





Permanent Forestry Exhibit at Trenton Inter-State Fair.

REPORTS OF THE  
DEPARTMENT OF CONSERVATION AND DEVELOPMENT  
STATE OF NEW JERSEY

---

ANNUAL REPORT

For the Year Ending October 31,  
1915

Department of  
Conservation and Development

SUCCEEDING  
THE GEOLOGICAL SURVEY  
THE FOREST PARK RESERVATION COMMISSION  
THE STATE MUSEUM COMMISSION  
THE WASHINGTON CROSSING PARK COMMISSION  
THE FORT NONSENSE PARK COMMISSION



TRENTON, N. J.  
MacCRELLISH & QUIGLEY Co., STATE PRINTERS.  
1916.

## The Board of Conservation and Development.

---

EDWARD S. SAVAGE, *President*, .....Rahway  
WALTER J. BUZBY, .....Atlantic City  
NELSON B. GASKILL, .....Trenton  
SIMON P. NORTHRUP, .....Newark  
CHARLES LATHROP PACK, .....Lakewood  
STEPHEN PFEIL, .....Camden  
GEORGE A. STEELE, .....Eatontown  
HENRY CROFUT WHITE, .....North Plainfield

---

ALFRED GASKILL, Lawrenceville, .....*State Forester and Director*  
HENRY B. KÜMMEL, Trenton, .....*State Geologist*  
CHARLES P. WILBER, New Brunswick, .....*State Firewarden*  
OFFICE, STATE HOUSE, TRENTON



## Letter of Transmittal.

---

*To His Excellency, James F. Fielder, Governor:*

SIR—I have the honor to submit for your information, and for transmittal to the Legislature as required by law, the first report of the Department of Conservation and Development. It includes the reports of the State Geologist, the State Forester and the State Firewarden for the full year ending October 31, 1915, and a report of the activities of the Board of Conservation and Development from July 1, 1915, the date on which the creative act became effective, to the close of the official year.

By direction of the Board of Conservation and Development.

Very respectfully yours,

ALFRED GASKILL,

*Director.*

State House, December 16, 1915.



## Contents.

	PAGE.
Personnel, .....	2
Letter of Transmittal, .....	3
Creative Statute, .....	7, 8
Report of the Board of Conservation and Development, .....	9-18
Organization, .....	9
State Parks, .....	11
Wharton Project, .....	11
Hunting, .....	12
Development, .....	13
Recommendations, .....	15
Financial Statement, .....	16-18
Report of the State Geologist, .....	19-40
Administration, .....	19
Topography and Engineering, .....	20-24
Bench Marks, .....	20
Revision of Maps, .....	22
Shark River Inlet Improvement, .....	22
Geology, .....	24
Mineral Statistics, .....	24
Underground Waters, .....	24
Mineral Studies, .....	24
Clay Investigations, .....	24
Soil Survey, .....	25
Testing Laboratory, .....	26
Archæology, .....	27
State Museum, .....	28
Publications, .....	29
Statistics of Mineral Production, .....	31-40
Report of the State Forester, .....	41-46
Publicity, .....	41
Private Forestry, .....	42
Shade Trees, .....	42
State Forest Reserves, .....	43
Colonies of State Dependents, .....	45
Tree Pests, .....	45
State Aid in Forestry, .....	46
Report of the State Firewarden, .....	47-66
The Fire Season, .....	47
Number and Area of Fires, .....	49
Causes of Fires, .....	51-55
The Forest Fire Service, .....	55
The State Force, .....	55
Local Organization, .....	56
Rural Mail Patrol, .....	57
Federal Patrol, .....	57
Value of the Service, .....	58
Needs, .....	58
Violations of Law, .....	64
Legislation, .....	65, 66

## Illustrations.

	PAGE.
Frontispiece—Permanent Forestry Exhibit at Trenton Inter-State Fair.	
Fig. 1. Thrifty Young Oak and Hickory Forest, .....	12
Fig. 2. A Group of Valuable Chestnuts, .....	12
Fig. 3. Tall, Well-grown Tulip, Ash and Birch in Need of Thinning, .....	12
Fig. 4. A Portion of the North Jetty; Shark River Inlet Improve- ment, .....	22
Fig. 5. The Finished Portion of the South Jetty; Shark River Inlet Improvement, .....	22
Fig. 6. Model of Mount Hope Ore Bodies, .....	32
Fig. 7. Model of Mount Hope Ore Bodies, .....	32
Fig. 8. A Well-done Forestry Job, .....	41
Fig. 9. A Poorly-done Logging Job, .....	41
Fig. 10. Some Good Shade Tree Work, .....	42
Fig. 11. Feeble Minded Colony—Lebanon Forest Reserve, .....	45
Fig. 12. A Road on the Stokes Forest Reserve, .....	45
Fig. 13. Natural Regeneration in the South Jersey Pine Forest, .....	47
Fig. 14. Half-grown Natural Pine Forest in South Jersey, .....	47
Fig. 15. South Jersey Pine Forest, .....	47
Fig. 16. Fighting a Forest Fire, .....	54
Fig. 17. Pine Forest Killed by Fire, 1908, .....	54
Fig. 18. Pine Forest Killed by Fire, 1914, .....	54
Fig. 19. Natural Reproduction, Oak and Pine after a Fire, .....	64
Fig. 20. Pine Forest Plantation, .....	64
Map—Forest Fire Service, .....	55

CHAPTER 241, P. L. 1915.

An Act to establish a Department of Conservation and Development and to consolidate therein the State Water Supply Commission, the Board of Forest Park Reservation Commissioners, the State Geological Survey, the Washington Crossing Commission, the State Museum Commission and the Fort Nonsense Park Commission.

BE IT ENACTED by the Senate and General Assembly of the State of New Jersey:

1. A department of conservation and development is hereby established, and the same shall be governed by a board to be known as the "Board of Conservation and Development."

2. The Board of Conservation and Development shall consist of eight members, not more than four of whom shall be members of the same political party, and all of whom shall be residents of the State.

3. The members of the Board of Conservation and Development shall be appointed by the Governor, by and with the advice and consent of the Senate, for the following terms, to commence on the first day of July, one thousand nine hundred and fifteen: two for one year, two for two years, two for three years, and two for four years. Annually thereafter, two members shall be appointed for a term of four years. Vacancies shall be filled for the unexpired terms. The board shall meet every month in the State House, in Trenton, at such times as its rules may prescribe, and at such other times and places within the State as, in its judgment, may be necessary. The board shall elect one of its members president who shall hold office for one year and until his successor shall be elected.

The members of the board shall receive no compensation for their services, but the State Treasurer shall, upon the warrant of the State Comptroller, pay their necessary expenses.

4. The board shall select a person who shall be known as the "Director of Conservation and Development," who shall be a resident of this State and a qualified engineer, forester or geologist, who shall also be one of the division chiefs. In case the board cannot agree because of a tie vote therein, upon the selection of a director, the Governor shall be requested to sit with said board for the purpose of casting the deciding vote. Said Director of Conservation and Development shall receive a salary of not more than five thousand dollars per annum, to be paid out of the treasury of this State as the salaries of other employees are now, or may hereafter be, paid. He shall devote his entire time to the duties of his office, and shall serve for a term of four years, and until his successor has been appointed and qualified.

5. The Board of Conservation and Development shall succeed to and exercise all the rights and powers and perform all the duties now exercised and performed by or conferred and charged upon the State Water Supply Commission, the Board of Forest Park Reservation Commissioners, the State Geological Survey, the Washington Crossing Commission, the State Museum Commission and the Fort Nonsense Park Commission.

6. The Board of Conservation and Development shall also have the power to create subdepartments or divisions, to take specific charge of the different lines of work contemplated in this act, and shall have power to appoint heads or chiefs of such departments or divisions, which heads or chiefs of said subdepartments or divisions shall be experts of recognized standing in their respective professions. One of these chiefs shall be named by the board as director. The board shall define the duties of the director and the chiefs of divisions and may designate a chief as acting director during the absence or disability of the director.

7. The Board of Conservation and Development shall have full control and direction of all State conservation and development projects and of all work in any way relating thereto, except such work as is conferred upon other boards, not included within the provisions of this act. It shall make such rules and regulations governing work of the department, and the conduct of its employees as, in its opinion, may be necessary to conserve, develop and promote the interests of the State, in all matters herein committed to its charge. It shall fix the salaries of all employees.

The Board of Conservation and Development shall report annually to the Legislature.

8. The director shall be *ex officio* secretary of the board. The chiefs of divisions shall be subject to the rules and regulations of the board, and shall exercise general supervision over all conservation and development projects in their respective departments and all work in any way relating thereto. They shall be and hereby are charged with the enforcement of all laws relating to the powers and duties of the board in their divisions, and shall obtain, collect and preserve such information relating to the State's natural resources and to their conservation and development, and also relating to the work of the department as may be useful, in the discharge of their duties, or which may contribute to the advancement of the State's resources. They may, and any person authorized by them so to do may, without fee or hindrance, enter upon, examine and survey all lands and waters of the State.

9. The Board of Conservation and Development by its presiding officer, each of its committees by its chairman, and the Director of Conservation and Development shall have authority to administer oaths and to examine, under oath, in any part of the State, witnesses in any matter relating to the powers

Name.

Membership.

Appointment.

Terms.

Vacancies.

Meetings.

President.

No salary;  
expenses met.

Director.

In case of tie.

Salary.

Service and  
term.

Rights, powers,  
duties.

Subdivisions  
of department.

Heads or  
chiefs.

Duties of  
chiefs defined  
by board.

Acting direc-  
tor.

Control and  
direction ex-  
ercised by  
board.

Rules and  
regulations.  
Salaries.

Annual report.

Secretary.

Supervision.  
Enforcement  
of laws.

Obtain and  
preserve in-  
formation as to  
State's re-  
sources.

Entrance to  
lands and  
waters.

Oaths and  
witnesses.

## 8 CONSERVATION AND DEVELOPMENT.

Issue sub-pœnas.	and duties of the department and to the conservation and development of the State's resources. For this purpose it may issue subpœnas, signed by its president and secretary, requiring the attendance of witnesses and the production of books and papers in any part of the State before it, or before any of its committees, or before the Director of Conservation, and any person who, being served with a subpœna issued pursuant to the provisions of this act, shall fail to attend or who shall fail to give testimony, unless such testimony incriminate him or subject him to a fine or punishment, shall be liable to a penalty of five hundred dollars for each and every offense, to be recovered in the name of the State of New Jersey; said penalty, when recovered, to be paid into the treasury of the State of New Jersey; and it shall be the duty of the Attorney-General to prosecute any and all actions for the recovery of penalties, when requested so to do, and when, in his judgment, the facts and the law warrant such prosecution. Any person who, having been sworn by the presiding officer of the board, or the chairman of any of its committees, or by the Director of Conservation and Development, wilfully gives false testimony, shall be guilty of perjury.
Penalty for not observing subpœna. Recovery of penalty.	
Removal of director. Proviso. Proviso.	10. The Director of Conservation and Development may be removed by the Governor, after a hearing; <i>provided</i> , that charges against him have been submitted in writing, signed by a majority of the members of the board; <i>and provided, further</i> , that the Governor find such charges to be true in fact, and their nature such that, in his opinion, the best interests of the State demand the removal of said Director.
Appointments and tenure.	11. All of the officers and employees of the Department of Conservation and Development shall be appointed and shall hold their positions subject to the provisions of an act entitled "An act regulating the employment, tenure and discharge of certain officers and employees of this State, and of the various counties and municipalities thereof, and providing for a Civil Service Commission, and defining its powers and duties," approved April tenth, one thousand nine hundred and eight.
Codification of laws of each division.	12. Immediately upon the organization and establishment of the Board of Conservation and Development, it shall become the duty of the heads or chiefs of the several subdepartments to codify the various laws which have been passed, from time to time, relating to or concerning, in any way whatsoever, their respective departments, which codification shall set forth, in a clear and comprehensive manner, the origin of such department, meaning thereby its creative act, after which shall follow, in their proper order, all existing acts amendatory thereof and supplementary thereto, and all acts relating to its consolidation (if any there has been) with any other board or boards, commission or commissions, department or departments. Said work of codification shall continue, from year to year, after the principle herein set forth, with the idea of preserving, in concrete form, the history and development, or evolution, so to speak, of each special department, and contributing materially to a better and more comprehensive understanding of all laws relating thereto, and of the powers and duties devolved upon said departments by said acts.
Object of codification.	
Explanation of terms.	13. Whenever, in any act, the words the "State Water Supply Commission," the "Board of Forest Park Reservation Commissioners," the "State Geological Survey," the "Washington Crossing Commission," the "State Museum Commission," and the "Fort Nonsense Park Commission," are used, the same shall be taken to be and to mean the Board of Conservation and Development.
Expiration of terms of various commissioners.	14. The terms of office of the Forest Park Reservation Commissioners, the Managers of the State Geological Survey, the Washington Crossing Commissioners, the State Museum Commissioners, and the Fort Nonsense Park Commissioners, as members of the commissions and boards included in this act shall end on the thirtieth day of June, one thousand nine hundred and fifteen, and of the State Water Supply Commissioners, on the thirtieth day of June, one thousand nine hundred and sixteen.
Retention of present employees.	15. The officers and employees now in the employ of the said boards or commissions hereby consolidated shall be retained in their present offices or positions and shall continue as employees of the Department of Conservation and Development unless removed in accordance with the provisions of an act entitled "An act regulating the employment, tenure, and discharge of certain officers and employees of this State and of the various counties and municipalities thereof, and providing for a Civil Service Commission, and defining its powers and duties," approved April tenth, one thousand nine hundred and eight. The Director of Conservation and Development, however, may, with the approval of the board abolish any office or position, which, in his judgment, it may be unnecessary to retain.
May abolish positions.	
Repealer. Act in effect. Proviso.	16. All acts and parts of acts inconsistent herewith are hereby repealed, and this act shall take effect on the thirtieth day of June, one thousand nine hundred and fifteen; <i>provided</i> that this act shall not take effect as regards to or be construed to include the State Water Supply Commission until the thirtieth day of June, one thousand nine hundred and sixteen, which commission shall retain all the rights, powers and duties heretofore conferred upon it by law and shall continue to discharge such powers and duties until the thirtieth day of June, one thousand nine hundred and sixteen, notwithstanding anything in this act contained; <i>provided, however</i> , that if any section or parts thereof of this act shall be questioned in any court, and shall be held to be unconstitutional and void, the sections or parts thereof so declared to be invalid shall be excised, and the balance of the act shall stand as though said sections or parts thereof had never been included within the provisions of this act.
Proviso. Constitutionality of act.	Approved April 8, 1915.



## Report of the Board of Conservation and Development.

---

On July 1 the Department of Conservation and Development was established pursuant to the law approved April 8, 1915 (see page 7).

By this act the legislature declared it to be the policy of the state to conserve its energies by reducing the number of administrative bodies and consolidating related activities, and to develop its every natural resource.

In assuming this great trust the Board realized that the vital, constructive part of its work lay along development lines, and that by its handling of this subject it would be judged. The state's interests in Geology, in Forestry and in Water Supply being amply provided for, they required but to be reorganized in accordance with the statute. The larger, many-sided duty, the opportunity for constructive work requires much thought and the best abilities of every member of the Department. It is with the deepest sense of responsibility that the Board has undertaken the task of making known, and thereby beginning the development of *all* our natural resources.

In this conception of its duties the Board of Conservation and Development submits a report covering what it has done since July first, combined with reports that cover the activities of its various branches for the full year.

### ORGANIZATION.

The permanent organization of the Department was promptly effected by the selection of Mr. Alfred Gaskill as Director and the creation of three administrative divisions. See chart, page 10.

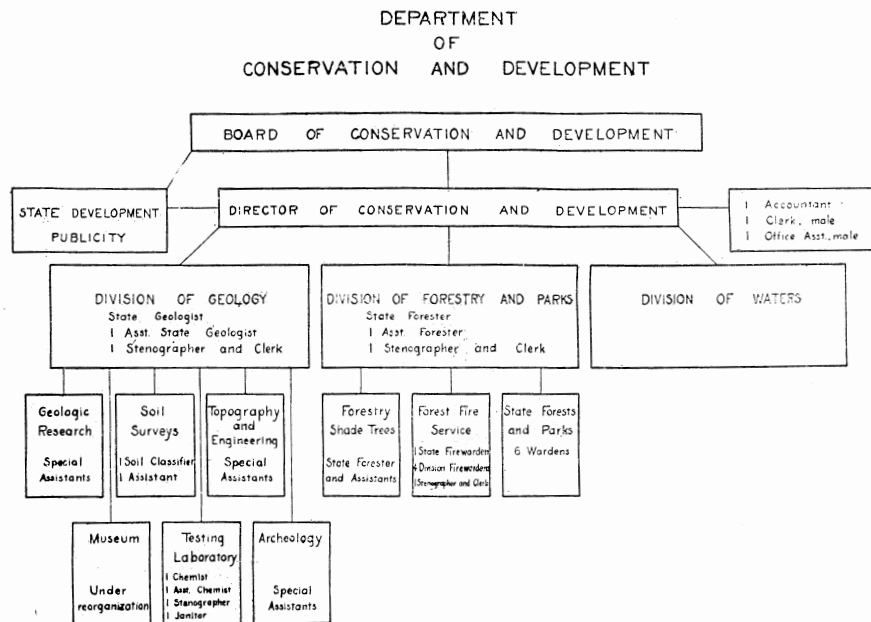
The *Division of Geology* continues, under Dr. H. B. Kümmel, who has been State Geologist for many years, all the activities of the old Geological Survey; it will also have charge

## 10 CONSERVATION AND DEVELOPMENT.

of the State Museum and of all new projects dealing with the state's terrain. The *Division of Forestry and Parks*, under Mr. Alfred Gaskill, who continues as State Forester, and combines the duties of that position with those of Director of the Department, is given control of the forest fire service and of all other activities of the Forest Park Reservation Commission, of Washington Crossing Park, of the Fort Nonsense Park project, and of new work in related lines. The *Division of Waters* will be organized when, under the law, the powers and duties of the Water Supply Commission are assumed.

The work of each of these divisions is supervised by a standing committee of the Board. A fourth standing committee on *General Development* is charged with the study of existing conditions and the formulation of new projects.

The reorganization has involved no material interruption of established activities; the state's work is being carried on as heretofore and is particularized in the reports of the State Geologist, the State Forester and the State Firewarden published herewith.





## REPORT OF THE BOARD

II

### STATE PARKS.

The administration of the forest reserves and Swartswood lake, all of which may be considered state parks, is provided for under the law and appropriation applicable to forestry. Under the *Washington Crossing Park* Commission the state acquired title to a farm of 100 acres at the historic crossing of the Delaware, but there is no money for its development as contemplated in the creative act. The *Fort Nonsense Park* project likewise lacks an appropriation. In this situation action on both these projects is deferred.

### WHARTON PROJECT.

One of the first matters which engaged the Board's attention was the proposition to bond the state in an amount not exceeding one million dollars to pay for a tract of about 100,000 acres in Atlantic, Burlington and Camden counties upon which is a valuable supply of potable water. Though under the statute this matter was in the hands of the Water Supply Commission, the project is one of conservation, which, if undertaken, will fall to this Department to develop, when, on July 1, 1916, it succeeds to the powers and duties of the Water Supply Commission. For this reason the Board, and many other citizens, believed that the voters should be advised by it.

An effort was accordingly made to find out the precise merits of the proposition and the value of the property to the state. Though the time was short, much might have been learned had it been possible to get authority to expend the necessary money. This being withheld, and much time lost, it remained only to compile such data as were available, and to make a hurried study of the values in the property apart from the water rights, in order to comply with a request made by the Governor for information and an opinion. The reply to the Governor, made in two letters, dated September 16 and October 19 respectively, pointed out that this Board recognized the importance of the question, that on its face the project was attractive, but that

12 CONSERVATION AND DEVELOPMENT.

definite information bearing upon several vital points was lacking. The decision reached by the Board and given out by the Governor for publication, with the entire correspondence, was that "it is impossible to reach a conclusion upon the merits of the proposition to purchase the Wharton Tract, but the absence of such information renders the proposition so uncertain as to indicate its rejection to be the part of caution."

The rejection of the proposition by a vote of 125,000 against 105,000, and largely because the people *did not know* what was involved, seems to have satisfied few. The Board accordingly, on December 1, revived the question, adopted the following resolution, and is prepared to advocate the necessary legislation:

WHEREAS, The Board of Conservation and Development, in its report to the Governor in response to his request for information concerning the proposed purchase of the so-called Wharton Tract, and for an expression of the judgment of the Board as to the desirability of the said purchase, expressed the opinion that there was not at hand sufficient information upon which accurately to base a conclusion as to the merits of the proposed purchase; and

WHEREAS, At the general election the referendum submitting to the voters of the state the question of the issue of state bonds for the proposed purchase was defeated by, approximately, twenty thousand votes;

*Resolved*, That the Board of Conservation and Development recommend that the question of the purchase of the so-called Wharton Tract be again submitted to the Legislature and through them, by proper legislation, to the voters of the state, upon the basis of such legislation as will clothe this Board, or some other authority, with the power to employ sufficient expert assistance to make a complete and thorough investigation and report upon all of the questions involved, to determine what land and water rights, and how much thereof should be acquired for the purposes of the state and at what price, and that the authority invested with such power be also authorized to exercise in the name of the state the right of eminent domain, in event that such action shall be necessary to acquire any or all of the lands and water rights desired at a fair and reasonable price, and that such legislation definitely provide that no contract or agreement of award in condemnation shall become effective or binding upon the state until approved by the Executive thereof;

*Resolved*, That a copy of this resolution be transmitted to the Governor.

## HUNTING.

Though the losses by forest fires coincident with the hunting season last year have not been repeated, it is quite apparent that the state's policy in respect to the pursuit of game is open to question. Is it fair or right to impose upon the farmers and wood-



**Fig. 1. Thrifty Young Oak and Hickory. Morris County.**



**Fig. 2. A Group of Valuable Chestnuts. Note Man in Background. Gloucester County.**



**Fig. 3. Tall, Well-Grown Tulip, Ash and Birch. An Improvement Thinning is Needed. Note Man in Lower Right Corner. Somerset County.**

**NEW JERSEY CAN GROW FINE HARDWOODS.**



## REPORT OF THE BOARD

13

land owners the burden of supporting the wild game that outsiders pursue under authority of the state?

In most minds there is a natural connection between forestry and hunting—derived, of course, from their historical relation. But in this country, where hunting privileges are free, and do not attach to the land, as is the rule in older civilized countries, there arise serious antagonisms. Much complaint is made that crops are destroyed by deer and rabbits; that fields are invaded and property damaged by the hunters; above all, that many fires are started by those who have not the interest of ownership in the forests and fields. The conclusion is inevitable that there is not room in a highly organized state like New Jersey for hunting, especially of deer and rabbits, and for forestry and farming. The Board submits this question for serious consideration.

### DEVELOPMENT.

One who undertakes even a superficial study of conditions in New Jersey will soon reach the conclusion that the state's growth and development have not been uniform; that its population, industries and interests are too closely confined to a few localities; that counties or sections having all that is needful for thriving communities are neglected; that there are in particular great opportunities for intensive farming and for minor industries based upon our diversified and fertile soils, our plentiful supply of pure water, our incomparable railroad, highway and water transport systems, our moderate climate, our nearness to the best markets in the world, our schools, churches and social life.

That this one-sided development may be corrected, that the interest of those now resident here may be stimulated, and that new residents who will occupy our abandoned farms, open up new fields, build homes, establish industries and pay taxes, may be attracted to the state, or from the cities to the rural districts, it is proposed:

1. That the Governor designate a day, to be known as New Jersey Day, on which a great effort shall be made to acquaint



14 CONSERVATION AND DEVELOPMENT.

New Jersey people with their state, its history, resources, advantages.

2. That a large committee of capable, influential men, representing the New York section, the Philadelphia section, and the seacoast section, be organized to co-operate with the Board in formulating definite plans.

3. That provision be made for active, effective co-operation with the State Chamber of Commerce, with railroads, with Boards of Trade, etc.

4. That an office of land registration and labor employment be established which shall furnish definite and trustworthy information to home seekers, to workers of all classes and to employers.

5. That a special study be made of marketing problems with a view to establishing a distribution system which shall serve both producers and consumers.

More specifically, it is recommended that the state itself make provision for these most *imperative, clearly established needs*. All but the last have been urged for years. They are not presented as new, nor with any desire that this Department undertake them. The interests of the state demand that they be undertaken:

(1) A strong state department to support and develop our agricultural interests and opportunities.

(2) A system of improved roads designed to reach and serve backward, undeveloped sections—business roads, not tourist highways.

(3) Mosquito elimination as a prerequisite to the development of sections now dominated by the pests, and as a means of greatly increasing the ratables.

(4) That the state and its resources be advertised at home and abroad, through the press, by attractive publications, at immigration stations, and by whatever means promise to be effective. Many states west and south, with much less to attract newcomers than has New Jersey, have long pursued this policy to their great advantage.

## REPORT OF THE BOARD

15

### RECOMMENDATIONS.

For the better understanding of the program which the Department itself hopes to carry out the various recommendations made by the Board, or by the chiefs of division, and endorsed by it, are here summarized:

1. That legislation be enacted, and an appropriation made, for at least a beginning in the *program of development* outlined at p. 13.

2. That the proposition to purchase the *Wharton Tract* be reopened as proposed at p. 12.

3. That the state's policy with respect to *hunting* be thoughtfully considered in connection with the rights of farmers and forest owners. See p. 12.

4. That the *forest fire service* be strengthened by legislation and increased appropriations as recommended by the State Firewarden (p. 58), since the control of forest fires is an absolute condition precedent to the practice of any kind of forestry, or to the development of any property value in or near the woods.

5. That an appropriation be made to build and equip the *Testing Laboratory* advocated by the State Geologist. See p. 27.

6. That the *State Museum* be reorganized and developed in accordance with the recommendations made in the State Geologist's report (p. 28). Larger and more accessible quarters are imperatively needed, yet even more imperative is the need to make the museum a clearing house of ideas bearing upon the state's resources, opportunities and educational interests.

## Financial Statement.

*For Fiscal Year Ending October 31, 1915.*

Since the reorganization became effective toward the close of the fiscal year, the accounts were carried under the old heads to the end. A new form will be followed hereafter.

### APPROPRIATIONS.

To July 1 available for specified purposes; after July 1 subject to the Board of Conservation and Development.

#### *Geological Survey—*

For Testing Road Materials, .....	\$4,000.00
For Geologist's Salary, .....	4,000.00
For Administration Account, .....	13,500.00
For Archæologic Survey, .....	500.00

#### *Forest Park Reservation Commission—*

For Administration Account, .....	11,500.00
For Land Purchase, .....	10,000.00
For Forest Fires, .....	21,500.00

#### *State Museum—*

For Curator's Salary, .....	1,500.00
For Administration, .....	1,000.00
	<hr/>
	\$67,500.00

### EXPENDITURES.

#### *Division of Geology—*

Salaries, Scientific force, .....	\$13,506.28
Salaries, Clerical force, .....	2,557.17
Expenses, Board of Managers, .....	69.77
Traveling Expenses, .....	2,098.57
Office Furniture, .....	8.25
Office Supplies, .....	234.54
Laboratory Equipment, .....	957.51
Laboratory Supplies, .....	488.03
Other scientific apparatus, .....	78.11
Library, .....	53.70
Postage, .....	380.71
Express and Freight, .....	24.02
Telephone and Telegraph, .....	93.60
Engraving and Printing Maps, .....	623.31
Sundries, .....	1.50
Total, .....	<hr/>
	\$21,175.07



## REPORT OF THE BOARD

17

*State Museum—*

Salaries, Curator and Clerk, { Nov. 1, 1914, to } ....	\$1,410.00	
Sundries, ..... { July 1, 1915, } ....	133.97	
Supplies (July 1, 1915, to October 31, 1915), .....	270.77	
Total, .....		\$1,814.74

*Division of Forestry—*

## ADMINISTRATION ACCOUNT.

Salaries and Expenses, Foresters and Secretary, ..	\$5,588.14	
Clerks and Office Expenses, .....	2,177.46	
Expenses, Forest Com. & Board Cons. & Devel., ..	279.82	
Instruments and Books, .....	83.55	
Education and Co-operation, .....	14.15	
Postage, 'Phone, Express, .....	292.31	
Publications, .....	133.00	
Exhibits, .....	191.41	
Experiments, .....	30.95	
Bass River Reserve, .....	354.99	
Lebanon Reserve, .....	494.86	
Mays Landing Reserve, .....	176.96	
Mount Laurel Reserve, .....	25.40	
Penn Reserve, .....	332.08	
Edward C. Stokes Reserve, .....	770.72	
Purchase of Land, .....	9,854.85	
Miscellaneous, .....	5.86	
Total, .....		\$20,812.51

## FOREST FIRES ACCOUNT.

Salaries and Expenses, Firewardens, .....	\$10,288.92	
Clerks and Office Expenses, .....	1,353.55	
Postage, 'Phone, Express, .....	156.69	
Extinguishing Forest Fires, .....	9,467.10	
Local Firewardens' Salaries and Special Expenses, ..	1,564.55	
Equipment, .....	42.00	
Patrols, Court Expenses, .....	57.78	
Total, .....		\$22,931.59
Balance Unexpended, .....		766.09
		<hr/>
		\$67,500.00

## NEW LABORATORY BUILDING.

Special Appropriation, .....		\$15,000.00
Lot for Building, .....	\$2,100.00	
Surveying, etc., .....	36.86	
Unexpended, .....	12,863.14	
	<hr/>	\$15,000.00

## SHARK RIVER INLET IMPROVEMENT.

Special Appropriations, State and local, .....		\$70,000.00
Expenditures, February 26, 1913, to October 31, 1915, \$44,073.98		
Contractor's Retent, 15 per cent., .....	5,693.68	
Available Balance, November 1, 1915, .....	20,232.34	
	<hr/>	\$70,000.00

## 18 CONSERVATION AND DEVELOPMENT.

## CASH ACCOUNT.

*Geology.*

Balance on hand November, 1914, .....	\$74.15	
Receipts from sales of maps and reports, .....	764.64	
	<hr/>	\$838.79
Paid State Treasurer, .....	\$787.14	
Balance on hand October 31, 1915, .....	51.65	
	<hr/>	\$838.79

*Forestry.*

Balance on hand November 1, 1914, .....	\$185.48	
Receipts from products of Forest Reserves, .....	562.40	
Receipts from Expenses of Foresters in Co-operative work, .....	38.71	
Receipts from Settlements with Sundry Violators of Forest Fire Law, .....	3,249.60	
Receipts from Sale of Reports, .....	5.00	
	<hr/>	\$4,041.19
Paid to State Treasurer, .....	\$774.25	
Paid to Sundry Township Treasurers, .....	3,109.53	
Paid direct to Township Firewarden, .....	4.50	
Balance on hand October 31, 1915:		
Due State Treasurer, .....	\$7.11	
Due Township Treasurers, .....	145.80	
	<hr/>	152.91
	<hr/>	\$4,041.19

## Report of the State Geologist.

---

HENRY B. KÜMMEL.

---

### ADMINISTRATION.

*Scope of Report.*—This report covers merely the administrative work of the Geological Survey from November 1, 1914, to July 1, 1915, and of the Division of Geology, including the State Museum, from July 1 to the end of the official year. The results of the scientific work of the Survey are separately published as maps, bulletins and final reports.

*Organization.*—Until July 1 the work was carried on under the supervision of the Managers of the Geological Survey in the same manner as in former years. The first of July the Geological Survey was merged with several other departments in the Department of Conservation and Development, becoming the Division of Geology. At that time also the State Museum was placed in this division. With this transfer there were no changes in the scientific personnel of the Survey. The State Geologist was appointed Chief of the Division of Geology, and the work went on without interruption.

During the year the scientific staff of the Division has been as follows, those in the first group having been employed continuously, the others as required:

Henry B. Kümmel, State Geologist.  
M. W. Twitchell, Assistant State Geologist.  
R. B. Gage, Chemist.  
C. C. Engle, Soil Expert.

---

C. C. Vermeule, Topographer and Consulting Engineer.  
J. Volney Lewis, Geologist.  
D. W. Johnson, Geographer.  
Max Schrabisch, Archaeologist.  
Linwood L. Lee, Soil Survey Expert.  
S. M. Sharkey, Clay Expert.

(19)

## 20 CONSERVATION AND DEVELOPMENT.

In addition to these, several of Mr. Vermeule's assistants were employed, either in the office or in the field, on revision of topographic maps, running lines of levels, and on engineering work at Shark River Inlet.

*Publications.*—The following publications were issued during the year, although the first three had been sent to the printer earlier:

Bulletin 13. Indian Habitations in Sussex County, New Jersey, by Max Schrabisch. Indian Remains near Plainfield, Union County, and along the Lower Delaware Valley, by Leslie Spier.

Bulletin 14. The Geology of New Jersey. A Summary to accompany the Geologic Map (1910-1912) on the scale of 1:250,000, or approximately 4 miles to 1 inch, by J. Volney Lewis and Henry B. Kümmel.

Bulletin 15. The Mineral Industry of New Jersey for 1913, by M. W. Twitchell.

Bulletin 16. Annual Administrative Report of the State Geologist for the Year 1914, and accompanying Reports, by J. Volney Lewis.

New editions of the Hackensack and Chester Topographic Atlas sheets, scale, 2,000 feet = 1 inch.

County and Municipality Map of New Jersey, scale, 4 miles = 1 inch.

Railroad Map of New Jersey, scale, 4 miles = 1 inch.

*Distribution.*—During the year maps of the Survey were sold as follows, figures for the two preceding years being added for comparison:

	<i>Sheets sold.</i>		
	1913.	1914.	1915.
Maps on scale of 1 mile per inch, .....	1,422	1,472	1,570
Maps on scale of 2,000 feet per inch, .....	1,809	1,585	1,195
Geologic folios, .....	60	101	116
State Geologic map, .....	.....	253	154

*Expenditures.*—The receipts and expenditures of the division are set forth on page 16.

## TOPOGRAPHY AND ENGINEERING.

*Bench marks.*<sup>1</sup>—On August 16 a leveling party, Loren P. Plummer, Jr., in charge, took the field under direction of C. C. Vermeule, Consulting Engineer, to supplement the lines of precise levels run previous to 1888 in connection with the topographic survey, and to continue the work of establishing new bench marks undertaken in the fall of 1912. Between August

<sup>1</sup>Summarized from a report to the State Geologist by C. C. Vermeule, Consulting Engineer.

## GEOLOGIST'S REPORT.

21

16 and October 31, 192 miles of levels were run and 260 bench marks were established, the cost for field work being \$5.62 per mile of levels, or \$4.30 per bench mark. It was found, however, that in order to secure checks necessary to give entire confidence in the results, it would be needful to run test lines from Mountain View to Pompton and from Branchville Junction to Franklin Furnace, each line 9 miles long. This was done, and the results are included in this report, although done after the close of the fiscal year. The entire operations for 1912 and for 1915 are summarized in the following table:

	1912.	1915.	Both Years.
Miles of levels run once, .....	314	201	515
Miles repeated, .....	86	12	98
Total miles run, .....	400	213	613
Old bench marks missing, .....	42	14	56
Old bench marks verified, .....	101	28	129
New bench marks established, .....	337	242	579
Bench marks resulting, .....	438	270	708

The cost of all field and office work in 1912 amounted to \$5.91 per mile of levels, and \$5.40 per effective bench mark. In 1915 it amounted to \$7.33 per mile run, and \$5.79 per effective bench mark. The total cost for the two years amounts to \$6.41 per mile of levels and \$5.55 per effective bench mark. During the past season the work done extended over a wider field so that the cost was materially increased by money spent and time lost in traveling from place to place. The result of the two seasons' work has been to give us 708 effective bench marks in northern New Jersey in place of the 129 marks established previous to 1888 and found in good condition.

All the levels have been closed in circuits and the accuracy of the work can be inferred from the following: A 32.5 mile circuit from Elizabeth through Plainfield, South Plainfield, Metuchen and Rahway, back to Elizabeth, gave a closure error of 0.32 foot or .00985 foot per mile, equivalent to an error of two-seventeenths of an inch per mile. A 33-mile line beginning at an adjusted bench mark at Annandale and extending through Frenchtown to Lambertville to a bench mark on another line gave an error of closure of 0.15 foot or .00455 foot per mile, equivalent to less than one-eighteenth of an inch per mile. Four

## 22 CONSERVATION AND DEVELOPMENT.

closures on a bench mark at Franklin Furnace have been obtained with the following results:

	<i>Elevation at Franklin Furnace. Feet.</i>	<i>Departure from mean. Feet.</i>
Waterloo-Newton-Franklin Furnace, 24 miles,....	566.45	— .26
Same line as above, .....	566.76	+ .05
Ridgewood-Newfoundland-Franklin Furnace, 32 miles, .....	566.71	0
Waterloo-Sparta Junction-Franklin Furnace, 19½ miles, .....	566.91	+ .20

These closures represent the accumulated error of all the levels lying north of the primary line of the U. S. Coast and Geodetic Survey running from Perth Amboy to Phillipsburg, and, therefore, the degree of accuracy indicated is quite remarkable.

The work done will now permit the publication of a complete revised list of bench marks for northern New Jersey, which will present a considerable betterment in accuracy and a large betterment in number and distribution. It is also sufficient to demonstrate that during the period of about 30 years intervening between the several series of levels there has been no appreciable change in relative elevations at the seashore and in Sussex and Warren counties, due to tilting of the earth's crust.

*Revision of Maps.*—In accordance with established practice, the culture on several topographic atlas sheets was revised preparatory to publishing new editions. The revision of the Chester sheet was completed early in the year, and later more or less extensive alterations in the field were made on the Shark River, Plainfield and Dover sheets. As soon as the necessary office draughting can be completed, these sheets will be sent to the lithographer.

*Shark River Inlet Improvement.*—During the first two months of the official year, *i. e.*, November and December, 1914, the Bay Dredging and Contracting Company made good progress in extending seaward the north jetty. Late in December, however, and at intervals thereafter during the winter, severe northeast storms prevailed which delayed and damaged the work to such an extent that it was not until June 30 that the engineer's monthly estimates showed that sufficient new work had been





Fig. 4. A Portion of the North Jetty, With False Work and Traveling Crane. The Seaward End of the False Work and Some of the Concrete Piles Were Swept Away by the Storms of Last Winter.



Fig. 5. The Finished Portion of the South Jetty and the Derrick Scow Used in Setting Piles.

SHARK RIVER INLET IMPROVEMENT.





## GEOLOGIST'S REPORT.

23

done to make good the losses caused by the breaking of the piles in the uncompleted portion of the work.

The unusual frequency of northeast winds during the winter and spring forced the inlet southward against the north side of the north jetty, so that during July the flood and ebb tides, guided by the configuration of the beach and the remains of partially destroyed wooden jetties, began to undermine the unfinished western end of the north jetty, causing the fall of many piles previously set. Owing in part to these losses, the contracting company in August found itself in financial difficulties, and on or about August 16 went into the hands of receivers.

Previous to this the Board of Conservation and Development made an examination of the progress of the work, and Mr. Vermeule, the Engineer in Charge, having on August 6 certified that the work was being unreasonably and unnecessarily delayed, on August 20 the Board adopted a resolution calling upon the bonding company to take over the work within ten days and proceed to complete the contract, failing which the state would proceed, and charge any excess cost to the contracting company and to the bondsman. The bonding company did not avail itself of the opportunity offered to assume the work, and the Board decided to carry it on as the only means of preventing further loss.

Under the terms of its contract the Board had the right to take over and use all equipment and material belonging to the contracting company and on the work. Owing, however, to the fact that the company was in the hands of receivers, it was necessary to apply to the U. S. District Court for permission to use this equipment. This was done, and on September 21 an order was issued authorizing the Board to take possession of the plant and proceed with the work, leaving to future adjudication the question whether any rent should be paid therefor, and, if any, the amount, not to exceed \$500 per month.

On application, the State House Commission granted permission to the Board to proceed with the work by day labor so far as funds were available, in order that what had already been constructed might be preserved.

As soon as possible after these preliminary steps a working

## 24 CONSERVATION AND DEVELOPMENT.

force was organized, and the work is now proceeding under the general supervision of the Engineer in Charge and the active direction of Mr. Herbert Gardner, of Asbury Park. It has been necessary to overhaul thoroughly the old plant, purchase additional equipment and build considerable false work, so that practically no actual construction was done up to October 31, 1915. Fortunately, further shifting of the inlet has prevented any additional losses to the work since midsummer.

## GEOLOGY.

*Mineral statistics.*—Statistics regarding the mineral production of the State for 1914 were collected early in the year in co-operation with the U. S. Geological Survey, this work being in direct charge of Dr. M. W. Twitchell. A summary of his report is given on page 31. It shows that the total value of the mineral products of the State amounted to \$32,550,598, a decrease of several millions as compared with the year 1913.

*Underground waters.*—Compilation of records of wells, collection of data regarding the underground waters of the State, correlation of underground water strata, and work on a report on this subject engaged such part of Dr. Twitchell's time up to July 1 as was not spent on the mineral statistics. The importance of this work is reflected in the frequent requests for information regarding underground water supplies in all parts of the State.

*Mineral studies.*—During the latter part of the year Prof. J. V. Lewis made a reconnaissance of the crystalline areas of the Highlands in Passaic, Sussex, Morris, Warren and Hunterdon counties to determine primarily whether feldspar deposits suitable for use in pottery manufacture, or for the extraction of potash for use as fertilizer, could be found in commercial quantities. Considerable material has been collected and now awaits further study in the laboratory.

*Clay investigations.*—In September arrangements were made with Mr. C. W. Parmelee, head of the State School of Ceramics, for co-operative work in the examination and testing of a large number of New Jersey clays, particularly of the better grade. Between September 16 and November 1, S. M. Sharkey visited

many of the clay pits of the Woodbridge-Perth Amboy district and collected about 130 samples of clay. Since November 1 he has been engaged in making the required laboratory tests. These studies will result in a much better knowledge of the fundamental qualities of the high-grade New Jersey clays, and it is hoped may lead to a standardization of the local nomenclature and grades.

#### SOIL SURVEY.

The study and mapping of the soils of the State was continued in co-operation with the State Agricultural Experiment Station at New Brunswick and the Bureau of Soils at Washington. During the year the region embraced in the southern half of atlas sheet No. 31, chiefly in Gloucester and Camden counties, was surveyed. C. C. Engle commenced work early in the Spring; in June he was joined by A. L. Patrick, of the Bureau of Soils, and about July 1 by L. L. Lee, of this Department.

About 390 square miles were mapped in detail and the entire area completed early in the Autumn. After the completion of the field work several weeks were spent in preparing office copies of the field map, in collecting samples of the type soils for analysis, and in writing the report. Mr. Lee remained with the party until about September 10, and about the middle of October Mr. Patrick was withdrawn by the U. S. Bureau of Soils to work in another state.

With the beginning of the new official year Mr. Engle started work on the area of atlas sheet No. 35, which is the region east of Bridgeton and south of Vineland.

The map and report on the Freehold Area, surveyed in 1911, 1912 and 1913, was sent to the Public Printer at Washington, D. C., during the year, and will be published shortly. The entire expense of publication is borne by the U. S. Bureau of Soils, but both this department and the Agricultural Experiment Station have the privilege of purchasing special editions of the report at cost of printing. The results of the survey of the Camden Area will be published under a similar arrangement as soon as possible.

**TESTING LABORATORY.**

*Work done.*—There has been no change in the conditions under which the work of the laboratory of the department (formerly the laboratory of the Geological Survey) is carried on, except that as the work has increased the difficulties inherent in quarters poorly adapted for a laboratory are more in evidence. During the year the work has been chiefly in connection with the Department of Public Roads. It has comprised the preparation of specifications defining the different grades of material used in bituminous roads, sampling and testing these materials before use, sampling and testing completed portions of road under construction, inspection of methods of road construction so far as they relate to the use of materials tested in the laboratory, miscellaneous analyses, and work on plans and estimates for a new laboratory. A partial quantitative statement of the work done is as follows: over 190 samples of bituminous cement, involving over 1,000 determinations, were tested; the asphalt content and grading of the stone aggregate for 150 bituminous pavement samples were determined; between 60 and 70 stone samples were sieved and the proportionate amounts of different sizes present determined; between 20 and 30 sand samples were also graded and the void content determined. Conferences, inspection trips, reporting on samples tested, recording and filing results of tests, necessarily demanded much time.

*Work undone.*—Owing to lack of room, certain lines of testing have not been touched at all. The use of Portland cement in road building is increasing, but it has not been possible to undertake systematic tests of either the cement or the concrete mixtures. Paving brick, and iron-bridge paints are two other road materials which ought soon to be covered by carefully drawn specifications and tested before use.

*New laboratory.*—The Appropriations Committee of the last legislature, appreciating the importance of this work and the need of a proper building, included in the supplemental bill the sum of \$15,000 for the purchase of land and the erection of a building. A lot 40 by 90 feet on the northeast corner of

## GEOLOGIST'S REPORT.

27

Taylor and Quarry streets, in close proximity to the State House, was purchased for \$2,100. Plans were drawn for a three-story brick building with basement, and bids solicited. The lowest bids received were 33 per cent. or more in excess of the appropriation, although they did not include any of the fixed equipment, such as hoods, benches, etc., and it was therefore necessary to reject them all. Time was lacking before the close of the fiscal year to attempt a revision of the plans and a reduction in the cost, even if such a course had been desirable. The entire appropriation, therefore, except for the part expended for the purchase of the site, reverted to the state treasury.

The necessity for a new laboratory grows more pressing each year. Requests from different state departments to test materials purchased are more numerous. The importance of a testing laboratory is increasingly evident. It is therefore essential that plans for a new building have due regard for future development, and it is the conviction of those in charge of the work that the plans adopted cannot be materially curtailed. The next legislature will be asked, therefore, to appropriate \$23,500 for the erection and equipment of a laboratory building.

## ARCHÆOLOGY.

*Area surveyed.*—Collection of information regarding former habitations of the early inhabitants of New Jersey has been continued. Mr. Max Schrabisch was again temporarily employed in this work. He was in the field for about three months and during that period completed his survey of Warren County (commenced in 1914) and also covered practically the whole of Hunterdon County. During the summer nearly 400 camp or village sites were located, and many other details regarding the Indian inhabitants were learned. Mr. Schrabisch is now completing his work by compiling the results of his studies during the past two seasons in a report on the distribution of Indian habitations in Warren and Hunterdon counties, which will be published as soon as possible after completion.



### STATE MUSEUM.

On assuming charge of the Museum it was decided that the first work to be done was to label, classify and arrange for use the 4,000 lantern slides which had been purchased as the nucleus of a loan collection to be used by the public schools. This was at once undertaken, but it was not possible to get these ready for use at the beginning of the school year, and the work is still in progress.

There is a large opportunity for a State Museum. The constant stream of visitors to the State Capitol, the students of the State Normal School, the 16,000 pupils in the public schools of the city, and the entire population of this community, should find in a State Museum something of interest and of instruction regarding New Jersey. Its exhibits should relate primarily to the state—its plants, animals, and mineral resources; its educational work; the activities of its various departments, boards, commissions; its industries; and the relation of all these to the life and well-being of its people.

The Museum should be a definite and active educational agency, working in close co-operation on the one hand with the schools of the state, and on the other with the public libraries. Its exhibits should be a visible expression of the activities of the various state departments, so far as these can be thus expressed. It should epitomize the past of the state and its present conditions, and it should be an index to its future possibilities. Its design should be to suggest new fields of enterprise to men of affairs, to attract homeseekers to populate the unused acres—erroneously called waste lands—and to impart to the rising generation knowledge of the resources and capabilities of New Jersey.

Under the present limitations of space, only a few steps can be taken in making the Museum what it should be. Much must be postponed until quarters adequate in space and specially designed for museum purposes can be provided. In the meantime, the present exhibits should be relabelled, rearranged, and

## GEOLOGIST'S REPORT.

29

reduced in number. Specimens, of interest solely to the scientist, should be kept accessible for study when necessary, but should be removed from the open cases. No object should be placed on exhibition which has not some special educational value, and which is not capable of attracting and instructing a large proportion of the visitors. Special efforts along several lines should be made to bring the school children to the Museum, and the museum material to the schools. Explanatory labels should replace the present ones, which are quite inadequate. The exhibits of school work should represent the schools of to-day—not those of one or more decades ago.

To accomplish even these preliminary results, an assistant, trained in museum work, enthusiastic, and with a broad vision of future possibilities must be found. To bring to full fruition the present plans, suitable quarters with exhibition rooms, work-rooms, and a lecture room, must be provided.

## PUBLICATIONS.

The various reports of the State Geologist contain a vast amount of information relative to the natural resources of New Jersey. From its nature much of this is of permanent value, entirely independent of its date of publication. Copies of most of the reports published since 1884 are available for distribution, without cost except that of transportation, to persons who have good reason for receiving them. *When the stock on hand of any report is reduced to 200 copies, the remaining volumes are withdrawn from free distribution and are sold at cost price.*

The Geological Survey has published two sets of topographical maps of the state, one on a scale of one mile per inch and the other 2,000 feet per inch. These are sold at 25 cents per sheet. It has also issued several maps of the entire state on a single sheet, at prices varying from 35 to 50 cents. In co-operation with the United States Geological Survey, it is also publishing a Geologic Atlas of New Jersey, to be issued in several parts, each folio containing topographic and geologic maps, illustra-

30 CONSERVATION AND DEVELOPMENT.

tions and descriptive text. Five of these folios have been issued, and are sold for 25 and 50 cents, according to size.

Special circulars have been prepared describing these publications, which will be sent on application. All requests for reports or information regarding the same should be addressed *State Geologist*, Trenton, N. J.



## Statistics of the Mineral Industry of New Jersey for 1914.

BY M. W. TWITCHELL, ASS'T STATE GEOLOGIST.

### GENERAL SUMMARY.

The statistics of the mineral production of New Jersey in this report were collected jointly by the Geological Survey of New Jersey and the United States Geological Survey.

#### TOTAL VALUE OF MINERAL INDUSTRY IN NEW JERSEY.

<i>Product.</i>	<i>Number of Producers.</i>	<i>Value in 1914.</i>	<i>Value in 1913.</i>	<i>Increase or Decrease.</i>	
Clay and clay products, .....	195	\$17,133,236	\$20,475,067	\$3,341,831	D
Portland cement, .....	3	3,081,205	3,638,755	557,550	D
Stone, .....	83	1,547,773	1,794,684	246,911	D
Sand and gravel, .....	86	1,544,322	1,162,050	382,272	I
Iron, .....	4	1,076,208	980,303	95,905	I
Mineral water, .....	17	155,649	188,546	32,897	D
Lime, .....	10	41,226	55,775	14,549	D
Other products, <sup>1</sup> .....	11	7,970,979	12,419,821	4,448,842	D <sup>2</sup>
Total, .....	409	\$32,550,598	\$40,715,001	\$8,164,403	D <sup>2</sup>

### ZINC ORE.

New Jersey continues to be one of the leading states in the production of zinc ore, its total output being of greater value than that of any other state except Missouri.

According to figures furnished by the New Jersey Zinc Company, the sole producer, there were hoisted during 1914 at the Franklin mine 489,230 tons of zinc ore. About 29,458 tons of

<sup>1</sup> Includes zinc ore, mineral paints, coke and its by-products, sand-lime brick and green-sand marl, which are here grouped together in order to conceal the production of individual producers.

<sup>2</sup> This figure is much larger than the actual decrease, owing to a change in the method of estimating the value of the zinc ore (see under Zinc).

## 32 CONSERVATION AND DEVELOPMENT.

low-grade ore were also recovered from the mine dump. The Sterling Hill mine, after having been idle for a number of years, is now being reopened and developed. A new shaft on a slope of 57 degrees has been sunk here to a depth of 829 feet. Incidental to the development of the Sterling Hill mine, 10,870 tons of ore were mined or recovered from the old dumps.

The total amount of ore from both mines sold or treated in 1914 was 529,443 short tons. Its value<sup>1</sup> has been combined with that of mineral paints, coke and its by-products, sand-lime brick, and marl, their total for 1914 being \$7,970,979.

## ZINC ORE MINED IN NEW JERSEY SINCE 1880.

Previously reported, .....	6,212,125 short tons.
Mined in 1914, .....	489,230 short tons.
Total, .....	6,701,355 short tons.

## IRON ORE.

There were only four mining and shipping companies, and only five mines active in 1914. Of the active mines, two are in Morris County, two in Warren County, and one in Passaic County. Practically all of the ore mined was magnetite.

The total quantity of ore mined was 350,135 long tons, an increase of 24,830 tons. The total quantity marketed was 346,820 long tons, having a value of \$1,076,208, an increase in quantity of 24,830 tons, and in value of \$95,905.

Many improvements have been made at the Mount Hope plant of the Empire Steel and Iron Company during the past few years, as a result of which the capacity of the plant has been greatly increased. It is now about 60 tons of ore per hour, or about 1,000 tons per day. Through the courtesy of the company two views of a large-size model of the ore-bodies are shown in Figs. 6 and 7. The relative size, shape, and location of the Taylor, Finley, Leonard, and Elizabeth ore shoots can be readily

<sup>1</sup> In previous years the estimated value of the recoverable zinc content has been given. In 1913 this was \$8,081,502 (corrected figure), according to the United States Geological Survey. This is *not* the value of the zinc ore, but the estimated value of zinc content after freight, haulage, smelting, and manufacturing are added.

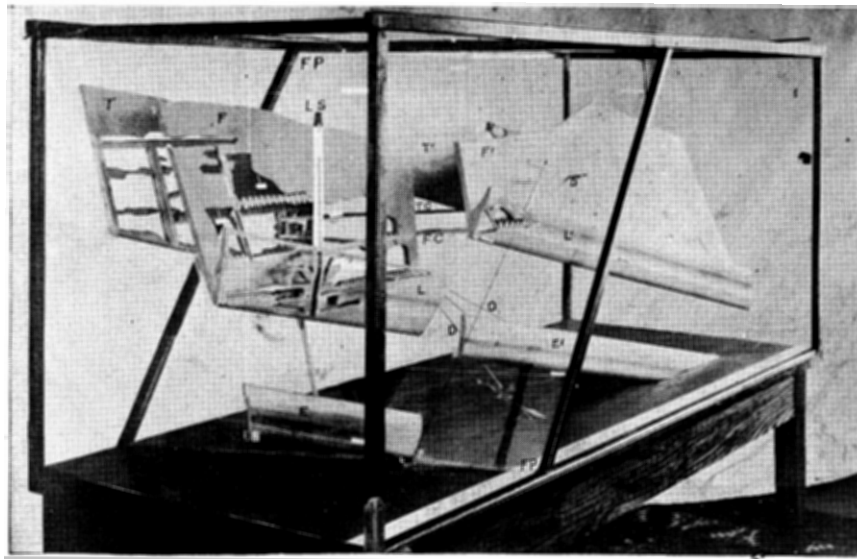


Fig. 6. Model of Mount Hope Ore Bodies Viewed From the Southwest.

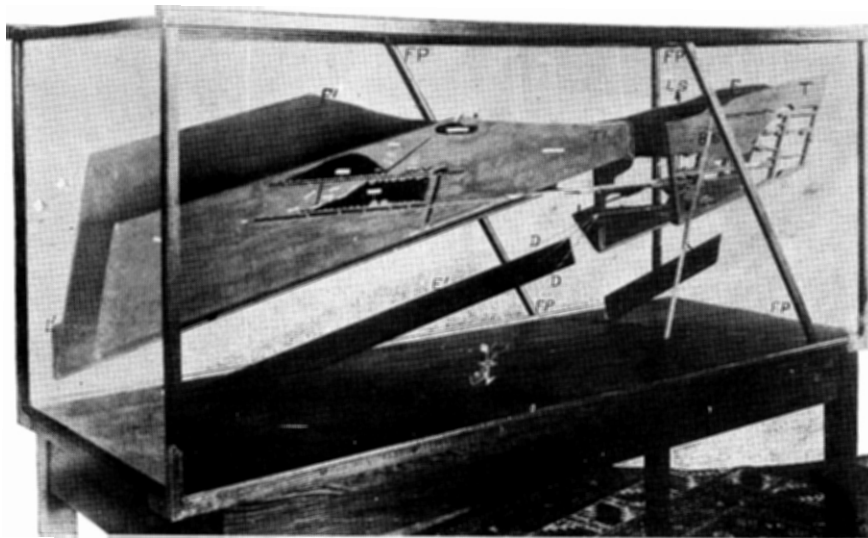


Fig. 7. Model of Mount Hope Ore Bodies Viewed From the North.

Explanation of lettering: T, South Taylor vein. T<sup>1</sup>, North Taylor vein; F, South Finley vein; F<sup>1</sup>, North Finley vein; E, South Leonard vein; E<sup>1</sup>, North Leonard vein; D D, Diamond drill holes; L S, Leonard shaft; B S, Brown shaft; F P, Fault plane; T C, Taylor crosscut from the south to the north Taylor veins; F C, Finley crosscut.



## GEOLOGIST'S REPORT.

33

seen, with the great offset upward and to the right (Fig. 3) along the fault plane (FP). The views also bring out distinctly the present method of mining (see north Taylor vein as compared with the old stopes in the south Taylor), but the model does not show all the ore removed, since some of the old workings in the north Taylor vein are not indicated in detail, and the work of recent months does not show.

## TOTAL IRON ORE MINED IN NEW JERSEY SINCE 1870.

Previously reported, .....	20,140,272 long tons.
Mined in 1914, .....	350,135 long tons.
Total, .....	20,490,407 long tons.

## CLAY AND CLAY WORKING INDUSTRY.

The production for 1914 is the lowest reported since 1908, and is given in the following table:

## PRODUCTION OF CLAY AND CLAY PRODUCTS IN NEW JERSEY, 1914.

	<i>Value 1914.</i>	<i>Value 1913.</i>	<i>Increase or Decrease.</i>
Clay (mined and sold as clay), .....	\$648,584	\$769,689	\$121,105 D
Clay-Products:			
Pottery, .....	8,131,356	8,838,545	707,189 D
Brick and Tile, .....	8,353,296	10,866,833	2,513,537 D
Total Clay and Clay-Products, \$17,133,236	\$20,475,067	\$3,341,831 D	

*Clay.*—The following table shows the amount and value of the clay mined and sold raw. It does *not* include the value of the clay mined by the manufacturer.

## CLAY MINED AND SOLD RAW, 1914.

<i>Varieties.</i>	<i>Num- ber of Producers.</i>	<i>Amount in Short Tons.</i>	<i>Value 1914.</i>	<i>Value 1913.</i>	<i>Increase or Decrease.</i>
Ball clay, .....	3	2,596	\$13,341	\$8,522	\$4,819 I
Fire clay, including sagger clay, .....	37	273,973	485,599	576,957	91,358 D
Stoneware clay, .....	6	11,465	25,532	43,180	17,648 D
Brick clay, .....	5	22,295	24,229	29,941	5,712 D
Miscellaneous, .....	9	63,374	99,883	111,089	11,206 D
Total, .....	43	373,703	\$648,584	\$769,689	\$121,105 D

## 34 CONSERVATION AND DEVELOPMENT.

*Pottery.*—The details in regard to the pottery production are given in the following table:

## POTTERY PRODUCTION OF NEW JERSEY, BY VARIETIES, 1914.

<i>Varieties.</i>	<i>No. of Producers Reporting.</i>	<i>Value 1914.</i>	<i>Value 1913.</i>	<i>Increase or Decrease.</i>	
Red earthenware, .....	7	\$35,198	\$35,360	\$162	D
Stoneware and yellow or Rockingham ware, .....	3	72,288	66,993	5,295	I
White ware, including C. C. ware, white granite, semi-porcelain ware and semi-vitreous porcelain ware, .....	7	727,637	834,716	107,079	D
China, bone china, delft and belleek ware, .....	7	1,076,043	1,239,453	163,410	D
Sanitary ware, .....	20	5,058,204	5,238,013	179,809	D
Porcelain electrical supplies, .....	13	905,878	1,190,448	284,570	D
Miscellaneous, .....	8	256,108	233,562	22,546	I
Total, .....	52	\$8,131,356	\$8,838,545	\$707,189	D

The production of the leading counties is given in the following table:

## POTTERY PRODUCTION OF NEW JERSEY, BY COUNTIES, 1914.

<i>Rank in 1914.</i>	<i>Counties.</i>	<i>No. of Producers Reporting.</i>	<i>Value 1914.</i>	<i>Value 1913.</i>	<i>Increase or Decrease.</i>	
1	Mercer, .....	33	\$7,101,197	\$7,898,474	\$797,277	D
2	Middlesex, .....	3	418,035	370,026	48,009	I
3	Hunterdon, .....	3	227,568	217,452	10,116	I
4	Camden, .....	3	201,028	215,328	14,300	D
	All other counties, .....	10	183,528	137,265	46,263	I
	Total, .....	52	\$8,131,356	\$8,838,545	\$707,189	D

*Brick and Tile.*—During 1914 there were decreases in every important variety of brick and tile. The detailed figures are given in the following table:

## PRODUCTION OF BRICK AND TILE IN NEW JERSEY, 1914.

	<i>Number of Pro- ducers.</i>	<i>Pro- duction in Thou- sands.</i>	<i>Value 1914.</i>	<i>Value 1913.</i>	<i>Increase or Decrease.</i>	
Common brick, .....	55	349,434	\$1,944,806	\$2,391,287	\$446,481	D
Front brick, .....	9	23,640	377,779	474,501	96,722	D
Fancy brick, .....	4	.....	463,221	517,263	54,042	D
Enameled brick, .....						
Fire brick, .....	13	34,545	897,442	1,246,294	348,852	D
Total brick, .....	71	407,619	\$3,683,248	\$4,629,345	\$946,097	D



## GEOLOGIST'S REPORT.

35

Drain tile, .....	7	.....	\$31,043	\$44,020	\$12,977	D
Architectural terra cotta, .....	6	.....	1,620,791	2,388,293	767,502	D
Fireproofing and hollow blocks, .....	12	.....	1,599,295	2,092,370	493,075	D
Tile (other than drain tile), ..	14	.....	1,139,895	1,308,787	168,892	D
Miscellaneous, <sup>1</sup> .....	8	.....	279,024	404,018	124,994	D
<hr/>						
Total tile, etc., .....	40	.....	\$4,670,048	\$6,237,488 <sup>2</sup>	\$1,567,440	D
Total brick and tile, ..	100	.....	\$8,353,296	\$10,866,833	\$2,513,537	D

Middlesex County continued to lead, with a total production valued at \$5,926,490; Mercer County standing next with a production of \$587,069; while Monmouth was third, its output having a value of \$395,994.

## PORTLAND CEMENT.

There was a falling off in the production of Portland cement in New Jersey in 1914 as compared with 1913. The total production was 3,674,800 barrels, a decrease of 785,227 barrels. The shipments amounted to 3,530,476 barrels, having a value of \$3,081,205, representing a decrease in quantity of 724,539 barrels, and in value of \$557,550.

The stock on hand in 1914 was 559,557 barrels, an increase of 143,758 barrels over the previous year. The average price per barrel in 1914 was 87.2 cents; in 1913 it was 85.5 cents.

As in previous years, there were three producers, all located in Warren County, and all making use of cement rock and limestone.

## STONE.

The total production of stone in 1914, with the details by varieties and uses, will be found in the following tables:

## PRODUCTION OF STONE IN NEW JERSEY, BY VARIETIES, 1914.

	Value 1914.	Value 1913.	Increase or Decrease.	Per Cent. of Total 1914.
Trap, .....	\$1,164,529	\$1,359,931	\$195,402 D	75.25
Limestone, .....	240,937	280,680	39,743 D	15.56
Granite, .....	74,808	62,637	12,171 I	4.83
Sandstone, .....	53,394	69,584	16,190 D	3.45
Slate, .....	14,105	21,852	7,747 D	.91
Talc and serpentine, .....				
Total, .....	\$1,547,773	\$1,794,684	\$246,911 D	100.00

<sup>1</sup> Includes vitrified brick or block, sewer pipe, stove lining, silica brick, glass-house pots, conduits, gas logs, etc.

<sup>2</sup> Involves a slight correction in previous report.

## PRODUCTION OF STONE IN NEW JERSEY, BY USES, 1914.

<i>Uses.</i>	<i>Value 1914.</i>	<i>Per Cent. of Total.</i>
Crushed stone (trap, granite, limestone for road metal, railroad ballast and concrete), <sup>1</sup> .....	\$1,215,708	78.55
Blast furnace flux, .....	136,038	8.79
Rough stone (for building, rubble and riprap), <sup>1</sup> .....	48,344	3.12
Paving blocks, <sup>1</sup> .....	11,645	.75
Other values, <sup>1</sup> .....	136,038	8.79

*Trap rock.*—In 1914 the average value for trap road metal at the quarries was 81.7 cents per ton; for concrete stone, 78.3 cents; for railroad ballast, 71.3 cents. Other details regarding trap rock are given below. The leading counties, in the order of their production, were Somerset, Hunterdon, Passaic, Essex, and Mercer.

## PRODUCTION OF TRAP ROCK IN NEW JERSEY IN 1914.

<i>Variety.</i>	<i>Num- ber of Producers.</i>	<i>Amount in Short Tons.</i>	<i>Value 1914.</i>	<i>Value 1913.</i>	<i>Increase or Decrease.</i>
Building stone, rough and dressed, .....	4	.....	\$1,335	\$18,856	\$17,521 D
Paving blocks, .....	7	( <sup>2</sup> )	11,645	50,949	39,304 D
Rubble, .....	5	.....	9,664	4,976	4,688 I
Riprap, .....					
Crushed stone—					
Road metal, .....	50	769,575	625,536	701,494	75,958 D
Railroad ballast, .....	12	315,608	222,395	250,571	28,176 D
Concrete, .....	37	354,035	276,821	322,598	45,777 D
Other values, .....	4	.....	17,133	10,487	6,646 I
Total, .....	52	1,439,218 <sup>3</sup>	\$1,164,529	\$1,359,931	\$195,402 D

*Sandstone.*—In 1914 the number of sandstone producers dropped from fourteen to nine, with a 23 per cent. decrease in value of the product, which was chiefly rough stone for building purposes. Mercer County continued to be the chief producer.

<sup>1</sup> To avoid revealing individual production, it has been necessary to include small amounts of crushed sandstone, rough sandstone, and sandstone paving blocks under the head of "other values," along with limestone for agricultural purposes, roofing slate, talc rock, etc.

<sup>2</sup> The total number of individual blocks was 506,674.

<sup>3</sup> The total amount of crushed rock in 1913 was 1,640,135 short tons.

## GEOLOGIST'S REPORT.

37

## PRODUCTION OF SANDSTONE IN NEW JERSEY IN 1914.

Variety.	Number of Producers.	Value 1914.	Value 1913.	Increase or Decrease.
Building stone (rough and dressed), <sup>1</sup> .....	8	\$29,954	\$38,335	\$8,381 D
Other uses, <sup>2</sup> .....	3	23,440	31,249	7,809 D
Total, .....	9	\$53,394	\$69,584	\$16,190 D

*Limestone.*—In the following table neither the amounts nor value of the stone used in making lime or Portland cement are included, as the value of the stone so used is included in that of the manufactured products. Sussex County led in production, Warren being second, and Hunterdon third.

## PRODUCTION OF LIMESTONE IN NEW JERSEY IN 1914.

Uses.	Number of Producers.	Quantity in Short Tons.	Value 1914.	Value 1913.	Increase or Decrease.
Road making, .....	5	19,030	\$13,701	\$15,377	\$1,676 D
Concrete, .....	4	15,844	9,838	12,579	2,741 D
Blast furnace flux, .....	9	286,826	136,038	178,233	42,195 D
Other uses, <sup>3</sup> .....	..	.....	81,360	74,491	6,869 I
Total, .....	12	.....	\$240,937	\$280,680	\$39,743 D

*Granite.*—Although there was a decrease in the number of granite producers in New Jersey from 11 to 7 in 1914, there was a small increase in the production as shown below. Morris and Passaic counties were the only producers, Morris leading.

## PRODUCTION OF GRANITE IN NEW JERSEY IN 1914.

	Number of Producers.	Value 1914.	Value 1913.	Increase or Decrease.
Building and monumental, .....	2 }	\$7,391	\$9,662	\$2,271 D
Rubble and riprap, .....	2 }			
Crushed stone, <sup>4</sup> .....	5	67,417	52,975	14,442 I
Total, .....	7	\$74,808	\$62,637	\$12,171 I

<sup>1</sup> Chiefly rough.

<sup>2</sup> Includes stone for paving, curbing, flagging, riprap, and concrete road-making, chiefly the latter.

<sup>3</sup> Includes limestone for riprap, agricultural and other purposes.

<sup>4</sup> The quantity of crushed stone in 1914 was 103,234 tons, while in 1913 it was 91,728 tons, the increase being 8,506 tons.

## 38 CONSERVATION AND DEVELOPMENT.

*Slate and talc.*—Black roofing slate was quarried by two producers, one near Newton and one near Lafayette, both in Sussex County. Talc was mined by one firm whose quarry and mill are near Phillipsburg, in Warren County. This company quarries and grinds a rock consisting of a light-green serpentine mixed with tremolite that has been partly altered to talc. The white talcose rock flour thus obtained is known as "mineral pulp," and, having properties similar to talc, is used for similar purposes.

The combined production in 1914 was valued at \$14,105, while in 1913 it was \$21,852, a decrease of \$7,747.

## SAND AND GRAVEL.

The production of sand and gravel continues to be one of the more important mineral industries of New Jersey. During 1914 the total production increased, chiefly in the output of gravel. The leading counties in 1914, in the order of the value of their production, were Ocean, Burlington, Middlesex, Cumberland, Morris and Cape May.

## PRODUCTION OF SAND AND GRAVEL IN NEW JERSEY IN 1914.

Variety.	Num- ber of Producers.	Amount in Short Tons.	Value 1914.	Value 1913.	Increase or Decrease.
Molding sand, .....	34	376,605	\$237,788	\$285,677	\$47,889 D
Glass sand, .....	6	83,927	62,595	82,577	19,982 D
Building sand, .....	42	1,704,011	394,092	369,993	24,099 I
Grinding and polishing sand, ...	6	21,137	23,207	14,803	8,404 I
Fire or furnace sand, .....	9	40,454	33,367	87,580	54,213 D
Engine sand, .....	5	62,534	21,849	22,626	777 D
Paving sand, .....	3	110,260	39,902	59,722	19,820 D
Other sands, .....	6	61,869	59,089	22,485	36,604 I
Gravel, .....	35	2,204,880	672,433	216,587	455,846 I
Total, .....	86	4,665,677	\$1,544,322	\$1,162,050	\$382,272 I

## MINERAL WATERS.

There was a decrease both in the quantity and in the value of the mineral water production of New Jersey in 1914 as compared with 1913. In 1914 the total quantity was 1,710,030 gallons, having a value of \$155,649, while in 1913 the production was

## GEOLOGIST'S REPORT.

39

2,067,277 gallons, with a value of \$188,546. The decrease, therefore, was 357,247 gallons, valued at \$32,897.

Practically all of the mineral water produced in New Jersey is sold for table use. There were seventeen active springs, of which six are reported for the first time. These are located as follows: "Belmar," at Glen Rock, Bergen County; "Echo," at Ewing, Mercer County; "Fairholme," near Wenona, Gloucester County; "Sanhican," at Wilburtha, Mercer County; "Englewood Artesian Well," at Englewood, Bergen County, and "Cold Indian," at Asbury Park, Monmouth County.

**LIME.**

In order to avoid a duplication of values, stone used in making lime, chiefly for fertilizer and building purposes, is not included in the statistics of limestone in the stone industry, but is reported separately.

In 1914 the number of lime producers decreased from fifteen to ten. The total production was 10,953 tons, having a value of \$41,226. As the corresponding totals for 1913 were 14,378 tons, valued at \$55,775, there was a decrease of 3,425 tons in quantity and \$14,549 in value.

**MISCELLANEOUS.**

*Greensand marl.*—The production of greensand marl in New Jersey in 1914 was somewhat greater than in the previous year, but is, nevertheless, quite small. Four operators reported a production, three being located in Burlington County and one in Monmouth County.

*Sand-lime brick.*—There was a falling off in the production of sand-lime brick in New Jersey in 1914, and only one operator, located in Camden County, reported a production.

*Mineral paints.*—All of the mineral paints made in New Jersey in 1914 were of the chemically manufactured type, including white lead (both dry and in oil), red lead, litharge, and lithopone. Of these the principal one was lithopone, which was produced by

40 CONSERVATION AND DEVELOPMENT.

three manufacturers—one in Camden, one in Essex, and one in Union County.

*Coke and by-products.*—As for a number of years past, a large amount of coke and its by-products was produced by the single producer in New Jersey, whose plant is located at Camden.

The output of coke and its by-products is combined with that of zinc ore, sand-lime brick, marl, and mineral paints in order that the production of individual producers may be concealed. The total production for the five industries in 1914 was valued at \$7,970,979.







Fig. 8. A Clean Job. Poles, Posts and Cordwood; Stumps Cut Low; Brush Piled to be Burned; Thrifty Young Trees Left to Grow. Burlington County.



Fig. 9. Rough Work. High Stumps; Much Litter; Trees Lodged; A Good Place for a Bad Fire. Middlesex County.

FORESTRY VERSUS CHOPPING.

## Report of the State Forester.

---

ALFRED GASKILL.

---

The State Firewarden's report (see p. 47) shows that forestry continues to be well supported through the activities of the forest fire service. Forestry, or silviculture, on any other basis than practical immunity from fires is impossible; given that, our soil and climate make forests grow anywhere. In the broader view that forestry comprehends the care of shade trees, and of every interest connected with tree growth, except the horticultural, our activities are limited only by our ability to reach and serve the people.

New Jersey is a state of many interests and of many opportunities. New Jersey forestry, therefore, whether viewed as a specialized activity or as an element in state conservation, is chiefly concerned with educating and influencing the private landowner to make the most of his property. State ownership in a large way is as inadvisable as it is impracticable.

### PUBLICITY.

A constant effort is made to acquaint the public with the aims and efforts of forestry—in the control of fires, in forest management, in forest planting, in wood utilization, in the use of state reserves, in the care of shade trees. All these features were presented at the exhibit made at the Trenton Inter-State Fair, where they attracted the attention and aroused the interest of people from all parts of the state. (See frontispiece.)

Special publications issued during the year include a circular relating to *Camp Fires*, a 63-page bulletin on the *Wood-Using Industries of New Jersey*, a revision of the *Forest Fire Manual*,

42 CONSERVATION AND DEVELOPMENT.

a new compilation of the *Laws of New Jersey Relating to Forestry*, a pamphlet containing the *Shade Tree Laws of New Jersey*, and another "*Why New Jersey Advocates Forestry.*"

PRIVATE FORESTRY.

During the year a number of properties have been brought under management in co-operation with the owners; some through fellings made to improve a standing forest, some to utilize blighted chestnut, some by forest planting. In several instances the results of such operations carried out four or five years ago are proving their own advocate and are interesting other owners.

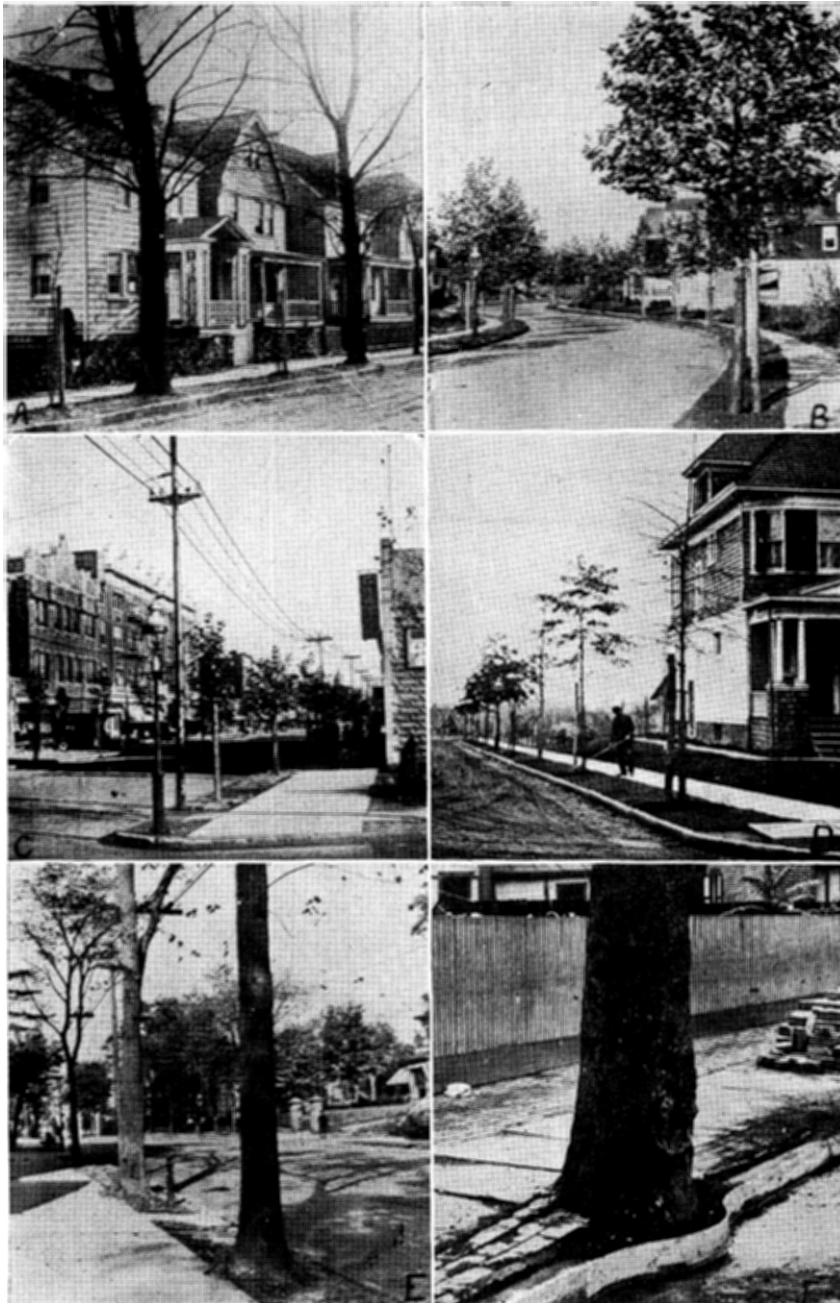
Forestry in New Jersey must always be a question of *wood-lots* because all our forest areas are likely to be curtailed as the demand for arable land increases. The state will gain, not lose, by lessening the extent of its forests and making more productive what remain. *Forest planting* may be resorted to under some circumstances; it is not generally recommended. The terms upon which *state aid* is offered will be found on p. 46.

SHADE TREES.

This subject must be considered as the chief auxiliary to forestry proper, since it appeals directly to a vastly greater number of people—and to children as well as to adults.

By the enactment of a new shade tree law (chapter 325, P. L. 1915), which replaced eleven confusing and conflicting statutes, the shade tree commissions of our municipalities have been placed upon a much more satisfactory basis. Though the department has only advisory powers in respect to these interests, it aims to help, and does help, without charge, whenever requested to do so, every municipal shade tree commission, and, in so far as it can, private citizens.

From the best information obtainable, there are now upwards of *sixty shade tree commissions* in as many communities. To



**Fig. 10. Some Good Shade Tree Work.**

A—Young trees started before removal of old. B—Well planted, right spacing, good footing, stake and guard. C—Shade for a business street. D—Good care. E—Carrying wires. F—Roots saved by an iron in curb. Photos of all but F by E. H. Bennett, East Orange.





## FORESTER'S REPORT.

43

a number of them one or more visits have been made, others have been advised by correspondence upon questions of law, of policy, of gas injury, of insect ravage, of health, etc.

What shade trees need most, need constantly, and usually lack, is care—a little food, a lot of water, generous openings in the pavement above their roots, and protection from physical injuries. Individuals can do much to provide such care, but far less than an organized commission. Few communities which have once enjoyed the advantages of a shade tree commission have ever dispensed with it, or found themselves overburdened with expense. On the contrary, such systematic care as a shade tree commission can, and usually does, give, is acknowledged a municipal gain. The state foresters stand ready at all times to advise and assist such bodies.

## STATE FOREST RESERVES.

These properties are not reserved in any way, but have been acquired primarily to be maintained as demonstrations in *practical forestry*, and secondarily as public *outing grounds*. The first object is being attained, the second will come with increased accessibility and greater need. A third use will be found in the devotion to *agriculture* of areas that are better adapted to it than to forestry. Forestry ordinarily claims only such land as is *not* wanted for something else.

With the exception of Lebanon, which is greatly exposed, serious fires have been kept from all the reserves, and their tree growth is in consequence most promising: a small income is received from products (see p. 18). A number of planting experiments promise to furnish valuable data when the time comes to plant more extensively than is now advisable.

By the purchase of an interior holding Stokes reserve has been increased by 180 acres and is provided with a good house and barn. This will be occupied by the warden until it is needed for a colony. Contracts have also been made to purchase 1,500 acres, which will be added to Stokes reserve, and 42 acres of well-grown pine in Ocean County which will be managed as a demonstration forest for that section.

## 44 CONSERVATION AND DEVELOPMENT.

The present area of these properties, their location, etc., is as follows:

- Bass River Reserve*—Warden, S. B. Allen, New Gretna, ..... 1,633 acres.  
Is in Burlington County, six miles from Tuckerton, and is typical of the so-called "pine barrens." A number of experimental plantations are on it.
- Lebanon Reserve*—Warden, Victor Bush, Pemberton, ..... 3,498 acres.  
Is in Burlington County, nine miles southeast of Pemberton, and is used largely as a demonstration in fire control under particularly difficult conditions. Considerable fire damage has been suffered, but the property is in better shape than it was when acquired.
- Mays Landing Reserve*—Warden, Ellsworth Duberson, Mays Landing, ..... 373 acres.  
Is located one and a quarter miles from Mays Landing, in Atlantic County, and exhibits the value of effective fire control for ten years. Several experimental forest plantations may be expected to yield results in the near future.
- Mount Laurel Reserve*—Warden, Harvey Darnell, Moorestown, 20 acres.  
A tract of hardwood and pine, about three miles from Moorestown, that affords a practical demonstration in forest management.
- Penn Reserve*—Warden, Elmer Inman, Chatsworth, ..... 2,764 acres.  
A tract of almost pure pine land in the heart of the wilderness, six miles from Chatsworth, Burlington County, that has proved the value of fire protection and the availability of a common type of land for timber growth.
- E. C. Stokes Reserve*—Warden, Jay Gould, Branchville, ..... 5,548 acres.  
Located in Sussex County, this reserve is typical of absolute forest land in North Jersey. Under fire protection alone the property is developing rapidly in value. The reserve is the most suitable for recreation of all those owned by the state, and the desire is to have it used in that way. A trail along the crest of the mountain suitable for pedestrians is now under construction.
- Swartswood Reserve*—No Warden, ..... 560 acres.  
This property, which came into the possession of the state this year, consists of a lake with an area of 544 acres and eight adjacent pieces of upland embracing 16 acres. It is in Sussex County, seven miles from Newton and half a mile from the village of Swartswood. It is maintained for the use of the public.

Total, ..... 14,396 acres.

When the purchase of the 1,542 acres above referred to shall have been accomplished the state reserves of land and water will aggregate 15,938 acres.





Fig. 11. Feeble-Minded Colony at Four Mile, Burlington County.



Fig. 12. Laurel Bordered Road on Stokes Forest Reserve. Sussex County.

## FORESTER'S REPORT.

45

## COLONIES OF STATE DEPENDENTS.

An important use to which parts of several reserves can be put is that of maintaining colonies of state dependents. The necessary seclusion is found, and as much land as may be needed for several truck farms can be cleared and worked by the inmates. The inmates can also be helpful in protecting and maintaining the forests. The colony established two years ago at Four Mile, on the Lebanon reserve, affords proof of the value of this idea. See Fig. 11.

## TREE PESTS.

The number of tree enemies is not increasing. Though new troubles frequently develop in forest or shade trees, some old enemy usually yields to control, and so the balance is kept.

The *Chestnut Blight* continues to take its toll, though there are some indications that the disease is less virulent; *Elm Leaf Beetle* has been driven from most of our territory, and spraying need be resorted to only as a precaution; *Tussock Moth* is allowed too much freedom and in several cities is a serious pest, although control is comparatively easy; the same is true of *Oyster Shell Scale*, which is doing some damage, especially to poplars; *Hickory Bark Beetle* is slowly removing all weakened hickory trees, it rarely attacks those that are vigorous. In the spring practically all our sycamores lost their young foliage by the common leaf blight or *anthracnose*. Most of the trees recovered, and little permanent injury appears to have been done. Some oaks were likewise affected, but suffered even less. Later in the season many sugar maples and Norway maples exhibited wilted leaves in parts of their crowns; rarely was an entire tree affected. No cause could be discovered and the trouble continues under investigation.

Other tree enemies were manifested locally; most are unimportant. Advice is offered to all who are concerned (see p. 46), either directly or through co-operation with the State Entomologist and State Plant Pathologist.

*Do not employ unknown tree doctors.*





**Fig. 13. Natural Pine Forest With Young Seedlings Beginning a New Generation. Ocean County.**



**Fig. 14. Natural Pine Forest, Half Grown. Burlington County.**



**Fig. 15. Pine Forest Kept Clean as a Park. Ocean County.**  
**HOW PINE GROWS IN SOUTH JERSEY UNDER PROTECTION**  
**FROM FIRE.**



## Report of the State Firewarden.

---

CHARLES P. WILBER.

---

### THE FIRE SEASON.

When the official year opened on November 1st drouth conditions, much more serious than ever before known, prevailed throughout the state. The Weather Bureau's record shows that "during September, October and November, 1914, there were but seventeen days on which a measurable amount of precipitation fell." This situation, particularly with the opening of the deer season on the first of November, and the high winds prevailing, produced a scourge of forest fires unparalleled since records had been kept for the state, both in number and in individual severity and size. During the first seventeen days of November, or until the drouth was broken, 262 fires, or 26% of the total for the entire official year, were recorded. Sixteen of these burned nearly 60,000 acres, or 40% of the year's total area.

The following months, December, January and February, with a normal, or more than normal precipitation, produced as usual a very small number of fires, none of which was serious.

With the opening of March, annual spring drouth conditions arose. But this year, New Jersey experienced the driest March since 1885, with the precipitation almost three inches below normal and with conditions of which the official weather report says, "There had never before been recorded so small a per cent. of moisture and so large a percentage of sunshine with continuously high velocity of wind combined." These conditions continued into April, interrupted briefly by a heavy snowstorm at the opening of the month despite which the average precipitation was below normal, resulting in an unusually dry spring.

48 CONSERVATION AND DEVELOPMENT.

The wind conditions were also abnormal in their curiously shifting and uncertain direction, which, with sometimes very high velocity, rendered fires peculiarly baffling and difficult to control. These conditions, prevailing before foliation had occurred, necessarily created an extremely dangerous fire hazard, the result of which is shown in the fact that 588 fires, or 58% of the total number, burned during these two months. Moreover, practically every large and serious fire, which burned after the November season, occurred between the dates of March 18 to 29 and April 16 to 20, during which periods approximately 55,000 acres were added to the area burned. And of this total almost 35,000 acres were burned by twelve fires on two days, April 19 and 20, when high and peculiarly variable winds made fire in the parched woodlands extremely unmanageable.

Weather conditions for the rest of the year were favorable. With the close of April, serious difficulty was at an end, and but 88 fires were reported from May 1 to October 31, of which but two assumed real size. The year's record, therefore, shows this curious feature; that in three periods—November 1 to 13, March 18 to 29, and April 16 to 20, a total of 30 days—there were burned 121,296 acres, or 87% of the year's total.

## FIRE WARDEN'S REPORT.

49

TABLE I.—FOREST FIRES IN 1915, AND IN PREVIOUS YEARS.

Year.	No. of Fires.	Total Acres Burned.	Acres per Fire.	Total Loss.	Loss per Fire.
No organized service, incomplete reports.					
1872, .....		100,000		\$1,000,000	.....
1880, .....	54	71,074	1,316	252,240	\$4,671
1885, .....		128,000		1,128,000	.....
1895, .....	49	66,120	1,349	600,000	12,245
1902, .....	65	98,850	1,520	169,323	2,605
1903, .....	79	85,046	1,076	305,744	3,870
1904, .....	81	41,530	512	193,413	2,388
Organized fire service.					
1907, .....	167	11,525	69	11,647	70
1908, .....	533	52,978	100	64,536	121
1909, .....	563	93,525	166	133,944	238
1910, .....	611	81,452	133	127,850	209
1911, Forest Fires, .....	289	64,404	122	86,940	165
Embryo Fires,† .....	239				
1912, Forest Fires, .....	214	26,291	48	21,501	39
Embryo Fires,† .....	331				
1913, Forest Fires, .....	311	53,823	77	67,205	99
Embryo Fires,† .....	367				
1914, Forest Fires, .....	396	78,655	92	83,880	99
Embryo Fires,† .....	451				
1915, Forest Fires, .....	549	150,258	147	209,090	207
Embryo Fires,† .....	467				

† Burned less than 5 acres.

## NUMBER AND AREA OF FIRES.

(See Tables I and II.)

As is natural because of the conditions outlined above, the number of fires that started during the year, 1,016, is far in excess of any heretofore recorded. Somewhat of the increase should properly be charged to the always-increasing exactness of the wardens in reporting all fires that start, some portion also is due to the fact that at the first of the calendar year a large increase was made in the area embraced by the fire service. However, the major increase in the number of the fires directly reflects weather conditions in the fall and spring drouths, and the especial

50 CONSERVATION AND DEVELOPMENT.

menaces of these seasons: the sportsmen and spring clearing. The most encouraging feature shown by the figures is that, despite this increase in the number of fires started, the percentage which became serious is no larger than it was a year ago.

The total area burned, 150,258 acres, is so much greater than that of previous years that it would be discouraging were it not for the fact that of this total a burned area of approximately 122,000 acres, or more than four-fifths is chargeable to three brief periods when natural conditions were so abnormal that anything but abnormal results would have been phenomenal.

The cost of controlling fires (see table IV) in such a season has been commensurately larger than in previous years. However, the average cost per fire was but slightly higher than in the previous year, despite the season's tendency to promote serious and costly fires.

## FIRE WARDEN'S REPORT.

51

TABLE II—FOREST FIRES BY RELATIVE AREA BURNED, AND BY COUNTIES, 1915.

COUNTY.	NUMBER OF FOREST FIRES.					Total Embryo Fires (less than 5 acres).
	5-10 Acres.	11-100 Acres.	101-1000 Acres.	Over 1000 Acres.	Total.	
<i>North Jersey—</i>						
Bergen, .....	3	17	2	.....	22	19
Hunterdon, .....						1
Morris, .....	23	39	7	1	70	51
Passaic, .....	6	14	2	.....	22	17
Somerset, .....	7	13	5	.....	25	21
Sussex, .....	5	16	4	1	26	30
Union, .....	3	3	.....	.....	6	3
Warren, .....	3	9	.....	1	13	19
Fires that burned in more than 1 county, .....			1	.....	1	.....
Totals, .....	50	111	21	3	185	161
<i>South Jersey—</i>						
Atlantic, .....	20	28	15	7	70	71
Burlington, .....	2	13	4	4	23	6
Camden, .....	5	28	6	.....	39	72
Cape May, .....	2	18	8	.....	28	41
Cumberland, .....	9	17	12	2	40	26
Gloucester, .....	4	14	11	2	31	4
Mercer, .....	1	2	.....	.....	3	5
Middlesex, .....	13	26	6	1	46	8
Monmouth, .....	11	10	4	.....	25	28
Ocean, .....	9	25	8	3	45	38
Salem, .....	4	2	1	.....	7	7
Fires that burned in more than 1 county, .....	1	1	3	2	7	.....
Totals, .....	81	184	79	20	364	306
<b>State Totals. .</b>	<b>131</b>	<b>295</b>	<b>100</b>	<b>23</b>	<b>549</b>	<b>467</b>
Per cent. of State Totals, .....	13	29	10	2	54	46

CAUSES OF FIRES.

(See Table III.)

**RAILROAD FIRES.**

In number the fires set by the railroads during the year is but little larger than previously, despite the unfavorable climatic conditions. It is significant also that the railroads are charged with responsibility for but 32% of the total number, as contrasted with 36%, 45% and 54%, respectively, in the three preceding years. As was said in the report a year ago, this continual improvement in the record made by the railroads is a cause for gratification, but railroad operation is still responsible for a far larger proportion of the fires than is any other known cause. This condition must prevail so long as the departments which maintain and operate the locomotives are satisfied with a lower standard of precaution than those responsible for the rights of way. On most roads the latter, supported by the claims department, are doing more year by year to prevent and to control forest fires.

**BRUSH BURNING.**

Again this year the proportion of fires charged to brush and rubbish burning is greater than before. This apparently is not because there is more carelessness in this use of fire, but because of continually increasing thoroughness in ascertaining how forest fires originate. Of the 127 fires known to have started from this cause, 113 have been definitely fixed upon the individual responsible, a proportion that is far in excess of any previous figure.

As the histories of fires which start from brush burning become more fully known it is increasingly certain that it is ignorance of the potentiality of fire which permits its misuse so that forest fires result.



## FIRE WARDEN'S REPORT.

53

TABLE III—FOREST FIRES BY CAUSES AND COUNTIES, 1915.

COUNTY.	NUMBER.														Totals.
	Locomotive.		Brush Burning.		Smokers.		Sportsmen.		Miscellaneous.		Unknown.				
	FF	eF	FF	eF	FF	eF	FF	eF	FF	eF	FF	eF	FF	eF	
<i>North Jersey—</i>															
Bergen, .....	2	4	2	4	....	1	2	1	1	1	15	8	22	19	
Hunterdon, ..	....	....	....	1	....	....	....	....	....	....	....	....	....	1	
Morris, .....	19	16	8	4	10	5	12	3	1	3	20	20	70	51	
Passaic, .....	9	9	3	....	1	1	5	5	2	1	2	1	22	17	
Somerset, ....	....	....	6	4	3	5	1	4	4	....	11	8	25	21	
Sussex, .....	9	12	3	3	2	5	4	....	2	3	6	7	26	30	
Union, .....	....	....	1	....	1	....	....	....	....	1	4	2	6	3	
Warren, .....	5	16	2	....	1	....	1	....	3	1	1	2	13	19	
Fires that burned in more than 1 county, .....	....	....	....	....	....	....	....	....	....	....	1	....	1	....	
Totals, ....	44	57	25	16	18	17	25	13	13	10	60	48	185	161	
<i>South Jersey—</i>															
Atlantic, .....	19	36	11	6	6	9	7	2	6	12	21	6	70	71	
Burlington, ..	1	2	5	....	4	1	3	....	3	2	7	1	23	6	
Camden, .....	9	51	4	4	3	3	3	1	2	1	18	12	39	72	
Cape May, ...	10	32	3	....	4	1	1	....	....	1	10	7	28	41	
Cumberland, ..	4	3	7	7	5	4	4	1	8	3	12	8	40	26	
Gloucester, ...	1	2	10	....	3	....	1	....	5	....	11	2	31	4	
Mercer, .....	....	....	1	2	1	1	....	....	....	1	1	1	3	5	
Middlesex, ...	3	....	4	4	9	....	5	....	2	3	23	1	46	8	
Monmouth, ..	8	20	4	....	7	5	1	....	1	....	4	3	25	28	
Ocean, .....	9	16	8	1	5	10	1	....	5	5	17	6	45	38	
Salem, .....	2	....	1	4	....	....	1	....	3	1	....	2	7	7	
Fires that burned in more than 1 county, .....	....	....	....	....	....	....	3	....	2	....	2	....	7	....	
Totals, ....	66	162	58	28	47	34	30	4	37	29	126	49	364	306	
<b>State Totals,</b>	<b>110</b>	<b>219</b>	<b>83</b>	<b>44</b>	<b>65</b>	<b>51</b>	<b>55</b>	<b>17</b>	<b>50</b>	<b>39</b>	<b>186</b>	<b>97</b>	<b>549</b>	<b>467</b>	
Per cent. of state totals, ..	32		13		11		7		9		28		.....		

FF—Forest Fires.

eF—Embryo Fires (less than 5 acres).

#### SMOKERS' FIRES.

The number of fires charged to careless smokers is larger than heretofore. And it is reiterated that there is no question but that the fires charged to this cause include but a small part of those so started. If the facts could be uncovered, the greater part of fires whose cause is now unknown probably would be charged to the careless smoker. The problem of preventing these fires involves a persistent campaign of education, and the final elimination of this menace must come from the smokers themselves. Penalties imposed upon the few offenders who are located, undoubtedly act as a preventive to some degree. Yet, the smoker is so transient and so often is unconscious of his culpability that the solution of the question is one of individual rather than of community awakening.

#### SPORTSMEN'S FIRES.

With a more careful analysis of the causes from which fires arise the number charged to the presence of gunners in the woods continues to increase. The experience of November, 1914, in this respect was so conclusive as to admit of no argument. A vast outbreak of fires was coincident with the opening of the woods to sportsmen; it continued while they were in the woods, and immediately disappeared upon the closing of the gunning season, although the abnormal drouth prevailed both before and after this period. This class of fires, like those set by smokers, cannot be curtailed in any effective way until the individual sportsmen are induced to observe proper precaution. Their camp fires, built in the woods without a permit, not only violate the law but provide an unnecessary and fruitful source of forest fires. Still oftener the gunner, smoking as he goes, neglects both the land owner's private interest and the larger public need by thoughtlessly dropped matches or tobacco. A blackened waste of 40,000 acres, such as that left by one fire set by some gunner's carelessness, last November, is not only an economic calamity, but disastrous to the sportsmen's special interest as well.



**Fig. 16. Fighting a Forest Fire in Brush and Smoke.**



**Fig. 17. Pine Forest Killed by Fire 1908. Recovery is Very Slow.**

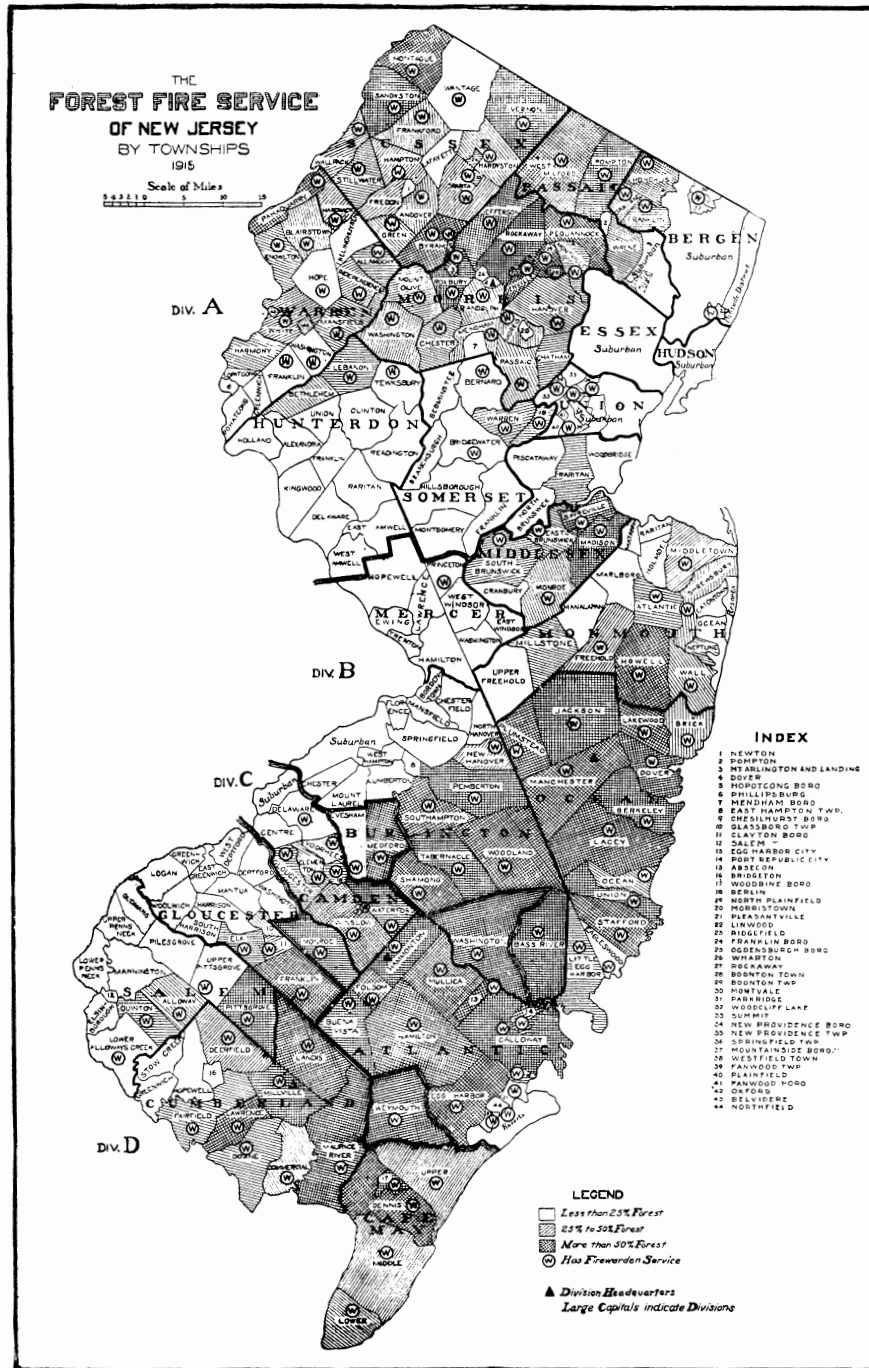


**Fig. 18. Dense Pine Forest Completely Killed by Fire November, 1914.  
Burlington County.**

**Why There are Few Good Forests in New Jersey—FIRE!**









## FIRE WARDEN'S REPORT.

55

### MISCELLANEOUS FIRES.

Fires, a few in number from any one cause, are started by various other agencies each year. Such fires maintain proportionately the same relation to the total. In many instances the causes are beyond the control of the fire service, such as those which start from burning buildings, etc. In a smaller number, such as fires set from stationary engines, tramways, children at play, etc., the menace is not known and no remedy can be applied to the specific agency before the damage has been done.

### THE FOREST FIRE SERVICE.

(See Map.)

#### THE STATE FORCE.

Because of the climatic conditions above described, the past year has made greater demands on both State and Division Wardens for active attendance at fires than any previous season. The same factor has necessitated increased activity along the lines of fire patrol. The increased number of the fires also has added to the burden of investigation into the causes of, and responsibility for, fires.

The extension of the territorial scope of the service during the past year (see p. 56) has created in some sections a large new demand on the state's force, both in installing new wardens in fresh localities and in properly opening the campaign. The growing stability of the local service, on the other hand, renders less attention necessary to the stimulation and instruction of the local force.

The tremendous strides made in effectiveness by the local service under the state force, as enlarged in 1911, has fully justified the expectation at that time. In lines of administrative and investigative work, in fire prevention and control, the closer local touch which the plan permitted has amply proven its value.

The major handicap which the present force fails, and cannot

56 CONSERVATION AND DEVELOPMENT.

but fail, to overcome is the impossibility of securing prompt notice of all fires that start. A state system of forest fire look-outs is the present most imperative need. The scope of each such station is so wide, the public and property interests involved so multiplied in territory like that with which this state deals, that local or individual maintenance of such facilities cannot be anticipated.

**LOCAL ORGANIZATION.**

Partly because of the expressed desire of local governing bodies, partly because the situation in previously organized municipalities permitted it, and particularly because the severe lesson of the fall so emphasized its need, a systematic effort to push out into new territory was opened with the calendar year. As a result, firewarden service has since been installed in 24 additional townships, mostly in North Jersey, as follows: Northfield City, Atlantic County; Park Ridge, Montvale and Woodcliffe Lake Boroughs, Bergen County; Bethlehem, Lebanon and Tewksbury Townships, Hunterdon County; Chester, Mendham, Morris, Passaic and Washington Townships, Morris County; Andover Township and Franklin Borough, Sussex County; Fanwood, Mountainside, New Providence and Springfield Townships, Union County; Franklin, Hope, Independence, Mansfield, Washington and White Townships, Warren County.

Largely, though not entirely, because of this expansion the force of local wardens has grown from 277, last year, to 310, and now serves 142 municipalities. This local force, which is the mainstay of the forest fire control work, continues to become more stable in its personnel, and, therefore, more useful and efficient in every way. This stability in the official organization reaches beyond it and, in combination with the rapidly awakening public interest in forest protection, is frequently encouraging an organized community activity that is invaluable. This, in the last analysis, is the only foundation on which effective fire prevention and control can rest.

## FIRE WARDEN'S REPORT.

57

**RURAL MAIL PATROL.**

The value of the co-operation of the United States Post Office Department, by its designation of all rural mailmen as patrolmen, has increased annually, since it was first instituted, on the suggestion of the New Jersey Forest Commission, in 1912. During the past year many fires have been first brought to the attention of the local wardens through this channel. In addition to this active participation in the control of fire, an order, in September of this year, for the first time opened every post office for the display of warning notices relative to forest fires. By this action the 1,058 offices and substations in New Jersey were made a valuable adjunct to the means available for public advertisement of the need for more general individual care with fire.

**FEDERAL PATROL.**

Continuing the co-operation extended under the so-called Weeks Law appropriation, the Federal Government again allotted \$2,000 to New Jersey for the maintenance of forest fire lookouts and patrols. Under the provisions of the law, this fund is available for use only in North Jersey. This season, as heretofore, this service has proven its value by securing prompt notice to the local wardens of fires in their territories.

Also, the even more important preventive results of such work again were apparent. During the five years in which the Federal aid has been available, the most marked attestation to its usefulness has been the annual decrease in the number of fires which have started in the areas so protected.

From April till the middle of November, a lookout watchman was on duty at the Cedar Pond Station provided by the Newark City Board of Works upon the city's watershed. During the gunning season, another watchman was stationed on an eminence overlooking a peculiar menace at this time, embracing the more southerly end of the Kittatiny ridge along the Delaware.

Early in April, mounted patrolmen began service on two areas in Passaic, Sussex and Somerset Counties. On August 1, the

58 CONSERVATION AND DEVELOPMENT.

patrol in the southern area was transferred to the section of Hunterdon, Morris and Somerset Counties in which the fire service had recently been inaugurated and so continued until the opening of the gunning season. At this time, the force was increased to six men, so located that the more troublesome situations might have especial attention.

**VALUE OF THE SERVICE.**

The measure of value in an undertaking must always be what it accomplishes. The number of forest fires or the recorded loss measures the exposure rather than the effectiveness of the Fire Service. An estimate of the woodland saved from fire by the activity of the wardens during any year is possible, but must necessarily be so inexact as to have little meaning, because of the incalculable vagaries of a burning fire. Yet in fairness it should be said that few, if any, of the fires reported are so situated or so innocent of harm that their control is not an economic gain, even though irreducible to actual figures. Each year, however, the control of forest fires renders a large and certain service beyond its recognized responsibility of forest protection. During the year just closed, it is known that improved property to the value of over \$700,000 has owed its immunity from fire to the wardens and their helpers. The more important items in a list that is far from complete include 3 entire communities, 244 other dwellings, 38 barns, 6 schools, 1 church, 3 manufacturing plants, 41 miscellaneous buildings, a large acreage of cranberry bogs and a large quantity of forest products and agricultural crops.

**NEEDS.**

Though the Forest Fire Service is steadily productive of improved conditions in the wooded areas of the state, it should be enabled to do more. It is strongly recommended that by the enactment of the laws outlined below, and by an increase of at least \$3,500 in its appropriation, the means may be provided for strengthening and extending its work.

## FIRE WARDEN'S REPORT.

59

TABLE IV.—FOREST FIRES BY COUNTIES AND TOWNSHIPS, 1915.

County and Township.	Number.		Acres Burned.	Loss to Forests and Other Property.	Cost to Extinguish.	Paid by.†		
	Forest Fires.	Embryo Fires.				Township.	State.	Offenders.
<i>Atlantic County—</i>								
Absecon (City), ..	1	....	75	\$75	\$15.00	\$7.50	\$7.50	.....
Buena Vista, .....	16	10	2,302	2,597	233.45	90.13	90.12	\$54.00
Egg Harbor, .....	7	3	4,097	2,550	209.04	97.62	106.42	8.00
Egg Harbor (City), .....	2	1	175	200	12.00	6.00	6.00	.....
Folsom, .....	18	17	10,360	12,056	756.06	326.02	326.04	105.50
Galloway, .....	8	2	2,118	2,165	253.80	124.90	124.90	4.00
Hamilton, .....	....	10	.....	.....	57.75	27.37	27.38	3.00
Hammonton, .....	9	11	475	940	234.48	52.76	52.74	128.98
Linwood, .....	1	....	10	10	3.60	1.80	1.80	.....
Mullica, .....	1	....	10	10	3.60	1.80	1.80	.....
Northfield (City), .....	14	18	6,498	7,744	720.59	338.62	338.67	43.10
Pleasantville, .....	14	18	6,498	7,744	720.59	338.62	338.67	43.10
Port Republic, .....	14	18	6,498	7,744	720.59	338.62	338.67	43.10
Weymouth, .....	14	18	6,498	7,744	720.59	338.62	338.67	43.10
<b>Total, .....</b>	<b>76</b>	<b>72</b>	<b>26,110</b>	<b>\$28,337</b>	<b>\$2,495.77</b>	<b>\$1,072.72</b>	<b>\$1,081.57</b>	<b>\$346.58</b>
<i>Bergen County—</i>								
Franklin, .....	7	2	344	\$393	\$136.70	\$64.35	\$64.35	\$8.00
Hohokus, .....	3	5	365	330	70.15	23.85	23.85	22.45
Montvale (Boro.), ..	2	2	48	50	23.00	6.50	6.50	10.00
Oakland (Boro.), ..	3	3	168	195	176.04	61.75	73.79	42.50
Park Ridge (Boro.), ..	2	4	25	35	24.00	8.00	8.00	8.00
Ridgefield (Boro.), ..	1	....	8	10	2.00	1.00	1.00	.....
Woodcliffe Lake, ..	4	3	82	160	24.00	9.00	9.00	6.00
<b>Total, .....</b>	<b>22</b>	<b>19</b>	<b>1,040</b>	<b>\$1,173</b>	<b>\$455.89</b>	<b>\$174.45</b>	<b>\$186.49</b>	<b>\$96.95</b>
<i>Burlington County—</i>								
Bass River, .....	2	....	690	\$200	\$153.00	\$76.50	\$76.50	.....
Evesham, .....	4	....	1,625	3,075	149.20	74.61	74.59	.....
Medford, .....	4	....	870	2,795	308.06	140.27	140.29	\$27.50
New Hanover, ....	1	....	5	5	.....	.....	.....	.....
Pemberton, .....	4	....	590	590	142.80	17.25	17.25	.....
Shamong, .....	4	1	1,130	1,180	84.10	42.04	42.06	50.00
Southampton, .....	2	....	50	50	13.05	1.75	1.75	5.00
Tabernacle, .....	4	2	2,561	4,700	148.22	74.04	74.02	.....
Washington, .....	3	2	33,019	69,026	1,042.65	521.32	521.33	.....
Woodland, .....	4	1	6,810	6,810	211.05	126.37	144.68	.....
<b>Total, .....</b>	<b>32</b>	<b>6</b>	<b>47,350</b>	<b>\$88,431</b>	<b>\$2,252.13</b>	<b>\$1,074.15</b>	<b>\$1,092.47</b>	<b>\$82.50</b>

## 60 CONSERVATION AND DEVELOPMENT.

TABLE IV.—FOREST FIRES BY COUNTIES AND TOWNSHIPS, 1915.—Continued.

County and Township.	Number.		Acres Burned.	Loss to Forests and Other Property.	Cost to Extinguish.	Paid by.†		
	Forest Fires.	Embryo Fires.				Township.	State.	Offenders.
<i>Camden County—</i>								
Berlin, .....	4	....	165	\$205	\$31.40	\$15.70	\$15.70	.....
Chesilhurst (Boro.)	9	11	184	130	129.15	43.47	43.48	\$22.80
Clementon, .....	5	1	1,262	1,220	127.10	55.55	55.55	16.00
Delaware, .....	1	....	50	50	14.50	7.25	7.25	10.00
Gloucester, .....	5	5	387	355	124.30	38.65	38.65	47.00
Voorhees, .....	1	2	12	10	22.00	8.50	8.50	5.00
Waterford, .....	4	....	390	390	47.70	23.85	23.85	.....
Winslow, .....	13	53	1,232	1,310	317.46	56.19	56.21	148.83
Total, .....	42	72	3,682	\$3,670	\$813.61	\$249.16	\$249.19	\$249.63
<i>Cape May County—</i>								
Dennis, .....	4	2	295	\$765	\$93.25	\$29.18	\$29.17	\$34.90
Lower, .....	2	14	90	90	52.40	17.45	17.45	17.50
Middle, .....	14	19	1,897	2,410	335.80	102.53	102.52	130.75
Upper, .....	5	5	600	772	59.90	28.95	28.95	.....
Woodbine (Boro),	4	1	505	1,230	68.25	27.12	27.13	14.00
Total, .....	29	41	3,387	\$5,267	\$610.60	\$205.23	\$205.22	\$197.15
<i>Cumberland County—</i>								
Commercial, .....	2	1	1,020	\$1,530	\$134.80	\$67.40	\$67.40	.....
Deerfield, .....	9	4	481	360	76.00	28.50	28.50	\$37.50
Downe, .....	2	1	3,006	4,010	158.10	79.05	79.05	.....
Fairfield, .....	3	3	2,030	2,072	188.89	88.95	88.94	11.00
Landis, .....	13	10	684	735	258.63	106.94	106.95	48.25
Lawrence, .....	2	1	82	170	67.85	33.93	33.92	.....
Maurice River, ....	8	1	1,270	1,595	143.55	65.20	65.20	13.15
Millville (City), ..	7	6	1,135	1,310	187.80	78.95	78.95	29.70
Total, .....	46	27	9,708	\$11,782	\$1,215.62	\$548.92	\$548.91	\$139.60
<i>Gloucester County—</i>								
Clayton (Boro.), ..	2	....	105	\$150	\$44.16	\$22.08	\$22.08	.....
Elk, .....	1	....	25	50	12.50	6.25	6.25	.....
Franklin, .....	22	2	11,525	9,910	760.84	378.26	378.27	\$22.50
Monroe, .....	6	2	1,342	1,845	151.42	63.16	63.16	9.00
Total, .....	31	4	12,997	\$11,955	\$968.92	\$449.75	\$449.76	\$31.50
<i>Hunterdon County—</i>								
Bethlehem, .....	....	....	....	....	....	....	....	....
Lebanon, .....	....	....	....	....	....	....	....	....
Tewksbury, .....	....	1	....	....	\$3.00	....	....	\$3.00
Total, .....	....	1	....	....	\$3.00	....	....	\$3.00



## FIRE WARDEN'S REPORT.

61

TABLE IV.—FOREST FIRES BY COUNTIES AND TOWNSHIPS, 1915.—Continued.

County and Township.	Number.		Acres Burned.	Loss to Forests and Other Property.	Cost to Extinguish.	Paid by.†		
	Forest Fires.	Embryo Fires.				Township.	State.	Offenders.
<i>Mercer County—</i>								
Princeton, .....	3	5	48	\$30	\$18.60	\$9.30	\$9.30	.....
Total, .....	3	5	48	\$30	\$18.60	\$9.30	\$9.30	.....
<i>Middlesex County—</i>								
East Brunswick, ..	8	2	515	\$665	\$91.10	\$45.55	\$45.55	\$15.00
Madison, .....	12	5	2,165	2,240	330.88	162.38	162.39	18.00
Monroe, .....	6	....	765	1,380	150.22	75.12	75.10	.....
Sayreville, .....	13	1	864	870	127.00	38.10	38.10	50.80
South Brunswick, ..	7	....	1,516	1,680	445.45	218.73	218.72	10.00
Total, .....	46	8	5,825	\$6,835	\$1,114.65	\$539.88	\$539.86	\$93.80
<i>Monmouth County—</i>								
Atlantic, .....	5	2	88	\$125	\$34.50	\$17.25	\$17.25	\$10.00
Freehold, .....	1	....	1,900	5,000	199.66	99.80	99.80	.....
Howell, .....	15	22	589	1,410	366.95	117.23	117.23	136.50
Middletown, .....	....	....	....	....	....	....	....	....
Shrewsbury, .....	5	4	286	480	133.95	5.88	5.87	129.45
Wall, .....	3	....	975	1,925	122.30	61.15	61.15	.....
Total, .....	29	28	3,838	\$8,940	\$857.36	\$301.31	\$301.30	\$275.95
<i>Morris County—</i>								
Boonton, .....	2	....	60	\$125	\$74.00	\$37.00	\$37.00	.....
Chester, .....	3	2	697	325	18.65	.75	.75	\$17.15
Denville, .....	5	6	87	105	93.45	22.23	22.22	50.00
Hanover, .....	6	8	84	210	132.00	39.00	39.00	54.00
Jefferson, .....	4	4	190	220	134.75	62.37	62.38	8.00
Mendham, .....	5	2	925	2,225	194.79	58.14	58.15	78.50
Montville, .....	4	4	440	875	189.50	74.25	74.25	41.00
Morris, .....	1	....	60	50	34.00	.....	.....	39.00
Mt. Arlington, ....	....	1	.....	.....	16.50	8.25	8.25	.....
Mt. Olive, .....	2	....	2,020	5,055	239.40	119.70	119.70	.....
Passaic, .....	....	....	....	....	....	....	....	....
Pequannock, .....	11	6	204	330	306.40	97.09	97.11	120.20
Randolph, .....	3	6	76	146	58.00	22.87	22.88	12.25
Rockaway, .....	17	8	463	1,482	319.05	145.06	145.04	28.95
Roxbury, .....	7	4	297	275	119.50	26.63	26.62	66.25
Washington, .....	1	....	20	50	7.50	3.75	3.75	.....
Total, .....	71	51	5,623	\$11,473	\$1,937.49	\$717.09	\$717.10	\$515.30

## 62 CONSERVATION AND DEVELOPMENT.

TABLE IV.—FOREST FIRES BY COUNTIES AND TOWNSHIPS, 1915.—*Continued.*

County and Township.	Number.			Loss to Forests and Other Property.	Cost to Extinguish.	Paid by.†		
	Forest Fires.	Embryo Fires.	Acres Burned.			Township.	State.	Offenders.
<i>Ocean County—</i>								
Berkeley, .....	4	6	1,333	\$1,005	\$132.80	\$54.70	\$54.70	\$23.40
Brick, .....	2	....	24	55	35.00	17.50	17.50	.....
Dover, .....	2	....	821	1,750	39.40	10.60	10.60	18.20
Eagleswood, .....	1	2	20	20	16.00	8.00	8.00	.....
Jackson, .....	11	1	1,631	2,860	285.80	98.74	98.76	81.20
Lacey, .....	4	17	7,059	7,095	258.50	105.62	105.63	51.25
Lakewood, .....	5	2	600	1,005	129.90	64.95	64.95	3.00
Little Egg Harbor, ..	1	....	250	200	21.65	10.83	10.82	.....
Manchester, .....	9	5	7,599	7,545	254.07	114.90	114.92	24.65
Ocean, .....	1	1	25	25	17.30	7.65	7.65	2.00
Plumstead, .....	3	....	318	550	43.00	21.50	21.50	.....
Stafford, .....	6	3	591	535	149.90	72.45	72.45	5.00
Union, .....	2	1	305	200	72.25	20.75	20.75	30.75
Total, .....	51	38	20,576	\$22,845	\$1,455.57	\$608.19	\$608.23	\$158.25
<i>Passaic County.—</i>								
Pompton, .....	19	5	801	\$835	\$305.60	\$47.60	\$47.60	\$107.20
West Milford, ....	3	12	50	45	119.27	48.52	50.60	22.15
Total, .....	22	17	851	\$880	\$424.87	\$96.12	\$98.20	\$129.35
<i>Salem County—</i>								
Alloway, .....	....	....	....	....	....	....	....	....
Lower Alloways Creek, .....	....	....	....	....	....	....	....	....
Pittsgrove, .....	2	4	80	\$120	\$70.65	\$12.00	\$12.00	\$46.65
Quinton, .....	4	2	618	1,030	109.40	52.20	52.20	5.00
Upper Pittsgrove, ..	1	1	20	45	33.60	7.80	7.80	18.00
Total, .....	7	7	718	\$1,195	\$213.65	\$72.00	\$72.00	\$69.65
<i>Somerset County—</i>								
Bernard, .....	3	12	35	\$35	\$177.15	\$74.00	\$74.00	\$29.15
Bridgewater, .....	6	2	69	108	81.30	19.48	19.47	82.00
North Plainfield, ..	15	6	1,625	1,750	547.15	266.60	266.60	28.00
Warren, .....	2	1	37	40	9.95	2.23	2.22	5.50
Total, .....	26	21	1,766	\$1,933	\$815.55	\$362.31	\$362.29	\$144.65
<i>Sussex County—</i>								
Andover, .....	1	....	43	\$80	\$16.50	\$8.25	\$8.25	.....
Byram, .....	8	5	510	725	181.52	75.81	75.81	\$19.50
Frankford, .....	1	1	150	300	190.81	95.40	95.41	.....
Franklin (Boro.), ..	1	....	115	75	18.00	9.00	9.00	.....

## FIRE WARDEN'S REPORT.

63

TABLE IV.—FOREST FIRES BY COUNTIES AND TOWNSHIPS, 1915.—Continued.

County and Township.	Number.		Acres Burned.	Loss to Forests and Other Property.	Cost to Extinguish.	Paid by.†		
	Forest Fires.	Embryo Fires.				Township.	State.	Offenders.
<i>Sussex County—Con.</i>								
Green, .....								
Hampton, .....		3			\$4.00			\$4.00
Hardyston, .....	3	7	91	\$91	61.55	\$24.83	\$24.82	11.90
Hopatcong, .....								
Montague, .....	2	1	1,080	1,600	152.00	76.06	76.05	
Ogdensburg (Boro) .....	2	4	17	30	39.30	17.65	17.65	4.00
Sandyston, .....	1	2	300	300	61.85	29.92	29.93	10.00
Sparta, .....	5	6	540	640	158.35	74.17	74.18	20.00
Stillwater, .....		3		10	51.20	25.60	25.60	
Vernon, .....	5		106	110	51.85	18.93	18.92	14.00
Walpack, .....								
Wantage, .....								
Total, .....	29	31	2,952	\$3,961	\$986.93	\$455.62	\$455.62	\$83.40
<i>Union County—</i>								
Fanwood, .....	4		53	\$80	\$33.00	\$12.00	\$12.00	\$9.00
Mountainside, ....	1	2	10	10	16.75	8.38	8.37	10.00
New Providence, ..	1		55	75	16.20	8.10	8.10	
Springfield, ....		1			5.00	2.50	2.50	
Total, .....	6	3	118	\$165	\$70.95	\$30.98	\$30.97	\$19.00
<i>Warren County—</i>								
Allamuchy, .....	1	1	150	\$150	\$73.90	\$36.95	\$36.95	
Blairstown, .....	1	1	750	800	489.00	244.50	244.50	
Franklin, .....	2		50	50	25.95	5.15	5.15	15.65
Hardwick, .....					226.90		226.90	
Harmony, .....								
Hope, .....	1		100	50	43.80	21.90	21.90	
Independence, ....	3		80	145	20.00	9.50	9.50	3.00
Knowlton, .....	7	14	1,539	1,523	529.24	149.27	149.27	226.70
Mansfield, .....								
Pchaquarry, .....	1	3	3,000	2,500	971.40	190.00	778.40	3.00
Washington, .....								
White, .....								
Total, .....	16	19	5,669	5,218	\$2,380.19	\$657.27	\$1,472.57	\$248.35
<b>State Total, ..</b>	<b>*584</b>	<b>*470</b>	<b>150,258</b>	<b>\$209,090</b>	<b>\$18,902.95</b>	<b>\$7,515.74</b>	<b>\$8,372.36</b>	<b>\$2,884.61</b>

\* These totals are greater than the actual number (1,016) because in 41 cases one fire burned in two or more townships.

† The sum of these columns often differs from the "Cost to Extinguish" item because a fine was larger than the bill, or a bill was withdrawn, etc.

### VIOLATIONS OF LAW.

(See Table V.)

Persistent, rigid enforcement of the forest fire law has been continued. Again the number of cases in which it has been necessary or advisable to resort to prosecution has been small. Malicious, or even knowing, violations of the law are fewer each year.

This year 41% of all fires reported were fixed on those responsible. In 43 additional instances, violations of the permit law from which no forest fire resulted were apprehended. Of the total 459 violation cases reported, 60% are chargeable to the railroads and 40% to other agencies, as follows: 156 cases to brush burning, 18 to smokers, and 9 to miscellaneous agencies. 84% of all this business has been finally disposed of and of the 73 cases still pending, 27 are for railroad fires, the final settlement of which should be completed before the first of January.

Of the 95 old cases remaining unsettled at the opening of the year, seven only are still pending. In all but one instance the delayed settlement is due to postponed or appellate legal action.

During the current year penalties to the amount of \$3,249.60 have been collected. Of this total, \$2,151.36 was paid by the railroads and \$1,098.24 by other agencies.

The departmental policy of a corrective rather than a punitive administration of the law has admirably met local conditions. It has created a sympathetic and widespread support throughout the state, and induced a readier frankness in dealing with the causes of fires, both by those responsible and by local wardens. The pioneer work of informing the public of the requirements and the strict enforcement of the law has now been done in most localities. The time has arrived when ignorance is not a proper extenuation for infraction of the law, and carelessness should be dealt with more severely. Therefore, it is proposed to enforce the law hereafter, none the less considerately or fairly, but with distinctly increased stringency.





Fig. 19. Volunteer Forest, Oak and Pine, Coming in After a Fire.  
Atlantic County.



Fig. 20. Planted Pine Forest on a Piece of Rough Ground. The Field in  
the Background is Also Forest Land—Too Poor For Farming.  
Warren County.





**LEGISLATION.**

The inability of the fire service to apply preventive measures to special forms of menace was a cause of serious concern for several years. Among other hazards, the careless use of steam tramroads in the woodlands, the unnecessary and dangerous accumulation of slash and logging debris, the recklessness of those interested in numerous unreliable land development projects, and the difficulties in the railroad situation due to the nullifying of the fire line law could not be dealt with effectively because, except for warnings, no action was possible until a fire had burned and the damage was done. By enacting two additions to the forest fire law, a compulsory slash disposal provision and a compulsory patrol act (chapters 61 and 109, laws of 1915), the 1915 session of the legislature made it possible to eliminate such situations, when found, or to provide reasonable safeguards before harm comes of them.

Another act providing for a more equitable disposition of the expense of fighting forest fires was also advocated but not carried. The present law, dividing this burden equally between the state and the townships concerned, is admirable in its stimulus to local economy and effective effort. On the other hand, the forested townships, though usually those which have fewest resources and least income, must carry the major part of the protective costs. It was proposed to so modify the law that a portion of this burden should be borne by the counties in which the fires burned. The outlay would not be great for any one county, but the responsibility, imposed upon the more populous communities by the obligation, should tend to stimulate the effort for fire prevention, and would insure a fairer distribution of the expense. The resubmission of this measure is earnestly urged.

In the cases of the Forest Commission *vs.* McCloskey, and *vs.* Veeder brought before it on appeal, the Supreme Court ruled that unintentional responsibility for a forest fire did not come within the scope of the penalty provisions of the present statute. It was the distinct intent when the law was framed that any firing of the forest, whether deliberate or accidental, should constitute an

## 66 CONSERVATION AND DEVELOPMENT.

offense. There is probably no single feature of the fire service work which has contributed so much to progress in fire prevention as the insistence that all who are responsible for fires shall be held accountable. The success of this effort is attested by New Jersey's unique position of leadership among forest fire organizations in this respect. And the results of this success are written in the increased care with which fire is being handled in its every use throughout the forested areas. Careless and ignorant use of fire, as well as malice, must continue punishable if the ground already gained is to be held and further advance made. Although appeal from the court's decision has been taken, it is urged that the wording of the statute be so altered by the next legislature that its meaning cannot be misunderstood.

The annual forest fire menace during the gunning season demands some effective remedy. Malicious use of fire to uncover hidden game is not the common practice; interference with those fighting a fire is not usual and seldom is intentional; but, universally, a fire, however started, is the immediate gathering point for every nearby gunner. And they more generally rally for the advantage offered to their guns than to forestall or assist the firefighters. Partially to meet the situation it is urged that a provision be inserted in the present game law to make it unlawful to hunt or kill game in the vicinity of any fire burning in grassland, brushland or woodland. Such an amendment would effectively do away with fires set to drive game; would eliminate a serious menace to the firefighters, who, while working on the "head fire," in the haze of smoke are likely to be shot by mistake; and would emphasize indubitably the care necessary in handling smoking materials and fire by rendering a forest fire the sportsman's worst enemy in a game country.

TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Atlantic County—</b>				
November 13, ...	Buena Vista, .....	Harry Johnson, .....	Set fire without a permit, .....	Released with warning.
January 11, .....	Buena Vista, .....	Anostano Ragni, .....	Set fire without a permit, .....	Released with warning.
April 22, .....	Buena Vista, .....	Arthur Elliot, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$20.00.
May 3, .....	Buena Vista, .....	T. H. Smith, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$1.00.
	Buena Vista, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$15.00.
	Buena Vista, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
	Buena Vista, .....	Reading R. R., .....	4 fires set by locomotives, .....	Paid firewardens' bills, \$18.00.
	Buena Vista, .....	Reading R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
April 18, .....	Egg Harbor, .....	Abraham Alburger, .....	Set fire without a permit and allowed it to escape, .....	Prosecuted, convicted and jailed in lieu of payment of \$200 fine.
May 1, .....	Egg Harbor, .....	Mrs. Lester Resh, .....	Set fire without a permit, .....	Paid fine, \$8.00.
May 7, .....	Egg Harbor, .....	Max Schulz, Sr., .....	Son set a forest fire without a permit, .....	Pending.
March 3, .....	Galloway, .....	Mrs. H. Baum, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$10.00.
March 13, .....	Galloway, .....	Risley Blackman, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
March 15, .....	Galloway, .....	John L. Berry, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$16.00.
March 28, .....	Galloway, .....	Albert Chappel, .....	Set fire without a permit and allowed it to escape, .....	Released; secured withdrawal of bill from firefighters.
March 29, .....	Galloway, .....	Philip Lehner, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$10.00.
	Galloway, .....	Pennsylvania R. R., .....	5 fires set by locomotives, .....	Paid firewardens' bills, \$33.00.
	Galloway, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Claim withdrawn.
	Galloway, .....	Pennsylvania R. R., .....	2 fires set by locomotives, .....	Cases dropped; township bills too tardy.
	Galloway, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Pending; claim submitted.
	Galloway, .....	Reading R. R., .....	8 fires set by locomotives, .....	Paid firewardens' bills, \$36.50.
	Galloway, .....	Reading R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
November 12, ...	Hamilton, .....	Daniel McLaren, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
March 30, .....	Hamilton, .....	Frank Greis, .....	Fire set by sparks from sawmill, ..	Released with warning.
August 7, .....	Hamilton, .....	S. G. Hegeman, .....	Set fire without a permit, .....	Pending.

TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Atlantic County—Con.</b>				
April 2, .....	Hammonton, .....	Henry Grady, .....	Daughter set fire without a permit, ..	Released with warning.
	Hammonton, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$1.00.
	Hammonton, .....	Reading R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$2.00.
	Hammonton, .....	Reading R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
November 13, ...	Mullica, .....	William Doerr, Jr., .....	Fire set by sparks from sawmill, ..	Paid fine, \$74.73.
March 25, .....	Mullica, .....	Mrs. Mike Kosowska, .....	Allowed brush fire to escape, .....	Paid fine, \$23.00.
April 15, .....	Mullica, .....	Moritz Finch, .....	Allowed brush fire to escape, .....	Paid fine, \$10.50.
	Mullica, .....	Pennsylvania R. R., .....	2 fires set by locomotives, .....	Cases dropped; township bills too tardy.
	Mullica, .....	Reading R. R., .....	6 fires set by locomotives, .....	Paid firewardens' bills, \$18.75.
	Mullica, .....	Reading R. R., .....	2 fires set by locomotives, .....	Cases dropped; township bills too tardy.
November 27, ...	Weymouth, .....	William Balder, .....	Set fire by careless smoking, .....	Pending.
February 12, ...	Weymouth, .....	Mr. Westlake, .....	Set fire by careless smoking, .....	Pending.
March 25, .....	Weymouth, .....	R. Markman, .....	Allowed brush fire to escape, .....	Released with warning.
April 20, .....	Weymouth, .....	A. B. Boyd, .....	Set fire without a permit and allowed it to escape, .....	Pending.
	Weymouth, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$1.00.
	Weymouth, .....	Reading R. R., .....	10 fires set by locomotives, .....	Paid firewardens' bills, \$38.20.
	Weymouth, .....	Reading R. R., .....	2 fires set by locomotives, .....	Cases dropped; township bills too tardy.
<b>Bergen County—</b>				
	Franklin, .....	N. Y., S. & W. R. R., ....	1 fire set by locomotive, .....	Pending; claim submitted.
April 18, .....	Hohokus, .....	Donald MacPherson, .....	Set fire without a permit and allowed it to escape, .....	Pending.
April 20, .....	Hohokus, .....	Joseph Edwards, .....	Set fire without a permit and allowed it to escape, .....	Prosecuted, convicted, paid fine, \$13.40, and costs.
April 8, .....	Oakland, .....	Anna M. Van Winkle, ....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
April 18, .....	Oakland, .....	Thomas Jones, .....	Maliciously set fire, .....	Prosecuted, convicted and jailed in lieu of payment of \$50 fine.
	Oakland, .....	N. Y., S. & W. R. R., ....	2 fires set by locomotives, .....	Pending; claims submitted.
April 9, .....	Park Ridge .....	Otto Dressler, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$8.00.
	Montvale, .....	Erie R. R., .....	2 fires set by locomotives, .....	Paid firewardens' bills, \$10.00.
April 19, .....	Woodcliffe Lake, .....	Frank Irvine, .....	Allowed brush fire to escape, .....	Paid fine, \$6.00.

TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Burlington County—</b>				
March 26, .....	Medford, .....	Wm. B. Stackhouse, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$27.50.
March 29, .....	Pemberton, .....	Lillian Harker, .....	Allowed brush fire to escape, .....	Released with warning.
April 18, .....	Pemberton, .....	Andrew Anderson, .....	Set fire by careless smoking, .....	Pending.
November 12, ..	Shamong, .....	Henry C. Biddle, .....	Set fire by careless smoking, .....	Paid fine, \$50.00.
March 25, .....	Southampton, .....	Thomas Blazach, .....	Set fire by careless smoking, .....	Paid fine, \$5.00.
November 13, ...	Tabernacle, .....	Mrs. James Crosby, .....	Set fire by carelessly dumping hot ashes, .....	Released with warning.
April 1, .....	Woodland, .....	Samuel Gross, .....	Allowed brush fire to escape, .....	Released with warning.
<b>Camden County—</b>				
March 24, .....	Chesilhurst, .....	Mrs. Anna Wilde, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$12.00.
March 25, .....	Chesilhurst, .....	John Decker, .....	Children set fire without a permit and allowed it to escape, .....	Paid fine, \$10.80.
March 26, .....	Chesilhurst, .....	John Decker, .....	Children set fire without a permit and allowed it to escape, .....	Released with warning.
April 17, .....	Chesilhurst, .....	Alphonse Schramm, .....	Children set fire without a permit, .....	Prosecuted and released.
April 14, .....	Clementon, .....	Mrs. M. E. Walz, .....	Allowed brush fire to escape, .....	Paid fine, \$8.00.
	Clementon, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
	Clementon, .....	Reading R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$8.00.
February 22, ....	Delaware, .....	Benimino Solinio, .....	Set fire without a permit, .....	Paid fine, \$5.00.
	Delaware, .....	Joe Serge, .....	Set fire without a permit, .....	Released with warning.
	Delaware, .....	Dominick Colangelo, .....	Set fire without a permit, .....	Paid fine, \$5.00.
	Gloucester, .....	Reading R. R., .....	4 fires set by locomotives, .....	Paid firewardens' bills, \$47.00.
April 23, .....	Voorhees, .....	John Hendrickson, .....	Set fire without a permit, .....	Released with warning.
January 20, .....	Winslow, .....	Frank Linzi, .....	Set fire without a permit, .....	Released with warning.
March 29, .....	Winslow, .....	Mrs. Charles Daniels, .....	Set fire without a permit and allowed it to escape, .....	Pending.
April 9, .....	Winslow, .....	Martin Duddy, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$20.00.
April 27, .....	Winslow, .....	John Tomascello, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$15.00.
	Winslow, .....	New Jersey Central R. R., ..	2 fires set by locomotives, .....	Paid firewardens' bills, \$13.25.
	Winslow, .....	Reading R. R., .....	46 fires set by locomotives, .....	Paid firewardens' bills, \$150.15.

TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Cape May County—</b>				
	Dennis, .....	Reading R. R., .....	2 fires set by locomotives, .....	Paid firewardens' bills \$19.00.
	Dennis and Woodbine, ..	Reading R. R., .....	1 fire set by locomotive, .....	Paid firewardens' bill, \$29.90.
	Lower, .....	Reading R. R., .....	9 fires set by locomotives, .....	Paid firewardens' bills, \$17.50.
	Lower, .....	Reading R. R., .....	2 fires set by locomotive, .....	Cases dropped; township bills too tardy.
April 16, .....	Middle, .....	Bart Slover, .....	Set fire by careless smoking, .....	Pending.
	Middle, .....	Pennsylvania R. R., .....	2 fires set by locomotives, .....	Paid firewardens' bills, \$24.40.
	Middle, .....	Reading R. R., .....	16 fires set by locomotives, .....	Paid firewardens' bills, \$106.35.
March 17, .....	Upper, .....	Harris B. Corson, .....	Set fire by careless smoking, ....	Released with warning.
	Upper, .....	Reading R. R., .....	4 fires set by locomotives, .....	Cases dropped; township bills too tardy.
<b>Cumberland County—</b>				
November 12, ...	Deerfield, .....	Harry Cotter, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$20.00.
March 17, .....	Deerfield, .....	Tony Olivo, .....	Allowed brush fire to escape, .....	Paid fine, \$5.00.
March 29, .....	Deerfield, .....	Joseph Stallope, .....	Son set fire without a permit and allowed it to escape, .....	Released with warning.
April 14, .....	Deerfield, .....	Joe Beherlitch, .....	Set fire without a permit, .....	Pending.
April 15, .....	Deerfield, .....	Benjamin Rassass, .....	Allowed brush fire to escape, .....	Pending.
April 16, .....	Deerfield, .....	Harris Goldstein, .....	Allowed brush fire to escape, .....	Released with warning.
April 18, .....	Deerfield, .....	Louis Levenson, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
March 18, .....	Fairfield, Lawrence and Millville, .....	Mose Williams, .....	Set fire without a permit and allowed it to escape, .....	Pending.
	Fairfield, .....	New Jersey Central R. R., ..	2 fires set by locomotives, .....	Paid firewardens' bills, \$11.00.
March 2, .....	Landis, .....	George Wheldon, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
March 11, .....	Landis, .....	James D. McConnell, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.50.
April 14, .....	Landis, .....	Palo Trano, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$30.00.
April 18, .....	Landis, .....	Randall Higbee, .....	Son set fire without a permit, ....	Released with warning.
May 6, .....	Landis, .....	J. C. Peterson, .....	Set fire without a permit, .....	Paid fine, \$2.25.
	Landis, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Paid firewardens' bill, \$5.50.
	Landis, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Cases dropped; township bill too tardy.
March 28, .....	Maurice River, .....	Willis Ackley, .....	Set fire without a permit, .....	Pending.
	Maurice River, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Paid firewardens' bill, \$13.15.
	Maurice River, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Cases dropped; township bill too tardy.
January 22, .....	Millville, .....	Harry Follows, .....	Allowed brush fire to escape, .....	Paid fine, \$8.00.



TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
	<b>Cumberland Co.—Con.</b>			
April 22, .....	Millville, .....	Mike Kutchka, .....	Set fire without a permit, .....	Pending.
	Millville, .....	Mrs. John Rondolski, .....	Set fire without a permit, .....	Pending.
	Millville, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Pending; claim submitted.
	<b>Gloucester County—</b>			
March 29, .....	Clayton and Franklin, ...	Walter Wolfe, .....	Set fire by careless smoking, .....	Dropped; insufficient evidence.
November 13, ...	Franklin, .....	Joseph Peretti, .....	Set fire without a permit, .....	Released with warning.
February 22, ....	Franklin, .....	Janvier Farms Co., .....	Allowed brush fire to escape, .....	Pending.
March 24, .....	Franklin, .....	Joseph Shoen, .....	Set fire without a permit and allowed it to escape, .....	Pending.
March 24, ....	Franklin, .....	J. M. Patterson, .....	Allowed brush fire to escape, .....	Pending.
April 12, .....	Franklin, .....	Ralph Musto, .....	Set fire without a permit, .....	Paid fine, \$10.00.
April 21, .....	Franklin, .....	Ralph Musto, .....	Allowed brush fire to escape, .....	Dropped; insufficient evidence.
	Franklin, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$12.50.
April 23, .....	Monroe, .....	Harry Clayton, .....	Employee set fire without a permit, .....	Pending.
April 25, .....	Monroe, .....	Ivar G. Jergensen, .....	Set fire without a permit, .....	Prosecuted; released.
April 26, .....	Monroe, .....	W. Charles Tweed, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
	Monroe, .....	Reading R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$3.00.
	Monroe, .....	Reading R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
	<b>Hunterdon County—</b>			
June 25, .....	Tewksbury, .....	David Jones, .....	Set fire without a permit and allowed it to escape, .....	Pending.
	<b>Mercer County—</b>			
February 26, ....	Princeton, .....	Charles Van Kirk, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
March 31, .....	Princeton, .....	Fred Hightman, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
April 2, .....	Princeton, .....	Myron R. Thompson, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
April 8, .....	Princeton, .....	Joseph Phillips, .....	Set fire by careless smoking, .....	Pending.

TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Middlesex County—</b>				
November 2-13, ..	East Brunswick, .....	Martin Mapulski and Andrew Sineski, .....	Set fire without a permit and allowed it to escape, .....	Dropped; insufficient evidence.
November 12, ..	East Brunswick, .....	Bernard Axel, .....	Set fire without a permit, .....	Paid fine, \$10.00.
November 12-13, ..	East Brunswick, .....	Joseph Mussbaum, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
March 17, .....	Madison, .....	Fred Rogers, .....	Set fire without a permit, .....	Dropped; offender fled jurisdiction.
March 27, .....	Madison, .....	James L. Green, .....	Set fire without a permit, .....	Paid fine, \$10.00.
March 29, .....	Madison, .....	Frank Pettner, .....	Son mischievously set a forest fire, .....	Pending.
March , .....	Madison, .....	Fred Martz, .....	Son set fire without a permit, .....	Paid fine, \$5.00.
April 1, .....	Madison, .....	J. W. Reid, .....	Set fire without a permit, .....	Released with warning.
September 18, ...	Madison, .....	Harry Serman, .....	Set fire without a permit, .....	Paid fine, \$10.00.
March 31, .....	Monroe, .....	Mrs. Samuel Boyce, .....	Set fire without a permit, .....	Released with warning.
April 19, .....	Sayreville, .....	Edwin Good, Jr., .....	Maliciously set forest fire, .....	Dropped; insufficient evidence.
		New York Telephone Co., ..	Employees set fire without a permit and allowed it to escape, .....	Paid fine, \$50.80.
March 28, .....	Sayreville, .....	Raritan River R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
	South Brunswick, .....	Herman Zipkin, .....	Allowed brush fire to escape, .....	Pending.
	South Brunswick, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Claim withdrawn.
<b>Monmouth County—</b>				
November 5, ....	Atlantic, .....	Joseph Schmidt, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$30.00.
March 31, .....	Atlantic and Shrewsbury, ..	Nevada McGill, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$15.00.
April 10, .....	Atlantic, .....	William Baker, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
	Atlantic, .....	W. J. Johnson, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
April 19, .....	Atlantic, .....	James Higgins, .....	Set fire without a permit, .....	Released with warning.
March 27, .....	Howell, .....	Asbury Tice, .....	Set fire by careless smoking, .....	Paid fine, \$5.00.
	Howell, .....	New Jersey Central R. R., ..	14 fires set by locomotives, .....	Paid firewardens' bills, \$98.00.
	Howell, .....	New Jersey Central R. R., ..	3 fires set by locomotives, .....	Claims withdrawn.
	Howell, .....	Pennsylvania R. R., .....	2 fires set by locomotives, .....	Paid firewardens' bills, \$33.50.
November 10, ...	Shrewsbury, .....	Michael Bonforte, .....	Set fire by careless smoking, .....	Paid fine, \$5.00.
	Shrewsbury, .....	New Jersey Central R. R., ..	5 fires set by locomotives, .....	Paid firewardens' bills, \$79.45.

TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Morris County—</b>				
April 2, .....	Chester, .....	Elmer May, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$2.65.
April , .....	Chester, .....	Charles M. Scheffelin, .....	Set fire without a permit, .....	Released with warning.
April 22, .....	Chester, .....	Henry Shoemaker, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$8.00.
April 25, .....	Chester, .....	John Smith, .....	Set fire without a permit, .....	Pending.
November 1, ....	Chester, .....	D., L. & W. R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$4.50.
	Denville, .....	D., L. & W. R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$43.00.
	Denville, .....	D., L. & W. R. R., .....	1 fire set by locomotive, .....	Pending; claim submitted.
April 13, .....	Hanover, .....	George Matthews, .....	Set fire without a permit and allowed it to escape, .....	Dropped; insufficient evidence.
	Hanover, .....	D., L. & W. R. R., .....	2 fires set by locomotives, .....	Paid firewardens' bills, \$21.00.
	Hanover, .....	D., L. & W. R. R., .....	2 fires set by locomotives, .....	Cases dropped; township bills too tardy.
August 19, .....	Hanover, .....	D., L. & W. R. R., .....	4 fires set by locomotives, .....	Pending; claims submitted.
	Jefferson, .....	William Griebstein, .....	Set fire without a permit, .....	Released with warning.
	Jefferson, .....	N. Y., S. & W. R. R., .....	2 fires set by locomotives, .....	Paid firewardens' bills, \$10.00.
March 25, .....	Mendham, .....	M. J. Murphy, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
April 16, .....	Mendham, .....	John Van Duyne, .....	Set fire without a permit and allowed it to escape, .....	Pending.
March 15, .....	Montville, .....	William Linke, .....	Set fire by carelessly dumping hot ashes, .....	Pending.
April 21, .....	Montville, .....	D., L. & W. R. R., .....	3 fires set by locomotives, .....	Pending; claims submitted.
	Morris, .....	John H. B. Coriell, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$34.00.
June 28, .....	Morris, .....	John R. Brinley, .....	Set fire without a permit, .....	Paid fine, \$2.50.
June 30, .....	Morris, .....	John R. Brinley, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$2.50.
August 20, .....	Morris, .....	Robert Hipson, .....	Set fire without a permit, .....	Released with warning.
February 20, ...	Pequannock, .....	Peter Legge and Charles H. Romaine, .....	Sons set fire without a permit, ...	Released with warning.
March 3, .....	Pequannock, .....	George S. Jacobs, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$10.00.
April 2, .....	Pequannock, .....	N. Y., S. & W. R. R., .....	Fire escape from sectionmen cleaning right of way, .....	Paid fine, \$27.20.
	Pequannock, .....	N. Y., S. & W. R. R., .....	5 fires set by locomotives, .....	Paid firewardens' bills, \$83.00.

TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Morris County—Con.</b>				
March 29, .....	Randolph, .....	Miss Rosanna Reynolds, ...	Set fire without a permit and allowed it to escape, .....	Released with warning.
	Randolph, .....	Jolia Corcoran, .....	Set fire without a permit and allowed it to escape, .....	Dropped; insufficient evidence.
	Randolph, .....	D., L. & W. R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
	Randolph, .....	New Jersey Central R. R., ...	1 fire set by locomotive, .....	Paid firewarden's bill, \$12.25.
October 28, .....	Rockaway, .....	Harry Miller, .....	Set fire without a permit, .....	Pending.
	Rockaway, .....	L. B. Cooper and M. Humphreys, .....	Set fire without a permit, .....	Pending.
March 31, .....	Roxbury, .....	John Cooper, .....	Set fire without a permit, .....	Released with warning.
September 13, ...	Roxbury, .....	Hercules Powder Co., .....	Employee set fire without a permit, .....	Released with warning.
	Roxbury, .....	New Jersey Central R. R., ...	2 fires set by locomotives, .....	Paid firewardens' bills, \$17.00.
<b>Ocean County—</b>				
	Berkeley, .....	New Jersey Central R. R., ...	1 fire set by locomotive, .....	Paid firewarden's bill, \$8.00.
	Berkeley, .....	Pennsylvania R. R., .....	2 fires set by locomotives, .....	Paid firewardens' bills, \$15.40.
October 22, .....	Brick, .....	Samuel Hulse, .....	Set fire without a permit, .....	Pending.
June 9, .....	Dover, .....	Solomon Applegate, .....	Allowed brush fire to escape, .....	Pending.
November 6, ....	Jackson, .....	Julian Schaffer, .....	Set fire without a permit and allowed it to escape, .....	Dropped; insufficient evidence.
March 22, .....	Jackson, .....	J. W. Patterson, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$10.00.
March 31, .....	Jackson, .....	Edward Hurley, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
April 9, .....	Jackson, .....	W. J. Clayton, .....	Allowed brush fire to escape, .....	Paid fine, \$10.00.
April 20, .....	Jackson, .....	James D. Holman, .....	Allowed brush fire to escape, .....	Paid fine, \$11.00.
April 21, .....	Jackson, .....	Andrew Bartolf, .....	Allowed brush fire to escape, .....	Paid fine, \$20.00.
March 4, .....	Lacey, .....	J. L. Walback, .....	Set fire without a permit and allowed it to escape, .....	Dropped; offender fled jurisdiction.
April 26, .....	Lacey, .....	John S. L-nch, .....	Set fire by careless smoking, .....	Pending.
November 17, ...	Lakewood, .....	David Hand, .....	Set fire without a permit, .....	Paid fine, \$3.00.
May 3, .....	Manchester, .....	Abraham Jaffee, .....	Set fire by careless smoking, .....	Paid fine, \$10.00.
	Manchester, .....	New Jersey Central R. R., ...	2 fires set by locomotives, .....	Paid firewardens' bills, \$5.00.
	Manchester, .....	New Jersey Central R. R., ...	4 fires set by locomotives, .....	Cases dropped; township bills too tardy.
	Ocean, .....	New Jersey Central R. R., ...	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
	Stafford, .....	Tuckerton R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$5.00.
	Stafford, .....	Tuckerton R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
	Union, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$30.75.

TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Passaic County—</b>				
April 9, .....	Pompton, .....	Watson Poole, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
April 20, .....	Pompton, .....	William Gould, .....	Son set forest fire, .....	Released with warning.
April 21, .....	Pompton, .....	Michael O'Connor, .....	Set fire without a permit and allowed it to escape, .....	Pending.
	Pompton, .....	Erie R. R., .....	5 fires set by locomotives, .....	Paid firewardens' bills, \$92.20.
	Pompton, .....	Erie R. R., .....	4 fires set by locomotives, .....	Cases dropped; township bills too tardy.
	Pompton, .....	N. Y., S. & W. R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$2.00.
	Pompton, .....	N. Y., S. & W. R. R., .....	1 fire set by locomotive, .....	Pending; claim submitted.
April 20, .....	West Milford, .....	C. V. Fanning, .....	Fire set by sparks from sawmill, ..	Dropped; insufficient evidence.
	West Milford, .....	N. Y., S. & W. R. R., .....	4 fires set by locomotives, .....	Paid firewardens' bills, \$13.15.
	West Milford, .....	N. Y., S. & W. R. R., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
<b>Salem County—</b>				
November 3, ....	Pittsgrove, .....	William Nazarino, .....	Set fire without a permit, .....	Released with warning.
November 12-13, ..	Pittsgrove, .....	Thomas M. Tice, .....	Allowed brush fire to escape, .....	Paid fine, \$15.00.
March 17, .....	Pittsgrove, .....	Edward Garrison, .....	Set fire by careless smoking, .....	Pending.
	Pittsgrove, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$25.65.
March 27, .....	Quinton, .....	Morgan Hoffheins, .....	Set fire without a permit, .....	Paid fine, \$5.00.
	Upper Pittsgrove, .....	Pennsylvania R. R., .....	1 fire set by locomotive, .....	Pending; claim submitted.
<b>Somerset County—</b>				
March 27, .....	Bernard, .....	Edwin Packard, .....	Employee set fire without a permit, ..	Pending.
April 2, .....	Bernard, .....	John Sarboukh, .....	Set fire without a permit and allowed it to escape, .....	Dropped; insufficient evidence.
March 28, .....	Bridgewater, .....	C. H. Dunning, .....	Son set fire without a permit and allowed it to escape, .....	Paid fine, \$32.00.
March 28, .....	Bridgewater, .....	Fred H. Roc, .....	Set fire without a permit, .....	Released with warning.
March 31, .....	Bridgewater, .....	Patsy De Castio et als., ....	6 boys mischievously set fire, .....	Tried, convicted and paid \$50 fine.
April 16, .....	Bridgewater, .....	A. G. Anderson, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
November 7, ....	North Plainfield, .....	Mount St. Mary's School, ..	Set fire without a permit, .....	Paid fine, \$13.00.
March 18, .....	North Plainfield, .....	Henry Geunard, .....	Set fire without a permit, .....	Paid fine, \$10.00.
March 20, .....	North Plainfield, .....	Harold Hartpence, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$5.00.
March 24, .....	North Plainfield, .....	Mrs. Vengenza Valetta, ....	Set fire without a permit and allowed it to escape, .....	Released with warning.



TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
<b>Somerset Co.—Con.</b>				
April 2, .....	North Plainfield, .....	Leopold Kuntz, .....	Set fire by careless smoking, .....	Released with warning.
April 16, .....	Warren, North Plainfield and Bridgewater, .....	Mrs. I. H. Garrett, .....	Allowed brush fire to escape, .....	Pending.
April 22, .....	Warren and North Plainfield, .....	Miss Lottie Burnett, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
<b>Sussex County—</b>				
	Andover, .....	Lehigh & Hudson River Ry. Co., .....	1 fire set by locomotive, .....	Case dropped; township bill too tardy.
April 15, .....	Byram, .....	H. L. Stone, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
August 13, .....	Byram, .....	John Brindle, .....	Set fire without a permit, .....	Released with warning.
March 4, .....	Hampton, .....	Mrs. Ann Mering, .....	Set fire without a permit, .....	Pending.
	Hardyston, .....	N. Y., S. & W. R. R., .....	5 fires set by locomotives, .....	Paid firewardens' bills, \$11.90.
	Hardyston, .....	N. Y., S. & W. R. R., .....	2 fires set by locomotives, .....	Cases dropped; township bills too tardy.
August 13, .....	Hopatcong, .....	L. E. Rowley, .....	Set fire without a permit, .....	Released with warning.
March 2, .....	Ogdensburg, .....	Levi Tollison, .....	Set fire by careless smoking, .....	Paid fine, \$6.00.
	Ogdensburg, .....	N. Y., S. & W. R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$4.00.
	Ogdensburg, .....	N. Y., S. & W. R. R., .....	2 fires set by locomotives, .....	Cases dropped; township bills too tardy.
March 13, .....	Sandyston, .....	Daniel Sutton, .....	Allowed brush fire to escape, .....	Paid fine, \$5.00.
June 2, .....	Sandyston, .....	Charles Lavilla, .....	Allowed brush fire to escape, .....	Dropped; offender fled jurisdiction.
March 31, .....	Sparta, .....	John Rednor, .....	Mischievously set fire without a permit, .....	Paid fine, \$5.00.
April 19, .....	Sparta, .....	Max Risse, .....	Employee set fire without a permit, .....	Pending.
September , .....	Sparta, .....	Walter Hollinshed, .....	Set fire without a permit, .....	Pending.
	Sparta, .....	N. Y., S. & W. R. R., .....	3 fires set by locomotives, .....	Paid firewardens' bills, \$15.00.
April 17, .....	Stillwater, .....	Eric G. Rydell, .....	Set fire without a permit and allowed it to escape, .....	Released with warning.
	Stillwater, .....	Savalor Dislavo, .....	Set fire by careless smoking, .....	Dropped; offender fled jurisdiction.
April 8, .....	Vernon, .....	A. Hovencamp, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$7.00.
April 10, .....	Vernon, .....	James R. Carr, .....	Set fire without a permit, .....	Pending.



TABLE V.—VIOLATIONS OF THE FOREST FIRE LAW, 1915—Continued.

DATE.	COUNTY AND TOWNSHIP.	OFFENDER.	OFFENSE.	SETTLEMENT.
	<b>Union County—</b>			
April 9, .....	Fanwood, .....	R. M. Huse, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$9.00.
April 17, .....	Mountainside, .....	Foster Carkhuff, .....	Set camp fire without a permit, ...	Paid fine, \$10.00.
	<b>Warren County—</b>			
March 25, .....	Franklin, .....	John A. Baylor, .....	Set fire without a permit and allowed it to escape, .....	Paid fine, \$15.65.
	Knowlton, .....	D., L. & W. R. R., .....	1 fire set by locomotive, .....	Paid firewarden's bill, \$57.70.
	Knowlton, .....	D., L. & W. R. R., .....	4 fires set by locomotives, .....	Cases pending; claims submitted.
	Knowlton, .....	Lehigh & New England R. R., .....	3 fires set by locomotives, .....	Cases pending; claims submitted.
	Knowlton, .....	N. Y., S. & W. R. R., .....	10 fires set by locomotives, .....	Paid firewardens' bills, \$132.00.
	Pahquarry, .....	N. Y., S. & W. R. R., .....	1 fire set by locomotive, .....	Case pending; claim submitted.

