this project and records are being kept upon these posts for this purpose. In a few cases local parties have been permitted to use the treating plant for small lots of posts which they have furnished. These posts

have likewise been tagged and recorded upon the same filing cards as those used under this project, of which they are to form a part.

SHADE AND TIMBER TREE SURVEY OF COLORADO STATE FORESTRY PROJECT NO. 2

Work upon this project has been greatly hampered for the same reasons mentioned in connection with Project No. 1, and practically no progress has been made except to complete the shade tree survey of the city of Fort Collins, which was begun during the first biennial period. It is particularly desirable that this project should be carried on for the reason that some of the oldest timber plantations in the state are being cut and worked up into lumber, fuel and posts, and the data which these plantations offer should be secured and recorded.

STATE FORESTRY PROJECT NO. 3

NAME OF PROJECT.—Demonstrations in Timber Preservation.

OBJECT.—To teach farmers and other interested persons how to prolong the period of use of fence posts by preservative treatment.

LOCATION.—The work to be carried on at the State and County Fairs and similar gatherings throughout the principal farming sections of the State.

METHOD OF PROCEDURE.—The person in charge of this work shall visit such fairs or similar gatherings of farmers and persons directly interested in agriculture as the time will permit and show by actual operation the process of fence post preservation adapted to the ordinary farm.

(a) For this work a suitable portable outfit shall be obtained which can be shipped to the places of demonstration and quickly set up and put into operation. This outfit should consist of a riveted sheet iron tank of one-eighth-inch black iron; 30 inches in diameter and 44 inches in height, and a sheet iron fire box with smoke pipe for the heating of same. A chemical thermometer registering to 250 degrees Fahrenheit should be used in regulating the temperature of the preservative.

(b) The preservative used may be one of the standard gas tar creosotes or any of the local gas tars or gas tar products most readily and cheaply obtainable.

(c) The process employed shall be the open tank process as described in Farmers' Bulletin No. 382 of the United States Department of Agriculture, title: "The Preservative Treatment of Farm Timbers."

(d) The posts employed in the demonstrations may be such as are available—cottonwood, poplar, aspen, lodgepole pine, Douglas fir, or other cheap woods, if possible. They should be round in form, free from bark and seasoned for at least five weeks.

(e) Illustrative material showing how and where a post decays and the effect of the preservative should be exhibited. A fence post nearly rotted off and shown in lengthwise sections together with one that has been treated, may be used.

(f) Brush treatment of posts should also be demonstrated. The outfit may consist of a wire-bound roofing brush, a galvanized iron bucket and a suitable trough for holding the post and catching the excess creosote during application. Hot creosote should be painted upon the butt end of the post to a height of 30 inches and after this has penetrated, a second coat is to be applied.

The top end of each post should be cut sloping and creosote applied in both processes of treating.

During the autumn of 1914, Mr. J. R. Wheeler was put in charge of this work. His report in part is as follows:

"The following towns were visited during agricultural fairs: Loveland, Greeley, Grange Hall, Pueblo, Montrose and Kremmling.

"A banner was displayed reading as follows:

"'Farm Forestry Demonstration in Timber Preservation

"'Under Direction of The State Forester,

"'State Agricultural College, Fort Collins, Colorado.'

"Cheap, quick-growing timber, such as cottonwood and poplar, can be made to last 15 or 20 years. Lodgepole pine, Engelmann spruce, and balsam fir can be made to last equally well in this way.

"Comparative cost of Lodgepole pine in Idaho:

First cost of post	.06	.06
Cost of treatment	.00	.15
Cost of setting post	.12	.12
Total cost of set post	.18	.33
Estimated length of service	4 years	20 years
Annual cost of post, approximately (allowing 6% on investment)	.05	.03
Annual saving per post	.00	.02

"The object of the demonstration, to show people how to make use of their cheap, home-grown timber, such as cottonwood and willow, was somewhat thwarted in my not being able to get this kind of timber to demonstrate with.

"In some instances split cedar was used. This post proves to be a very poor one according to the experience of many farmers,

who say from two to four years is as long as they will last without treatment.

"At one place cottonwood was used, but I found spots in the post which were not thoroughly seasoned because the bark had not been peeled off, though they had been cut eight months or more.

"At another place lodgepole pine was secured. These posts were seven or eight inches in diameter and the absorption made the treatment rather expensive: 21/48 barrel for fifteen posts.

"In the case of the split cedar, the cost of the treatment is little, considerably less than one-half gallon of oil to the post being absorbed.

"I had many inquiries with reference to the heating tanks we were using. They were especially admired by many men who had had experience with cookers and heaters of various kinds. Personally, I think they could not be improved upon. They are so constructed as to use a minimum of fuel, securing a maximum amount of heat.

"My experience at these fairs shows the small gatherings to be the most appreciative, although at the shorter meetings, people have so little time they are inclined to hurry around and do not get hold of the details of the process of treatment unless especially interested. Many who were especially interested, I found, were about to build or rebuild fences, or owned timber claims from which they intended to take posts.

"Loveland, Greeley and Kremmling were very satisfactory on account of the numbers interested and the many questions asked, which resulted in their finding out about the use of creosote oil.

"At Montrose a great deal of Carolina poplar is growing up and I had a good chance to talk and show figures to individuals, but they have access to native cedar as yet, as have also the people at Kremmling.

"While it would be expensive to maintain a complete bureau of information at the fairs, I have wondered if it would not be a profitable investment to maintain a booth where a full directory of Agricultural College departments could be found.

"I find that I have covered about as many dates as it is possible for one man to cover. Each demonstrator should have at least two outfits, and a careful plan of campaign should be outlined for shipping the outfits to give plenty of time for transportation and to save delay and anxiety at the place where the demonstration is to be made.

"I think this is a very important demonstration to the farmer in helping him to conserve his farm timber products; also there is a feeling among farmers that their interests are being looked after.

I find, too, the people in the newer and more distant places seem to need help and they also feel that they are just as worthy of consideration as those who live nearer to the College. At Kremmling there was an especial satisfaction expressed because of the interest taken in them.

"Reports sent from the field gave the disposition made of the posts after treating, except in cases cited below. These posts were distributed to men who will set them for experimental purposes and who will make a report when asked for it.

"Respectfully submitted,

"(Signed) JOHN R. WHEELER,"

Fort Collins, Colorado,
Ooctober 9, 1914.

Most of the post-treating work was done with Denver gas tar creosote, which is a by-product in the manufacture of illuminating gas from coal. This material can be purchased F. O. B. Denver for 20c per gallon. It is a rather thin, sirupy liquid, having the odor of illuminating gas and a rapid penetration when applied to an absorbing surface. Similar creosote may be obtained from the Omaha Gas Works, Omaha, Nebraska; the International Creosoting and Construction Company, Galveston, Texas; or Barrett Manufacturing Company, Chicago.

In most cases the cost of the treatment was about 10c per post. The cost of the treating tank and heating jacket combined was $45. These tanks were made especially heavy on account of the severe treatment they were expected to receive in shipment from one point to another.

In making the treatment, the tank was first filled with posts and then the creosote was added to a height of at least 30 inches. A fire was then built under the tank and the temperature raised to about the point of boiling water. The fire was then removed and the creosote allowed to cool to its original temperature while the posts were left in. The heating causes the air within the pores of the wood to expand and escape, and the subsequent cooling forces the creosote into the pores of the wood by atmospheric pressure aided by the capillary attraction.

A CHEAP OUTFIT FOR THE PRESERVATIVE TREATMENT OF FENCE POSTS ON THE FARM

A smaller but much cheaper treating tank than the one previously described can be made from one of the galvanized steel barrels used for shipping oil and gasoline. These barrels, which can be bought for about $6 or $7 are 36 inches high by 22 inches in

diameter, and by removing one of the heads by means of a cold chisel or otherwise, a tank 34 inches deep remains. This tank, which is heavy enough to serve the purpose of post treating, may be supported upon two iron cross-bars built into the sides of a brick or stonework fire place. Such a tank will hold about 10 or 12 posts of ordinary size at one time.

Perhaps the most convenient way of using such a small outfit without much attention is to fill it with posts and creosote either at night or in the morning and heat it to the required temperature with a small fire. The posts may be left in until the end of 24 hours and another lot put in. In this way the posts are given an excellent opportunity to absorb creosote while but little time will be taken from other work.

Whenever it is desired to make continuous treatment, the most effective method is to keep the creosote and treating tank heated to the temperature of boling water, continuously, while a barrel of cold creosote, open at one end, is kept at hand. The treating tank is filled with posts which are kept in the hot liquid for about an hour, after which they should be removed and at once plunged into the cold creosote, where they are to remain an equal length of time. In this way the process can be made nearly continuous and a large number of posts may be treated in one day. When the posts are removed from the cold creosote, they should be placed with the butt ends in an inclined trough with a pail at the lower end to catch the excess oil which may cling to them.

Care should be taken not to heat the creosote much above the temperature of boiling water, otherwise considerable of it will be lost by evaporation. The temperature may be determined roughly without a thermometer by hanging a small tin can containing a little water into the top of the treating tank. When the water in the can begins to boil, the creosote has reached the desired temperature.

While most any species of timber may be profitable treated in this way, it is particularly useful in treating the rapidly growing, cheap timbers which can be readily grown on many Colorado farms. It is equally useful in the treatment of the cheaper imported timbers, and when properly performed will lengthen their ordinary period of usefulness from two to four times.

FOREST STATIONS TO BE USED AS STATE FOREST RESERVES

Under a special Act of Congress two years ago, the State Agricultural College of Colorado was granted the privilege of selecting certain tracts of forest land lying either within the national forest or the public domain for use in carrying on the work of

the course in Forestry at this institution. This land is selected in areas of not less than forty nor more than one hundred and sixty acres each, and includes all conditions from timber-line to the lower foothills.

The State Forester was one member of the party entrusted with the selection of these tracts of land, which was done during the month of August, 1914. Twelve tracts, with a total area of 1,280 acres, have thus far been selected and each has been named according to some characteristic local feature. These twelve stations, as they will be known, are to be handled as State Forest Reserves, under the direction of this office. They are all situated in Township 7 North, Ranges 73 and 74 West, and vary in altitude from about 8,000 to 11,500 feet.

ERECTION OF FOREST LODGE

In order to more effectively carry on the work to be done upon these stations, a forest lodge has been erected upon the Pingree Station, to serve as a base of operations. This lodge has been constructed of native lumber in the rough, and is well equipped with plumbing, supplied with water from a nearby spring. It is well suited in other respects for a summer camp building, and its location in Pingree Park upon the Little South Poudre gives it an ideal situation for administrative purposes.

The great variety of forestal conditions which are to be found in easy reach from this Station should enable this department to carry on studies and experiments in the field under exceptionally favorable conditions.

FREE DISTRIBUTION OF SEEDS, CUTTINGS AND TREES

Several calls have been received for tree seeds, cuttings and seedling trees. Wherever possible these requests have been supplied to a moderate extent. Seeds of black and honey locust have been furnished for planting in small lots upon prepayment of postage. The same has been followed in the matter of furnishing cuttings of cottonwoods and willows. About 600 cuttings have been sent out during the past two seasons to various parts of this state, and in some cases to neighboring states where parties desired specimens of our native species. In a few cases small lots of seedling honey locust trees have been furnished for experimental planting, with the understanding that the parties to whom they are furnished should report upon their success with the same. During the past summer an active campaign has been carried on by some of the residents in Cheyenne County for the securing of a considerable

quantity of free nursery stock suitable for planting on unirrigated land. This matter has been strongly urged before the State Board of Forestry through the Arapahoe local number of the Farmers' Union and through the State Forestry Association. In order to supply at least in part this demand as well as to encourage settlers on the eastern plains of Colorado in the planting of trees, 25,000 seedling trees adapted to this purpose have been purchased from a middle western nursery for spring delivery. These trees are one-year-old seedlings and have been secured for a lower price than they could be grown in our own nursery under present conditions. The officers of the Union Pacific Railway Company have agreed to transport this nursery stock free of freight charges to the stations where it is to be distributed. While it will be impossible to supply all of the demands that may be made of this nature throughout the state, it seems especially desirable that some portion of the appropriation for our work be set aside each year for encouragement of tree planting in the eastern plains region. The only way in which this can be successfully handled, however, will be under the supervision of a field man who can give his whole time to the distribution of this stock during the planting season. No small effort will be required to see that it is placed in the best hands for effective use. In this connection it seems unwise at the present time to undertake the establishing of a State Forest nursery on a large scale which can supply the state with nursery stock, as is done in some of the neighboring states. Good stock can be purchased from the larger nurseries farther east at as low or lower prices than they can be grown in a State Forest nursery, unless it is conducted on an equally large scale.

CO-OPERATIVE TIMBER PLANTING AT AKRON

In the spring of 1909, nine species of broad-leaf trees were planted upon the Government substation farm at Akron, Colorado, in co-operation with the Agricultural Experiment Station of the college. This includes the following species: black locust, honey locust, black cherry, cottonwood, ash, elm, osage orange, Russian mulberry, Russian olive. These trees were furnished in small sizes by the Forest Service and planted in a wide belt extending around two sides of the substation farm. In 1911 the following conifers were added to this plantation: European larch, Scotch pine, Austrian pine, Jack pine, western yellow pine, Douglas fir, Black Hills spruce. This work has now been placed under the direction of the State Forester and will be used in making a study of best methods of timber culture under conditions like those in that region. The

work of cultivation, pruning and other requirements of the plantation are being handled by the substation force at the present time. This station offers a good opportunity for the testing of various species which may promise well for unirrigated land. It is too early at the present time to offer a detailed report upon this work, as the trees will require longer time in which to show their fitness for such conditions.

BASKET WILLOW PLANTING

A fair crop of basket willow rods was harvested during the past season from the small willow holt now growing in our forest nursery. These rods have been placed in the hands of an experienced basket maker who is testing them for their basket-weaving qualities. The following varieties appear to be well suited to this purpose as grown here: Purple, American Green, Vinalic, American. Further tests, however, are necessary with these varieties, which tests will be made in coming seasons.

PUBLICATION: "THE NATIVE EVERGREEN TREES AND SHRUBS OF COLORADO."

This publication in bulletin form contains illustrations and descriptions of all of our native species of coniferous evergreen trees and shrubs in Colorado. It has been published with the idea of familiarizing persons more generally with them, and of creating a more favorable sentiment toward forest conservation. This bulletin contains directions for the growing of evergreens from seed, the transplanting and care of such trees, and the various uses to which they are adapted. The illustrations and descriptions are suited to the use of teachers and pupils in our public schools and also to Forest Service officers and others who desire to recognize our native trees. The preparation of this publication has consumed the larger portion of the State Forester's time since our appropriation became available. It is believed that the demand for this bulletin will be very large as soon as it is in print.

RECOMMENDATIONS

There is little to recommend from this office in the way of additional legislation, except in the matter of lending encouragement in the planting and culture of timber, especially in the eastern plains region of the state. This matter is now being urged through the activities of the State Forestry Association through a proposed

act along the lines of a tax exemption law similar to that which is now in existence for irrigated land. (Laws '81, page 250, Sec. 1; G. S. '83, Sec. 3425; Mills Ann. Stats., Sec. 2006.) The present law exempts land planted to trees from any added increase in valuation in the assessment of said land during a period of ten years. A similar law should be enacted for tree planting on unirrigated land, except that the exemption limit should be extended to a period of at least twenty or more years on account of the greater difficulty of getting trees established and because of their slower growth under such conditions.

The present law concerned with the control of forest fires through the sheriffs of the various counties where forests occur seems well suited to our needs in this state. The greatest difficulty thus far met with in carrying on the work of forest fire protection under this law has been the lack of a regular deputy, one-half of whose time could be given to this work. This will be possible only when the appropriations for our work are regularly paid or otherwise made available for our use throughout the biennial period. It is impossible to do satisfactory work along any line without a more regular and systematic program, backed by a regular income for carrying it on. While it may be possible to spend an appropriation in three months' time which should have been spread over a period of two years, yet it is impossible to do so with any considerable degree of efficiency and economy.

FINANCIAL STATEMENT

STATE FORESTER

Apparatus	$ 282.78
Freight and Express	106.44
Furniture and Fixtures	396.80
Labor	493.72
Laboratory Supplies	100.12
Permanent Improvements	2,363.85
Postage and Stationery	70.09
Publications	632.04
Repairs	1.10
Salaries	2,545.26
Seeds and Plants	60.00
Telephone and Telegraph	16.90
Tools, Implements and Machinery	510.83
Traveling Expenses	418.92
Recorder's Fee	1.15
	$8,000.00