

FIRST REPORT ON
FOREST CONDITIONS IN OHIO.

OHIO
Agricultural Experiment
Station.

WOOSTER, OHIO, U. S. A., DECEMBER, 1907.

BULLETIN 188.



The Bulletins of this Station are sent free to all residents of the State who request them. Persons who desire their address changed should give both old and new address. All correspondences should be addressed to

EXPERIMENT STATION, Wooster, Ohio.

ORGANIZATION OF THE
OHIO AGRICULTURAL EXPERIMENT STATION.

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The Bulletins of this Station are issued at irregular intervals. They are paged consecutively and an index is included with the Annual Report, which constitutes the final number of each yearly volume.

To His Excellency, ANDREW L. HARRIS, Governor of Ohio:

SIR:—In obedience to the requirements of Section 409-cc, Revised Statutes of Ohio, I herewith transmit a report of investigations on the forest conditions of Ohio, made by the Ohio Agricultural Experiment Station during the two years, 1906 and 1907.

Respectfully submitted,

D. L. SAMPSON,
Secretary of the Board of Control.

BULLETIN

OF THE

Ohio Agricultural Experiment Station

NUMBER 188.

DECEMBER, 1907.

FIRST REPORT ON FOREST CONDITIONS IN OHIO.

REPORT OF THE DIRECTOR.

MR. T. C. LAYLIN, *President of the Board of Control:*

SIR—I herewith transmit the report of the Forester of this Station on the operations of the Department of Forestry for the biennial period, 1906—1907.

Forestry problems in Ohio differ from those in many other states in the fact that the state contains no mountain ranges nor other large bodies of waste land, but outside of a few tracts of several thousand acres each, belonging to coal companies in the southern part of the state, it is everywhere cut up into small farms, the average size of which is less than 100 acres each.

The principal work in forestry in Ohio, therefore, is to be done, not in the reforestation of large areas of state-owned lands, but in the improvement of the woodlot of the small farm.

Up to a very recent period forests have been looked upon, over a large part of Ohio, as an incumbrance to the land, rather than as a valuable asset. Forty years ago cordwood was worth more, in most sections of the state, than it is today; the cheapening of coal having driven firewood practically out of the market, and saw timber was worth as much or more than it has been at any time since until within a very recent period.

Farmers have had no means of forming a correct estimate of the annual increase in growth on lands in forest, nor have they been well informed as to the means necessary to secure the most profitable growth, consequently they have placed a very low value upon forest lands, and have given their forests very little care.

In view of this condition of affairs it has seemed best to direct the first work of the Station along the following lines:

1. The securing of information relative to the area actually in forest and the condition of the forests thereon:

On this point the statistics collected by the township assessors indicate a total area reported as forest amounting to about 2,500,000 acres; but our observation shows that the major portion of this area is in the condition of woodland pasture, rather than that of forest, and that it is rapidly diminishing in size and decreasing in value.

2. The obtaining of data respecting the rate of growth of forest trees and the conditions favoring such growth:

For this purpose native groves, the history of which is definitely known, have been measured and their annual growth ascertained, with the result that the value of the annual increase of a forest only moderately well cared for is found to be decidedly in excess of that usually obtained from open pastures, while the value of the woodland pasture is found to be very small.

3. The endeavor to interest the farmers of the state in the preservation and extension of their forests:

It may as well be accepted that farmers in the more level sections of Ohio will not devote their lands to forest until convinced that by so doing they may reasonably expect a return on the investment equivalent to that derived from pasture, or to the net returns from tillage. It is idle to talk to them of the danger to agriculture from deforestation, while they have before them the object lesson of two of the most fertile spots on the earth in the great prairie region of which Iowa is the center and the treeless steppes of southern Russia. When the farmers of central and northern Ohio can be shown that trees may be so grown as to yield a fair profit within a reasonable time they will grow trees, and this demonstration the Experiment Station is making in its distribution of seedling trees of post timber for cooperative planting, and in the information it is collecting respecting the rate of growth of other species of trees.

4. The studies of the forest problems peculiar to the hill counties of Ohio:

While the forests of the level lands of the state must compete with the plow for foothold, there are hundreds of thousands of acres of steep, hillside land in southern and eastern Ohio on which there should be no such competition, and which should remain permanently in forest. Much of this land is now covered with second growth timber and is held at a nominal value, because its owners do not know how properly to develop and care for it. A few demonstration forests established in this region would be of incalculable value in leading the way to a better system of management.

One such forest is being set apart by the governing board of the Boy's Industrial School at Lancaster, which has transferred the general management of several hundred acres of its forest lands to the Experiment Station. This will give an excellent opportunity for the study of the forest conditions of that part of the state; but there are other sections, where the soil conditions are very different from those in this region, in which similar opportunities for investigations may and should be secured.

ADDITIONAL LEGISLATION.

The law requires that this report shall contain "such recommendations, and such suggestions as to what legislation, if any, may be necessary for the development of a rational system of forestry adapted to the wants and conditions of the several sections of the state."

Under this head the Forester calls attention to the desirability of a slight modification of the existing law authorizing townships to purchase and improve lands for park purposes, by making the term park to include natural forest reserves.

The suggestion is also offered that the reforestation and future control by the state of the steep hillsides, bordering the narrow valleys through which the streams in southern Ohio flow, would mitigate the force of the freshets which have been so destructive in recent years, by retarding the inflow and distributing it over a longer period. The State already owns some lands of this character. The question is raised whether such lands should not be withdrawn from sale, and a policy adopted looking to the purchase, or at least the control, of additional reserves of this character.

With these exceptions it is believed that what is needed to develop the forestry industry of Ohio is not additional legislation, but information, demonstration and leadership in the actual growing of forest trees. The legislation suggested, however, would be of the greatest assistance in this work also.

Respectfully submitted,

CHAS. E. THORNE, *Director.*

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REPORT OF THE FORESTER.

BY W J GREEN

During the years 1906 and 1907 work has been carried on in forestry under the provisions of the act establishing a department of forestry at the Experiment Station. All lines of work designated in the act have been begun except the conducting of experiments in the treatment of wood to increase durability.

COOPERATION WITH THE DEPARTMENT OF AGRICULTURE.

Arrangements have been entered into with the Forest Service of the U. S. Department of Agriculture for the purpose of cooperation. This work was to have been commenced in the spring of 1907 and some preparations were made for it, but for sufficient reasons both parties deemed it better to defer action another year.

FOREST SURVEY.

The work of inquiring into the character and extent of the forests of Ohio, as well as investigating the causes of their waste and decay, has been combined with a study of the rate of growth of different species of forest trees. This work has been under the charge of the Assistant Forester, whose training in the government forest service has given him special fitness to deal with such questions. It has not been possible, within the limited time which could be spared from other work, to go beyond restricted areas in studying the character and extent of Ohio forests, but on every hand the causes of waste and decay are apparent. The few remaining virgin forest trees found in many woodlots in the state are nearly all dying at the tops, and in most cases show decay in the trunks.

Portable sawmills are converting these trees into lumber as fast as possible. This is not so much on account of the cash which they will bring as because they must be harvested at once in order to save them from further decay and to prevent partial or total loss. The prices at which these trees are sold vary greatly in different parts of the state, but in all cases the amount received seems insufficient.

No argument can be presented, however, in favor of holding timber which is mature, where growth has ceased and decay has set in. Trees die a natural death, in time, but much of the decay, as noted, is premature, and is the direct result of ill treatment. The monarchs of the forest which all admire, and many love, have suf-

fered because of neglect and ill treatment amounting even to abuse. Their ranks have been decimated and the unprotected tops of those remaining have been torn by the winds; live stock has browsed the underbrush which held the mulch of leaves; the ax has laid low many saplings, unnecessarily; no care has been taken to preserve a full leaf canopy above; grass has crept into the open spaces; the winds have whisked the leaves away, destroying the leaf mulch, cattle have puddled the soil by trampling, in fact by too much cutting and too much pasturing Nature's plans are all undone and the conditions which she has been centuries in perfecting are destroyed within a few years.

When natural forest conditions are destroyed the older trees soon perish and the younger ones fail to make satisfactory growth. It is true that decaying trees are found in undisturbed forests, but far greater mortality is seen where live stock has had access.

But as much as we deplore the decay and loss of the forest giants our sympathies should go out to the young and growing trees. The pernicious habit of pasturing the woodlot, which has caused the premature decay of mature trees, has wrought far greater destruction to the young growth than to the large trees. The fact that the few remaining trees which are ripe for the harvest will soon be gone is not so much to be deplored as that there is almost nothing left to take their places.

Examination has shown that nearly all woodlots are pastured and that where such is the case there is almost no reproduction. The seedlings have been eaten off as fast as they appeared and when the trees now standing are gone the woodlot will cease to exist. Over the greater part of the state fully 95 percent of the woodlots are in this condition.

Statistics show about one-eighth of our area to be wooded, or approximately two and one-half million acres. In some of the southern counties the percent of woodland in pasture is less than in the northern sections. The forest survey has not been carried far enough to permit an accurate estimate of the total acreage of young growing timber in the state, but there is evidence to show that it can hardly be more than 20 percent of the reported woodlands and without doubt is much less.

At least 80 percent of our mature timber trees are standing where natural forest conditions have been destroyed so that early decay is inevitable. Not more than half a million acres of young growing forests remain, and many of these are in bad condition, the stand usually being poor and the trees inferior.

These facts point to the inevitable disappearance of our forests at a more rapid rate than at any time before

THE WOODLAND PASTURE.

Four-fifths of the woodlands which we have been calling forests are not forests at all, but simply wooded pastures, having no value for timber production and but little for grass. In some parts of the state the percent of woodlands which are actual forests is much lower than this. A wooded pasture is a poor investment because the trees damage the grass both in quantity and quality, while the timber production is of little value.

An effort has been made to learn what estimate of value farmers put upon woodland pasture. Some admit that it is worth nothing, but others place upon it an annual cash value of twenty-five cents to several dollars per acre. The average of these estimates is about sixty cents per acre. Since there are more than two million acres of these wooded pastures within the state, it is evident that the annual loss in holding them in their present condition is considerable.

INCREASE IN VALUE OF GROWING TIMBER.

Now that timber of the best species of nearly all sizes above six inches in diameter is merchantable, it is easy to see that a young forest may yield returns from the thinnings alone, and at the same time increase in value rapidly.

To study rate of growth and determine increase in value of forest stands is an important part of the work of the forest survey. It is fundamental, because no other way is open at present, to show the approximate annual increase in value of growing timber. The work is laborious, because many examinations of growing trees on different soils must be made and typical specimens under natural forest conditions are hard to find. The abandoned woodlot or woodland pasture yields no suggestions, and natural second growth forests are rare. Considerable progress has been made, however, so that an approximate estimate of much value can be given. It can be shown that a good stand where valuable species predominate will yield a better income than if the land were in pasture. The following sample plots, taken in different parts of the state, illustrate this point. The estimates of value are based on local prices for timber on the stump:

PLOT I—Chestnut tract, 30 years old, Holmes county.

Number of trees per acre	184
“ “ posts “ “	254
“ “ poles “ “	102
Present value of posts and poles per acre.	\$45.58
Estimated value of posts and poles per acre 10 years hence....	\$98.60
Estimated average annual increase in value per acre	\$ 5.30

PLOT II—One, acre, mixed stand, 48 years old, Medina county

Species	Number of trees	Number of board feet at present time	Probable number of board feet 10 years hence	Average annual increase, board feet	Average annual increase in value for one species
White Ash	284	7940	10560	262	\$2 62
Sugar Maple	212	5630	6935	130	1 30
Black Cherry	62	740	1220	480	48
Basswood	30	507	899	391	55
Tulip Poplar	22	401	793	392	57
Red Oak	16	101	384	283	28
White Maple	30	487	811	324	32
Total for all species	656	15806	21602	579	\$6 12

While these plots are better than the average of uncared for second growth forests, they do not show the full possibilities in timber culture. Had they been planted, or improved by thinning, or by the removal of some species and the planting of others, the returns would have been greater and secured at an earlier date.

There are many pastured woodlots which do not under present management yield good returns, either in timber or in pasture, that might be improved at very small cost and brought into a paying condition. There are others, still greater in number, where the process of destruction has gone so far that improvement, with any chance of profit, is impossible.

THE FORESTS OF SOUTHERN OHIO.

Many examinations of woodlots and estimates of this kind have been made, more in the southern counties than elsewhere, because of the superior opportunities afforded in those sections where much of the land is owned by coal companies and held in large tracts. Since the removal of the virgin forests from these tracts the second growth has not been destroyed by pasturing, hence there are many thousands of acres of young timber, some of which is in good condition.

The owners of these forest lands have shown much interest in results of the examination and in the reports which have been made regarding the annual increase in the value of their holdings. Some plots show an annual increase in value of five dollars per acre and upward, but on all of the tracts there are weed trees which ought to be removed from some parts and planting should be done in others.

Numerous questions arise in the management of these tracts and the owners are anxious for guidance. Some of the problems require experimentation on the ground, or under similar conditions, in order to solve them. The use of land free of rent for experiments of almost any nature or extent could be obtained in that region. In that way virtual forest reserves of many thousands of acres could be secured.

The total area of the tracts which have been examined and plots here and there reported upon is nearly forty thousand acres, about thirty thousand of which are in timber, but this does not cover the entire area of furnace lands, nor has the work been done in sufficient detail to furnish such working plans as are needed. Enough has been accomplished, however, to show great possibilities for forestry in that region. Much interest has been aroused and the amount of actual forest operations which are carried on will depend largely upon what the Experiment Station is able to do in the way of demonstration and the solution of problems.

EXPERIMENTS ON THE STATION FARM.

The forestry work on the Station farm at Wooster consists both in growing trees under cultivation and improving the condition of woodlots, located mostly on land not easily tillable, the total area being about thirty-five acres.

On the Southeastern Test Farm, in Meigs county, the area to be under forest management is about the same. In both cases the work on woodlots which have been pastured many years presents difficulties very similar to those found in all parts of the state.

COOPERATION WITH THE BOYS' INDUSTRIAL SCHOOL.

The farm of the Boys' Industrial School at Lancaster offers excellent opportunities for forestry. The trustees of that institution have placed under the management of the Station authorities such portions of the farm as are to be kept in forest. Work in planting and in growth of nursery seedlings was begun in the spring of 1907. 17,940 trees, including white pine, locust, catalpa, ash and mulberry were planted. Thinning out of weed trees is to be begun at once, as well as those which are mature and ought to be removed, also planting is to be carried forward in the spring. The school is to furnish the labor and the Station superintendence, also such trees as are not grown on the farm.

COOPERATION WITH THE OBERLIN WATERWORKS.

A similar plan is in operation upon the farm of the Oberlin waterworks, except that superintendence is given at time of planting only, and suggestions to be carried out under the direction of the waterworks superintendent are made regarding the care of the trees. The object in this case is to cover with trees the farm upon which the intake is located. The work is experimental as far as possible and demonstrational as well, but is so planned that the farm will yield an income from the time that the first posts are ready to harvest. 31,600 trees have been planted on the waterworks farm, also several bushels of black walnuts.

COOPERATION WITH FARMERS.

Thus far the farmers of the state have shown more interest in planting trees for posts than in the care of trees which are already growing in their woodlots. For this reason the work of the Station has been centered upon post production, and trees have been furnished to land owners of the state upon the cooperative plan.

In other states where trees have been given out indiscriminately comparatively little good has been accomplished, but the plan followed here has been to visit all applicants in order to determine what kinds of trees to send, also to start some simple experiment. Further visits are to be made to as many plantations as seem desirable, in order to secure data regarding different species and to offer such suggestions as may be necessary concerning the treatment of the groves. While this plan requires labor and entails expense there is evidence that it will bring commensurate results. Valuable and much needed data can thus be secured from many localities, while interest in various phases of forestry is awakened in individuals and communities.

466 land owners in 84 counties of the state are cooperating with the Station in tree planting. Nearly half a million trees have been sent out in this manner. The Station keeps in close touch with each tree planter, offering suggestions and asking for reports on rate of growth and other matters of interest. Letters received from neighbors of those having trees from the Station show that the plots are closely watched and that the influence is widening and fast creating a sentiment in favor of forestry on a wider scope.

It is not expected that all plantations will prove successful, but the results thus far have been very gratifying. This is mainly because most of those who have planted the trees have cared for them because of having an interest in the matter.

Catalpa plantations, within the state, and now twenty to thirty years of age, have yielded an average gross return of about ten dollars per acre since the time of planting. This has given an incentive to the work, but some seem to have drawn the conclusion that in comparison with the catalpa our native forest trees are of little value. That this belief can have any permanent influence against forestry is not likely; indeed the indications are that sentiment is changing and that the time is ripe for the promulgation of broader doctrines. The general planting of the catalpa within the state has been in the nature of an opening wedge. It has set people to thinking about forestry in a way that no amount of talk about tree planting, in general, could have done.

DURABILITY OF FENCE POSTS.

An examination to determine the durability of fence posts of different kinds of wood has been commenced. 96 different fences have been examined, containing 7,000 posts. Much care has been taken to learn how long the posts have been set, whether seasoned or unseasoned, the kind of soil and other necessary data. One or two seasons' work are still needed before reliable conclusions can be reached.

PUBLICATIONS.

Two bulletins were published before a department of forestry was established, No. 149 on the catalpa as a farm crop, No. 158 on Forestry Investigations. Many calls have been received for these publications since the department was organized. A bulletin on evergreens suitable for windbreaks and general planting is ready for the press, and another on the chestnut is in preparation. One on the farmer's woodlot will be issued soon.

SUGGESTIONS FOR FUTURE WORK.

In order to adopt a rational system of forestry, adapted to the wants and conditions of the several sections of the state, as required by statute, investigation must be carried along various lines. There is much which needs to be known before forest tree planting can be safely entered upon as a business venture. We may learn much from other countries but many of our problems are local and in much of our work we must begin at the bottom.

The cooperative plan enables those who are carrying on the work to grasp the situation quickly, as it makes a wide acquaintance with diverse conditions possible. It serves to prevent too hasty generalizations and at the same time is the means of disclosing and impressing specific facts. Cooperative forestry widens the field of operations many fold, and makes possible the garnering of more facts within a shorter space of time than could be done at one central station. It is not only the best method of getting the facts quickly but at the same time it serves as a means of early dissemination.

The facts which are brought out are close at hand for those who wish them. The experimenter has every opportunity to increase and verify his knowledge and is brought directly in contact with the man who wants to know. More than that, the man who is not yet aware that he needs to know is often aroused by meeting the expert. The influence which is thus exerted in carrying the work on by the aid of the people is considerable at the outset and keeps growing.

STATE FOREST RESERVES.

A well managed state forest reserve would be useful, especially because of the element of permanency. In no other way can water flow be regulated, to any extent, for large areas of permanent forests are needed along streams in order to have any appreciable effect in checking floods. There is need of a forest cover along our streams to hold back the water for a longer time, not only to lessen the danger of floods but to prevent washing. The destruction of fertile fields in river bottoms is becoming such a serious matter that it is a question whether many such fields will not have to be planted to trees to prevent waste and loss.

The usefulness of some of our streams for water power is already destroyed and they can only meet the demands which must be made upon them in the near future by extensive reforestation. These and other good reasons can be urged in favor of the state ownership of forest reserves; but such reserves, either owned or controlled by the state, would do but little to develop the farm forestry feature, which needs immediate attention.

The preservation and improvement of existing woodlots is a difficult matter, and is the more so because of the indifference of the owners. Where indifference has been overcome there is still a lack of knowledge as to the varieties of trees to use and the methods to follow. The cooperative plan puts aside many of the difficulties. It is the easiest way to overcome indifference and the surest method of imparting knowledge.

It is true that by this plan watercourses cannot be adequately protected, but scattered forests which break the force of winds, harbor the birds, and add to the beauty of the landscape are in this way looked after and farm forestry encouraged. Whatever else we need to do in the way of forestry the farm woodlot should not be neglected. The work done thus far has been in this direction and should so continue, no matter what other duties are imposed.

STATE ENCOURAGEMENT OF FORESTRY.

Various plans have been proposed for the encouragement of forestry, and some of them have been tried in other states, such as rebates, bounties and remission of taxes. None of these plans seems to have been very successful. This has led to the almost general belief that forestry can be carried on successfully only by the state or general government.

Of some phases of forestry this is true but not of all. Conditions have changed materially since this belief in exclusive state forestry was established. Timber has increased in value; more small timber is used than formerly; faster growing species are planted: increasing

need of windbreaks is felt, and combinations of trees may be made to check the force of the wind and at the same time serve numerous other purposes; banks of streams and tillable lands need protection against floods; the difficulty of securing labor to care for crops is having an effect in favor of allowing more land to remain in forest; in short sentiment is changing and will change still more as knowledge increases.

TAX REBATE ON FOREST LANDS.

It is believed by many that if any plan could be devised by which the tax on land in forest could be remitted the practice of forestry would become common. If a campaign of education were carried on at the same time, so as to prevent costly mistakes, and also efforts were made to encourage and stimulate the doubting ones, the plan might work out well. Where this plan has been tried the machinery for carrying it out has been defective; besides, it was inaugurated before the people were ready for it.

It would be difficult to frame a law giving a bounty or rebate that would not be subject to abuse, moreover, it would be hardly possible to secure sufficient expert and trained men to make the law effective. At first, however, the number of exemptions would probably be small.

SUCCESSFUL FORESTRY REQUIRES EXPERT GUIDANCE.

Work of this kind could not be carried on through the agency of county or township officers. It would require the services of trained men, not necessarily graduates of forest schools, but preferably so. At least they should possess much practical knowledge of forestry. It may be stated as a fact that forestry cannot flourish except under expert guidance.

Forestry is no more difficult than any of the various branches of agriculture, but it is a subject almost unknown to the general public. There is a hesitancy to embark in forest operations, because of the long time element and also of the fear of failure. At present it is difficult to learn from books how to conduct even the most simple and elementary forest operations, because the literature on the subject is scanty and does not meet the requirements for particular or special cases. The subject, or at least certain phases of it, must be studied before one can embark in it, unless he is able to secure expert advice from the beginning. No one has ever questioned the necessity of expert management of state or government forest reserves. The need of a knowledge of correct principles is not less in farm than in state forestry, and the difficulty of securing this knowledge is greater in the former than in the latter case. Financial help will be appreciated by the farmers but reliable information will be valued more highly.

EDUCATION IN FORESTRY.

There is a law now in the statute books which enables townships to purchase and improve lands for park purposes. This is especially designed for those townships which have large towns or cities within their limits. The common acceptance of the term park is such that the cost of making and maintaining one is so great as to discourage most communities from attempting it. If this law were so modified as to authorize the establishment of forest parks, the simpler and less costly plan might appeal to many. If it were understood that a forest park might, and ought, to combine some of the features of a city park with those of a natural forest, thus greatly reducing the initial cost as well as that of maintenance, there would be a greater inducement to establish such parks. There would be the still further advantage of some income from the sale of timber.

The average city park is an expensive affair, and, as commonly managed, is too artificial to be classed as the highest form of landscape art. Its artificiality makes a little neglect appear glaring. An artist could not get an inspiration for a picture from a city park; there is almost always missing from such parks the delightful natural tangles, retreats, mossy logs, rocks and banks, the leaf carpet, the leaf canopy, the profusion of ferns, flowers and wild plants.

There is no reason why the monstrosities of the city parks should be transplanted to the country, but there is every reason why Nature should be allowed to assert herself in country forest parks. In a forest park there would need to be roads and some clearings in order to secure vistas; some grass would be wanted and a few cultivated flowers; open groves would be essential, but there should be as little studied effect as possible, and for the most part Nature should be left to take care of her own. The greater part of the work to be done in such a park would be along forestry lines. It would be a school, or a schoolroom, where not only forestry could be studied but natural history as well. Large cities might well provide such places and call them nature gardens. Many European municipalities have forest reserves and there is every reason why they should be established in this country and there is no state where the need is greater and the conditions more favorable than in our own.

FINANCIAL STATEMENT.

The last General Assembly appropriated to the Experiment Station for forestry investigations the sum of five thousand dollars for the year beginning February 16, 1906 and ending February 15, 1907. The same sum was appropriated for the year beginning February 16, 1907. The expenditures to November 15, 1907 are given.

FORESTRY EXPENDITURES FROM FEB. 16, 1906 TO FEB. 15, 1907.

Salaries.....	\$ 733.87	
Labor.....	1203.44	
Postage and stationary.....	5.85	
Freight and express.....	92.70	
Seeds, plants and sundry supplies.....	979.66	
Library.....	5.00	
Travel.....	855.47	
Buildings and repairs...	45.11	\$3921.10

EXPENDITURES FROM FEB. 16, 1907 TO NOV. 15,* 1907.

Salaries.....	\$1210.00	
Labor.....	1519.54	
Postage and stationery.....	23.35	
Freight and express....	59.46	
Seeds, plants and sundry supplies.....	478.33	
Library.....	9.41	
Tools.....	66.95	
Travel.....	1462.30	
Furniture and Fixtures.....	80.00	\$4909.04
Balance.....		1169.86

*Books closed on Nov. 15, 1907, but final payments were not made until Nov. 25, 1907.

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