

Commonwealth of Massachusetts

ANNUAL REPORT

OF THE

Commissioner of Conservation

AND

State Forester

FOR THE

YEAR ENDING NOVEMBER 30, 1930

DEPARTMENT OF CONSERVATION

Publication of this Document approved by the Commission on
Administration and Finance

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OUTLINE OF REPORT

- This report is divided for convenience and economy into four parts —
- Part I. The organization and general work of the Department of Conservation.
 - Part II. The work of the Division of Forestry.
 - Part III. The work of the Division of Fisheries and Game.
 - Part IV. The work of the Division of Animal Industry.
- Parts I and II are printed in one volume as Public Document No. 73.
Part III is printed in a separate volume as Public Document No. 25.
Part IV is printed in a separate volume as Public Document No. 98.

The Commonwealth of Massachusetts

Part 1.

ANNUAL REPORT OF THE COMMISSIONER OF CONSERVATION

The annual report of the Department of Conservation is herewith submitted. As the name implies, the work of this department is conservation of our natural resources. Our aims are to build up forests, both for use and for beauty, to conserve the lumber supply, to protect and increase the wild animal life for use and for sport, to protect and conserve the domestic animals of the State, and to safeguard health in connection with this last branch of our work.

As a department of the State, we have held meetings of the Commissioner and Directors, and the records of these meetings are on file.

The Massachusetts Federation of Women's Clubs, following the example of the Daughters of the American Revolution, have begun the acquisition of land for a state forest. The deed of the first parcel acquired was presented to the Commissioner on October 9, at Petersham, in the presence of a large number of club women and conservationists. The plot of land which the Federation contemplates purchasing will contain about 1,000 acres, and will include some acres well-wooded and suited to recreational uses. Wild life will be safeguarded on this forest as on the D. A. R. Forest.

The statue of Myles Standish has been restored and replaced on the monument on Captain's Hill, Duxbury, the work having been finished about November 30, 1930.

A very complete exhibit of the activities of the department was placed in the Exposition at the Commonwealth Armory in October. This attracted wide attention and gave to thousands of people their first comprehensive knowledge of the vital importance of conservation. In February and March, the governor having made \$25,000 available in our budget, as an increase to our appropriation for purchase and development of state forests, we employed on the forests in silvicultural and fire protection work about 330 men, for a period of about six and one-half weeks. These men were recommended by the regular agencies in various centers from which our forests were accessible. Nearing the end of our fiscal year, we put about fifty extra men to work on the forests, putting off until 1931 some purchases of land which we had contemplated making this year. A considerable sum was thus contributed to the acute unemployment situation.

FOREST CONSERVATION

In conservation of our forests we are furthering not only an economic situation in helping to provide lumber for future generations, so that they shall not feel a shortage which we now deplore, but we are also thinking of the preservation of all our great assets in beauty. Beauty of hill, woodlands and shore lure thousands of people to Massachusetts, and we as conservationists, play a large part in keeping this natural asset unimpaired.

CONSERVATION OF THE HEALTH OF DOMESTIC ANIMALS

The Division of Animal Industry has charge of the control, prevention and suppression of contagious diseases in domestic animals.

4,229 dogs were reported last year as having bitten persons. There were 4,449 persons reported as having been bitten by dogs. The number of positive cases of rabies increased from 618 to 738. Much of the danger of this disease could be eliminated if the local authorities would enforce the present laws in handling the stray and unlicensed dog.

During the year there were applied 88,740 treatments for the prevention of hog cholera and 23,166 treatments for control of Hemorrhagic Septicemia. The only expense incurred by the owners for this service was for the material used.

Rules and regulations were drawn up this year to prohibit the im-

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portation into the Commonwealth of animals known to have reacted to the test for Bang Abortion Disease of cattle. These regulations became effective July 16, 1930. The plan to institute Accredited Bang Abortion Disease-Free Herds has been put into effect and at the end of this year there were on file for this purpose seventeen applications consisting of 428 animals.

Conditions in the Brighton market have been improved and buyers of dairy cows from that market can be reasonably sure of getting clean cows if they so desire.

Interest in the tuberculin test has been manifest all over the State during the entire year, and at the present time applications for first test are coming in at the rate of an average of 800 cows per week. There were 121,821 tuberculin tests applied during the past year or 29,049 more than last year. We have received thus far petitions from six towns for the testing of all of the cattle within those towns and placing them in a quarantined area.

CONSERVATION OF WILD LIFE

The term "administration of wild life resources" is today freely used by the agencies, both federal and state, that are charged with the responsibility of looking out for these state interests.

There was a time when a great deal of sentiment surrounded this, subject, and the public at large was under the impression that all that had to be done to preserve and increase our wild life was to enact restrictive legislation on the taking of it. Our experience over the past hundred years has demonstrated conclusively that restrictive laws alone will not preserve or increase permanently this wild life stock. It is being understood more clearly from year to year that the breeding grounds must be preserved, others that have been destroyed restored if possible, and, in fine, all those things must be done that will give the wild life an opportunity to breed under favorable conditions, freed from the ravages of vermin, and with adequate food supplies at all times. These efforts must also be supplemented by artificial propagation of those species which can be so handled. The foregoing relates to fish life as well as birds and quadrupeds — and it applies equally to all species. It is useless to talk of having that beautiful bird, the wood duck, common in our State, if all the swamps and favorable breeding areas are to be drained and rendered unattractive. And so the propositions could be multiplied without end.

While the situation is complicated, due to the fact that the State owns the wild life but it is at large on privately owned land for the most part, nevertheless, a *modus vivendi* can and must be established which will enable us all to give our wild life resources proper administration.

On the fish cultural side, the Division of Fisheries and Game has made an annual restocking with trout, pond fish, and small mouth bass that will compare favorably with any other state. The drought conditions have multiplied the difficulties, but they have served a valuable purpose in emphasizing the need of having annually available a substantial amount of stock as insurance against such catastrophes.

This year over 17,000 three months old, or older, pheasants were reared at the game farms. For the first time, bob-white quail were reared at all four game farms, with a production of over 1,200 practically adult quail on hand at the end of the year. With the exception of a limited use of bantam hens on quail work at the Sandwich Game Farm, these results were accomplished by the use of the incubator-brooder system. In other words, these birds were produced by machinery rather than by the use of the old method of incubating and rearing the birds through the employment of sitting hens. Such a mass production of game birds by these purely artificial methods has never before been approximated by anyone.

Throughout the year, emphasis has been continued on the protection and other care of our song, insectivorous and other non-game birds and

quadrupeds. Year in and year out we stress the point that the objective of the Division is to administer *all* our wild life resources in the interest of *all* our people.

FOREST FIRES

The season of 1930 surpassed in fire risks that of 1929, which was abnormally dry. Practically no rain fell from May to late October. Fair weather and high temperatures were the rule. The number of fires was high and several very severe and widespread conflagrations occurred. Fortunately the state forests, where fire lines have been made, escaped with little damage, though fires raged near them. It was necessary, however, on account of the dry weather to close the woods twice, in the spring and again in the fall, as a cautionary measure.

GYPSY MOTH SUPPRESSION

The gypsy moth situation has recovered in the last two years, and the report of the superintendent this year shows all over the state markedly less defoliation. In fact only small acreages were stripped.

TOWN FORESTS

There are 90 town forests in Massachusetts at this present time. These forests comprise all together, over 25,000 acres of land. The state forester furnishes trees free of charge to plant these forests, the number thus provided in 1930 being 490,100. Probably about 1,000,000 trees are planted annually on these forests. The state forester feels that this project is one which should be largely stressed at this time, when there is so much unemployment. The preparation for planting, weeding, thinning, brush and cordwood cutting on these municipally owned lands would furnish employment for many men at certain times during the year. We therefore recommend this enterprise to all cities and towns who have not yet set apart lands for this purpose. The state forester will advise and suggest plans.

STANDISH MONUMENT RESERVATION

During the summer of 1930, 97,520 persons visited the Reservation. Contrary to expectations there was no increase in this number, but rather a small decrease. It was estimated that the Tercentenary of Massachusetts Bay would bring visitors to all of New England but this was not apparently the case, especially on the South Shore and Cape Cod.

The legislature of 1930 appropriated money for the restoration of the statue of Myles Standish on the monument, and the work has been finished and the statue replaced, the date of completion approximately coinciding with the end of the fiscal year. Next year visitors to the Reservation will see the monument complete as it was before it was struck by lightning in the electric storm in July, 1922.

STATE FORESTS

In the year 1930 a small amount of land was added to our State forests. In the late fall many purchases contemplated were laid aside in order that we might employ more men on our forests to relieve slightly the employment situation.

The land purchased was distributed as follows:

<i>Name of Forest</i>	<i>Acres</i>
Beartown	326.68
Brimfield	471.3125
Clarksburg	100.
Harold Parker	72.25
Hawley	90.
Huntington	441.
Leominster	44.1
Marthas Vineyard	42.3
Mohawk Trail	26745
Monroe	177.11

<i>Name of Forest</i>	<i>Acres</i>
Savoy Mountain	236.4
Shawme	155.625
Sutton	100.
Templeton	14.875
Warwick	226.4
Wendell	259.
Willard Brook	309.5325
Total	3,066.85245

RECOMMENDATIONS FOR LEGISLATION

Division of Animal Industry

Salary of Director. Owing to the steady growth in the volume of business in this division, it is the opinion of the Commissioner that the director is not receiving a salary commensurate with his duties and responsibilities. The Commissioner, therefore, recommends that the salary be increased.

PART II.

REPORT OF THE DIVISION OF FORESTRY

The second annual report of the state forester (1905) says that "this office was established to promote the perpetuation, extension and proper management of forest lands within the Commonwealth, both public and private." This we have endeavored to do consistently during the years that have passed. It has meant establishing and cultivating tree nurseries, which now produce from 3,000,000 to 3,500,000 trees annually, selling over a million of these at cost to private owners for planting, demonstrating by the use of small lots the economy of forest planting, purchasing and developing over a hundred thousand acres of state forests, establishing an adequate fire protection system, reducing the menace of the gypsy moth to a minimum and educating the public, both adults and youths, in the importance of conserving and enlarging our forested acres.

In all these operations we have tried to use economy, that the return to the State may be of some value in the future.

In this work we have been assisted by the Federal Government, the Massachusetts Forestry Association and other organizations interested in Conservation. The public has been constantly enlarging its interest and we feel that our years of education have produced some results.

Our personnel has not changed during the past year.

ORGANIZATION

WILLIAM A. L. BAZELEY, *Commissioner and State Forester*

CHARLES O. BAILEY, *Secretary to the Department*

ELIZABETH HUBBARD, *Head Clerk*

HAROLD O. COOK, *Chief Forester*

D. C. A. GALARNEAU, *Forester in Western Massachusetts*

FRANK L. HAYNES, *Forester, Land Purchase and Surveys*

JAMES MORRIS, *Forester, Nurseries*

ROBERT B. PARMENTER, *Forester, Extension work and Reforestation*

MAXWELL C. HUTCHINS, *State Fire Warden*

GEORGE A. SMITH, *Chief Moth Suppressor*

JOHN P. CROWE, *Supervising Fire Warden*

District Fire Wardens

1. Lincoln Crowell, Sandwich
2. William Day, Wareham
3. John H. Montle, Fall River
4. James E. Moloy, Woburn
5. Frederick R. Stone, Sudbury
6. Joseph L. Peabody, Winchendon
7. Charles L. Woodman, Oxford
8. Albert R. Ordway, Westfield
9. Verne J. Fitzroy, Shelburne Falls

District Moth Suppressors

1. Walter F. Holmes, Buzzards Bay
2. Clarence W. Parkhurst, Wrentham
3. Michael H. Donovan, Beverly
4. John J. Fitzgerald, Haverhill
5. Charles E. Mace, Bolton
6. Harry B. Ramsey, Worcester
7. Grover C. Twiss, Holyoke

LECTURES

We have filled such requests as have come to us from granges, women's clubs, luncheon clubs and kindred organizations for lectures on the forest policy and work of the State to the number of eighty-three. Many of these lectures have been illustrated by slides.

The following meetings outside of the State were attended by representatives of this department: Northeast Forest Research Council at Waterville, N. H.; New England Section Society of American Foresters at Portland, Me., and New Haven, Conn.

EXHIBITS

The Forestry Division put up several exhibits during the past year, two of them of major character. At the Eastern States Exposition at Springfield, we occupied the forestry wing of the State building and depicted five periods in the history of the forests of Massachusetts from the primeval forests of 1630 to the depleted stands of 1930 and looking into the future when there may be a balance between the forests, wood-using industries and agriculture. We took a prominent part in the exposition of State activities at the Commonwealth Armory in October with an exhibit 125 feet long showing the work of the various branches of the Division of Forestry. This included fire prevention, State forest administration, forest recreation, forest nurseries and gypsy moth suppression. It is estimated that 220,000 saw the exhibit at Springfield and 350,000 at Boston. Mr. D. C. A. Galarneau had charge of both exhibits, assisted at the latter one by Mr. F. V. Learoyd.

The division also had smaller exhibits at annual meeting of the State Federation of Women's Clubs at Swampscott and at the Merit Badge Exposition of the Norumbega Boy Scout Council in Newton.

NURSERIES

The amount of planting stock shipped from State Nurseries during 1930 shows an increase of about 20% over the preceding year. We had an unusually large number of five-year plants which were distributed mainly among the various town forests although there was a greater public demand for this class than we anticipated. Most of the stock was of the four-year class which we consider to be the class best suited universally to the reforestation needs of Massachusetts.

The nursery season was marked by one of the most severe droughts noted within the history of the department. We suffered very little loss, however, and examination of stock at the close of the season showed both buds and roots to be in excellent condition.

The demand for red pine increased greatly and we were able to dispose of our entire supply of four and five year stock without difficulty. We were unable to secure any red pine seed in 1928, so shall have this species only in the three year class for 1931 distribution. This class should prove satisfactory for open land planting. Red pine and white pine were distributed in about equal amounts. There were numerous requests for white spruce which we were mostly able to supply. It should be noted white spruce four year transplants are smaller than Norway spruce and considerably smaller than red and Scotch pine of the same class. We believe that white spruce is less satisfactory than Norway spruce or balsam fir for Christmas tree purposes and do not recommend it highly except for timber planting.

During the season we shipped large quantities of stock to our own reservations by truck and found this method very satisfactory. Seedlings were carried from Amherst Nursery to other nurseries directly and quickly and arrived at destination in much better condition than through our usual method.

We are indebted to the Highway Commission for use of their trucks to transport stock from nurseries to the Province Lands.

Planting stock was distributed as follows:

Sale	1,105,000
State Forests	1,581,000
Public Institutions	635,000
Town Forests	490,000
Reforestation Lots	42,000
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	3,853,000

EXAMINATIONS

The policy of this department of aiding private land owners by examining their woodlands and advising them as to their proper treatment dates back to the very beginning of the forestry work in this State and is much appreciated by the owners benefited. The following table gives a list of these examinations classified by the principal problems concerned. In the case of those listed as "general" more than one problem was considered. The examinations listed under "insects and diseases" were largely of single ornamental trees, hence no figures of acreage are given.

<i>Problem</i>	<i>No.</i>	<i>Acres</i>
Planting	18	462
Improvement cuttings	13	1,825
Marketing	10	1,860
Insects and Diseases	18	
General	7	540
Taxation	3	270
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	69	4,957

STATE FORESTS

We were fortunate this past year in not only having a somewhat larger regular appropriation for work on state forests, but we also received a supplemental appropriation during the late winter of \$25,000 for the relief of unemployment and used this to hire about 350 extra men on twenty forests during six weeks in that season. Comparatively little land was purchased because under the present conditions of unemployment it seemed best to put all available funds into labor.

Another item not so pleasing to report is the fact that about 1,600 acres of state forest land were burned over during the year, but in view of the severe drought and the extreme hazard that existed, we feel that we were fortunate that the burned area was not larger.

We have included reports on the work done on several state owned lots not within the lines of any state forest.

Arthur Warton Swann State Forest

An improvement cutting was made in a small stand of mixed hardwoods in area about eight acres. Along the walls bordering the plantations were many old pasture hardwoods of no value in themselves and in the aggregate suppressing much valuable young growth. Many of these were cut down, about five acres of alder swamp was levelled and made ready for planting.

Planting was confined to the setting out of 3,500 Norway spruce and some small experimental plantings of native and exotic species.

All the white pine plantations were gone over and weeviled leaders were cut and burned. This is the last year that this can be done on a large scale since most of the plantations have reached a height that makes such work impracticable. We tried an experiment of banding some of the white pines with tree tanglefoot near the top and there was a distinct reduction in weeviled leaders on the banded trees.

About 1,500 Asiatic chestnuts received from the U. S. Bureau of Plant Industry were set in the nursery and will be put out in the field next spring.

All the forest roads and trails for about six miles received their annual clearing.

Ashburnham State Forest

During the early winter the regular two-man crew made a release cutting and thinning over a part of the Lynde Lot near South Ashburnham, while in the late winter this crew supplemented by eight men taken on for our "unemployment" crew worked at clearing up some 30 acres of burned over land on the Crocker-Lyons parcel. In the spring 38,000 trees were planted on this burned parcel and 9,000 trees on a cut-over area on the Cory-Smith Lot at North Ashburnham.

During the early summer some release cutting was done by the regular crew of two men on the Rockwood Lots and in the late summer we spent several weeks gathering moss to be shipped to our nurseries.

During the late fall we carried on release cuttings on several of the old reforestation lots in North Ashburnham.

Barre State Forest

Almost the whole of the 460 acres of this forest were burned by a severe fire in April which killed not only the natural growth, but also spread over 150 acres of planted land.

Beartown State Forest

In the spring 52,000 red pine were planted in the open fields on the Demond property. Five miles of old forest roads and three miles of trail were cleared of brush.

Blandford State Forest

Roadside thinning was done along the Sanderson Brook road and at the time of the unemployment appropriation a crew of twelve men cut brush on the east side of the forest along the railroad track.

In May there was a fire on Green Hill in the west end of the forest which burned a total of 600 acres, 150 of which was on state land. Only hard work on the part of our district warden aided by crews from Blandford and Chester prevented it from doing much more serious damage.

The Department of Public Works has commenced work on a new section of Route 20 which will pass through the east side of our forest paralleling the railroad. While in one sense this road may add to the fire hazard in other ways it is a source of protection because it will act as a fire line to stop fires originating along the railroad right of way.

Brimfield State Forest

During March twelve "unemployed" men were used to clear off some twenty acres of brush pasture and prepare it for planting and during April and May about 100 acres of land were planted with 68,000 white pine and 25,000 red.

Clarksburg State Forest

By use of funds made available in the special unemployment appropriation a crew of fifteen men from North Adams were given work making an improvement cutting in about 30 acres of sprout hardwood land cutting out chiefly dead chestnut and grey birch. The slash was piled and burned.

Colrain State Forest

We tried an experiment in the older white pine plantations on this forest, one nineteen years old and the other fifteen years old, of thinning out a small area of about an acre, taking out all the badly weeviled trees for the purpose of determining whether there would be enough fairly straight trees left to form a worthwhile residual stand. In each case it was necessary to cut out about 400 trees, or one-third of the stand. As the badly weeviled trees were in most cases the dominant ones, it results in a heavier thinning than one would naturally apply from the strict silvicultural standpoint, but it liberates the intermediate trees which generally are not badly weeviled and are reasonably straight so that they will not be suppressed by the crooked dominants.

Conway State Forest

Along the old abandoned town road leading from Cricket Hill into the forest, brush was cut for one and one-half miles and some light repairs made.

D. A. R. State Forest

About fifty acres of culled out forest land was given an improvement cutting and slash burned and ten miles of forest road were cleared of brush which was afterwards burned. The trail to the summit of Moores Hill has been marked with signs.

Erving State Forest

During the early winter the regular crew of two men did some release cutting in the plantation north of the nursery. When the unemployment appropriation was made sixteen additional men worked for five weeks thinning out the hardwood stand along the state road on some 25 acres and carrying out a release cutting in a natural and planted stand of pine on the Coolidge Lot.

During the spring the regular crew spent most of its time at the nursery digging and shipping trees and transplanting seedlings.

During the spring a disastrous fire spreading from neighboring land burned 400 to 450 acres of land on this forest, much of it stocked with a promising young hardwood growth and including 10 acres of old fields planted with red and Scotch pine about five years ago. These old fields and other portions of the burned area were replanted by the use of 31,000 trees.

During the summer and fall months the regular crew worked in the nursery and brushed out forest roads. One bridge was built and a water hole dug.

Foxborough State Forest

During last winter, aided in part by our unemployment crew of some 25 men, about 60 acres of land were cleared of brush and weed trees and made ready for planting, and this area was set out with 50,000 white pine.

About four miles of forest roads were brushed out and two waterholes constructed.

During the summer a fire burned over some forty acres on this forest, including a considerable part of the Bennett lot planted two years ago.

Harold Parker State Forest

During the early part of the winter the regular crew of three men cleared up five or six acres of land burned over the previous year. Later in the winter when the "unemployed" crew of 25 men were put to work they cleared of brush and inferior trees a long strip of land on the north side of Salem Street in area about 25 acres. A portion of this crew were put to work creosoting gypsy moth egg clusters and the whole forest was gone over in this work.

During the spring the regular crew set out 20,000 red pines on the cleared area.

The summer was spent mowing brush along the sides of forest roads and improving these roads by filling ruts and installing drains. The tips of white pines infested with weevil were cut off and burned. In the fall a large cistern fed by a never-failing spring, was dug to give fire protection to that section of the forest. During both spring and fall much of the time of the crew was taken up in fire fighting in the vicinity. The state land was carefully patrolled and no fires occurred on the forest.

Hawley State Forest

The work on this forest has been confined to planting. During the spring, 140,000 white pine, 67,000 red pine, 15,000 Jack pine and 7,000 Norway spruce were set out.

Hubbardston State Forest

Last winter a crew of eight men hired under the special unemployment appropriation cut and burned the brush and weed trees on about twenty

acres of land on the Kendall Lot and later in the spring this was planted with 15,000 white pine.

During the fall a crew of four men brushed out forest roads on this lot and thinned a few small stands of medium pine and hardwoods.

Another "unemployment" crew did a considerable amount on the Bent Lot also in Hubbardston.

Leominster State Forest

During the winter the regular crew of three men did release cutting on the White lot in a natural stand of grey birch and white pine. At the time of the unemployed appropriation 25 men were put to work piling and burning slash on the Paradise Pond lot. In the spring the regular crew planted 40,000 white and 26,000 red pines on the White and Paradise Pond lots. During the summer and fall the regular crew carried out release cutting in pine and birch growth, cut chestnut poles and posts, cleared out wood roads and did many other odd jobs.

Marthas Vineyard State Forest

The chief work on this forest has been the building and maintenance of fire lines. About two miles of new fire line 50 feet wide was brushed and plowed while on about one and one-half miles additional brush was cut, but roads not plowed. At the same time 11 miles of old fire line were harrowed and brush cleared on one mile of forest road. The value of the fire lines was demonstrated during the summer when about 600 acres of the forest were burned over, but the fire was kept out of the planted area protected by fire lines.

During the spring the crew planted 75,000 red pine and 25,000 white pine.

The Division of Fisheries and Game have given up the maintenance of a resident warden on the Heath Hen Reservation and our forest superintendent has moved into the house formerly occupied by him.

The old fire tower had become unsafe because of rusting of the metal and a new 60 foot galvanized iron tower has been erected in its place and the telephone line rebuilt.

The forest crew assisted in fighting five fires not on the forest.

Mohawk Trail State Forest

The woodland at the camp ground was given a light thinning and the larger trees pruned to a considerable height, with the result that the camp ground is less damp and lighter. Seven new fireplaces were installed but the most important improvement was the building of a new comfort station containing up-to-date sanitary facilities. The new grade of the reconstructed state highway is so much higher than the old that access to the camp ground was made difficult but the state highway authorities were kind enough to cooperate with our superintendent in building two entrance roads. This camp ground is not only popular with over-night transients but is used by an increasing number of parties who like to stay several days or weeks. We are clearing out an extension to the camp ground slightly removed from the transient grounds especially for these periodic campers.

Twenty thousand red pine were set out on the Wheeler farm.

Monroe State Forest

By the use of a small "unemployed" crew on this forest about 50 acres of scrubby pasture was cleared and made ready for planting and later in the spring this area and 200 acres more of open fields and pastures were planted by the use of 300,000 trees divided as follows — 130,000 white, 80,000 red pine, 40,000 white spruce, 20,000 Norway spruce, 10,000 Jack pine, and 20,000 Scotch pine.

Myles Standish State Forest

Thanks to the presence of the "unemployed" crew in the early spring we were able to accomplish a large amount of release cutting in older

plantations, 375 acres in all. Planting of 35,000 red pines, 150,000 white pines and Norway spruce was carried out in the burned area at the north-west section of the forest, 90,000 seedlings were transplanted into the nursery.

A fire line was made along the Mast Road and one thousand feet of new fire line was constructed on the west line.

By use of the new grader eight miles of road were scraped and eight miles of what was previously plowed fire line was made into drivable road, and two miles of old road brushed.

The telephone line from Carver road to College Pond was practically rebuilt and made into an all pole line.

About 40 acres of white pine plantations were gone over during the summer by cutting off shoots infested with weevil and burning them.

A new chimney was built in the foreman's house and the house, barn, garage and pump house painted.

Toilets were built on the public camp ground at Widgeon Pond.

Two wells for fire protection were dug and tiled on the west line.

Because of the high fire hazard a considerable amount of time was spent by the crew patrolling the forest.

There were no fires on the forest but the crew fought at nine fires in the surrounding towns.

Oakham State Forest

The Fullam lot which was planted with white and red pine 15 to 20 years ago is in serious need of release and improvement cuttings. About 30 acres were given this treatment during the summer.

October Mountain State Forest

The main road received the usual care, grading, clearing culverts and rebuilding bridges. Owing to the large amount of lumber and cordwood trucked off the mountain the wear and tear on this road was considerable. By cooperation with the town of Becket and Washington which supplied trucks and gravel, much was done to put the Becket road in condition for auto travel.

Further work was done in the Finerty Pond road, making it passable for trucks for three-quarters of its length. The Sandwich road leading from the Bugbee path to Ashley Lake was brushed out and made passable. On nearly forty miles of forest trails brush was mowed for the purpose keeping them open.

During the winter a logging job was carried on which produced 4,730 hardwood ties and 50,000 feet of lumber. Under the emergency unemployment appropriation fifteen men were put to work clearing up the slash by cutting the tops of trees and many limbs into cordwood. During the fall a carload of balsam fir trees was cut for Christmas trees and shipped to Boston.

Planting was confined to the setting of 10,000 Scotch pine and 9,000 spruce, the latter used in filling in older plantations where trees had died out.

In the headquarters house two rooms were plastered and papered and a hardwood floor laid. A septic tank was installed in place of the cesspool. The barn and garage were shingled and painted. Electric lights were installed at headquarters.

The crew at this forest took part in the Tercentenary celebration work. One pair of work horses were entered at horse shows at Lenox and Great Barrington where they took blue ribbons in each case. As these horses are engaged in rough, hard work in the woods during much of the year this is an indication of the good care which they receive at the hands of the teamster.

Otis State Forest

Along the Algere Corner road a fire line fifty feet wide and three-quarters of a mile long was cut out on the Bonnie Brae lot so-called and on the Otis-Monterey road, now being made into a second class state

highway, a fire line fifty feet wide and a mile long was cleared on what is known as the Alexander Lot.

Otter River State Forest

The earlier part of the winter was spent by the regular crew in release cutting plantations overtopped with grey birch and pitch pine and the regular crew were supplemented during March with five men hired under the Unemployment Act. As has been our policy on this forest we continued to give away small blocks of weed trees to those who would cut and pile the brush and prepare the land for planting. Because of the unemployment situation there was a great demand for this free fuel and more land was cleared than we had trees to plant the following spring, but 48,000 red pine were set on some of this brushed area.

After the planting season the forest crew was cut to two men who spent the summer and fall cutting brush in forest roads, mowing fire lines and other general work.

In the reservation house a new chimney was built in the kitchen and the walls painted.

The nursery was maintained with a crew of two men, 150,000 trees were taken out and 240,000 seedlings transplanted.

Savoy State Forest

About ten miles of forest roads were kept in repair by cutting brush and fallen trees and cleaning out culverts and drains.

Released some 60 acres of pine and 75 acres of Norway spruce plantations and pruned 25 acres of pine plantations. Several old wells were fenced and covered so that that they might serve as a source of water in case of fire.

Shawme State Forest

Two miles of new fire line were built and nine miles of old line harrowed. Five miles of forest roads were brushed for the first time and fifteen miles of old roads were rebrushed. In addition rocks were dug out of several miles of roads and bad stretches graded. Five water holes were dug and made accessible to the fire truck. A fire line was built along one mile of the Forestdale state road.

During the spring 150 acres were planted with 75,000 red pine and 72,000 white pine. About 100 acres of plantations 7 years old were given a release cutting.

The crew of this forest assisted in fighting 19 fires in ten towns on the Cape.

Shutesbury State Forest

Comparatively little work was done on this forest during the past season. In the spring a crew of three men planted 5,000 red and 7,000 white pine while during a few weeks in the summer two men did some release cutting.

Spencer State Forest

During December about 800 balsam fir Christmas trees were cut on the Chestnut Hill lot, bringing in more than \$300. We wish that we had a larger area of fir plantations since they enable us to obtain a considerable income on a short rotation. During last winter improvement cuttings were made on the Dimmock lot, taking out about 25 cords of wood, 50 chestnut telephone poles and 600 posts. The poles are used in constructing telephone lines to our fire towers and the posts sold to highway contractors. It is unfortunate that this lot which contained a very promising growth of hardwoods and pine was swept by fire in the spring and destroyed.

During the "unemployment" period in March 16 men were engaged in thinning the Spencer lot, taking out 63 cords of wood over about 20 acres, and 10,000 white pines and 1,000 red planted in openings.

Templeton State Forest

In the spring a crew of 12 men planted 86,000 red pine on the Hadley-Aiken lot. During the early summer two men did some release cutting

in the older plantations. Work on this forest was discontinued for a couple of months and then taken up in the fall when two old cart roads were brushed out and gravelled in order to make them passable for automobiles. Three new waterholes were dug at advantageous points.

Tolland-Granville State Forest

During the winter about twelve acres of old brush pasture with a scrubby growth of birch, soft maple and alder were cleared, all brush burned and the area planted in the spring with 8,000 red pines and 2,000 white. Fifteen acres of older plantations were released by cutting of birch and poplar. Along 10 miles of main roads the brush and grass were cut and burned, repairs made by removing large stones and filling in ruts with gravel.

A picnic ground at Hubbard River was established by clearing out a small grove and installing tables and benches.

One half mile of new fire line was cleared of brush and dead wood and an old fireline brushed out. Five water holes were dug and marked. There were no fires on the forest but the crew assisted in fighting fires in Granville and Sandisfield. An interesting development in connection with this forest is the purchase by the City of Hartford, Conn., of a large area of land on our east side where they expect to create a large reservoir in the valley of the East Branch of Farmington River.

By cooperation with the Department of Public Works \$1,000 was spent improving the old road from East Otis to Tolland Centre which passes through the Tolland section of this forest.

Warwick and Mt. Grace State Forests

During the spring a small crew planted 5,000 red and 8,500 white pines on the Martin place and 7,000 white pines on Mt. Grace. After the planting season a crew of three men spent a few weeks cutting brush in trails and along roadsides, but no work was done after the middle of June.

Wendell State Forest

During the winter the regular crew of two men supplemented for six weeks by six men taken over under the Unemployment Act, carried out release cuttings in the older plantations near Mormon Hollow and in the spring 22,000 red pine were planted here.

During the summer a crew of four men worked clearing out brush on one and one-half miles of abandoned town roads, digging out rocks and filling ruts to make them passable for automobile travel. They also worked for a time eradicating wild *ribes* on the Mann Lot as a protection against blister rust.

Along all the existing forest roads brush was cut and burned and a bridge out of repair was rebuilt. In the fall the crew carried out a release cutting on the Thompson lot.

There were no fires on this forest, although the crew was called out many times to assist in fighting fires in the vicinity.

Williard Brook State Forest

During the six week period of the unemployment appropriation a crew of 12 men cleared some 15 acres of burned land and made it ready for planting and this and other land was later planted by the regular crew of 4 men with 8,000 red, and 22,000 white pine. Since the planting season the crew have spent the time in thinning and release cutting, cutting chestnut poles and posts, some 200 poles and 300 posts.

This forest is probably the most frequented by the public of any of our lands and it takes considerable time on the part of the crew to pick up the litter left after frequent picnic parties.

Windsor State Forest

Work on this forest was confined to mowing grass and brush at the parking space near the Jambs and cutting trees and logs lodged in the bottom of the gorge into short pieces with the hope that high water in the spring will carry them down stream. Some new tables and benches

were placed in the picnic grove and during Sundays and holidays one man was employed to police the Jambs section.

Bridgewater-Baker Lot

A portion of this lot was reforested about six years ago and the remainder has an excellent stand of pine reproduction but badly suppressed by an overstory of birch, oak and soft maple. By the use of an "unemployed" crew during five weeks in the late winter fifteen acres was given a thinning for the primary purpose of liberating the pine reproduction and the planted trees.

Buckland-Fiske Lot

About fifty acres of planted white pine were released by cutting of grey birch and pruned to a height of five or six feet.

Hanson Lot — Marlboro

During last winter and spring about twenty acres were released and brush burned and 20 acres more were cleared and made ready for planting and 13,000 red and white pine were set in the cleared area. During the spring the men on this lot served as the district firewarden's emergency crew and fought at many large fires in the district.

Hopkinton-Glebe Land

This lot of 150 acres planted some years ago was given a release cutting, taking out grey birch and a serious outbreak of gypsy moth was nipped in the bud by scouting and creosoting about 75,000 egg clusters.

Hubbardston-Clark Lot

During the summer a crew of two men made a release cutting over 40 acres of this lot which was planted with red pine eight years ago.

Montague-Hodgman Lot

A fire burned over about one-half of this lot, 18 acres, in 1929, and a crew hired at the time of the unemployed appropriation was put to work clearing up the dead trees and later in the spring 10,000 red and 9,000 Scotch pines were planted.

In the fall a fifteen foot fire line was plowed all around this lot.

The portion of this lot not burned contains one excellent plantation of white, red and Scotch pine about 18 years old, and we used these stands to carry on pruning in sample plots.

Plot 1, white pine, contains one acre and 900 trees. Only 262 of the best and straightest trees were pruned head high. It required 3 2-3 minutes per tree to prune and pile the brush.

Plot 2, red pine, contains 1-4 acre and 240 trees, of which 220 were pruned. Average time was 2 1-5 minutes per tree.

Plot 3, Scotch pine, one acre, 1,000 trees, 934 of which were pruned and the average time was 3 1-3 minutes per tree.

Montague-Ross Lot

This lot was entirely burned in 1929 and at the time of the unemployment work last winter a crew of 12 men were put to work clearing off the dead wood. The lot was planted in the spring by the use of 15,000 Scotch pine.

Rowley-Sohier Lot

By use of money received from the special unemployment fund we placed five men at work on this lot for four weeks in March. This lot was planted 15 years ago with white pines and ash but grey birches, hickories and maples had come up with the planted trees and pretty well suppressed them. Along the state road a strip 1,000 feet long and 300 feet wide was thinned out by these men, taking chiefly grey birch and leaving the pines, ash and hickories. A part of this lot has long been used as a dump and this was cleaned up.

Later in the spring a couple of men set out 2,000 red pines to fill in blank spaces.

West Brookfield-Fullam Lot

This lot which in part was planted some years ago and which on the remaining area has a fine natural reproduction of white pine, has been given a release cutting on areas most needing attention.

STATE FORESTS
PRESENT ACREAGE

<i>Name of Forest</i>	<i>Acreage</i>
Arthur Warton Swann	986.75
Harold Parker	1,399.85
*Myles Standish	8,869.
Otter River	1,816.835
Savoy Mountain	7,858.38
Ashburnham	1,208.075
Barre	582.125
Bash Bish	390.08
Beartown	7,613.78
Blandford	1,734.8
Brimfield	1,381.4525
Clarksburg	1,864.
Colrain	1,206.194
Conway	1,563.12
D. A. R.	1,020.
Erving	4,436.565
**Federation of Women's Clubs	8.
Foxborough	662.2412
Hawley	2,410.7
Hubbardston	811.37
Huntington	441.
Leominster	1,890.3563
*Marthas Vineyard	4,472.75
Mohawk Trail	5,419.86745
Monroe	4,116.68
Mt. Grace	1,065.825
Northfield	235.4875
Oakham	802.05
October Mountain	13,652.6
Otis	3,201.81
Oxford	28.7
Peru	1,588.
Petersham	248.15
Pittsfield	1,155.84
Sandisfield	3,894.59
*Shawme	8,335.87
Shutesbury	638.36
Spencer	650.525
Sutton	362.7715
Templeton	609.375
Tolland-Granville	4,682.25
Warwick	1,239.85
Wendell	4,966.46
Westminster	342.45
Willard Brook	309.5325
Windsor	1,450.05
Worthington	225.
Unassigned	1,093.325

*114,942.84295

*Includes takings.

**This forest is in process of acquiring.

REPORT OF THE STATE FIRE WARDEN

MR. WM. A. L. BAZELEY, *State Forester.*

SIR: In compliance with the provisions of section 26, chapter 48 of the General Laws, I submit herewith a report of the work accomplished by this branch of the division during the past year.

The season of 1930 will be remembered by many, especially those engaged in the extinguishment of forest fires, as the worst fire season we have experienced in many years. This was caused not only by the long continued drought starting in the early spring and extending through the entire summer and fall months but also by the fact that we were faced with the unemployment situation. Many of these men were engaged in extinguishing fires and were continually increasing them that they might lengthen their time of employment. We also had an increasingly large number of boys and young men who were constantly starting new fires not for the purpose of employment but who were possessed with a mania for starting fires. Then there was the careless or thoughtless automobilist who was responsible for over 40% of forest fires which were caused by the throwing of burning matches and smoking material by the roadside.

Fires were not confined to any particular area as has been the case in past years but were general throughout the entire State with several very disastrous fires spreading from adjoining states.

Our spring fires started the middle of April and continued with no decrease until May 15. Many days during this period we averaged over 100 fires per day. In fact, conditions were so serious that His excellency Governor Allen closed the woodlands to the public on April 30 and the fishing season was suspended on May 7 as conditions continued to be serious. On May 15 the woods were reopened to the public and the fishing season was reopened.

Our fall fires started September 29 and continued until October 16. These fires, while not as damaging as the spring fires, were more expensive to extinguish owing to the fact that they were confined largely to burning into the ground and the shortage of water made the extinguishment very difficult. It was again necessary for the Governor to close the woodlands to the public on October 14 but as rain came the next day they were reopened on October 16.

It has been customary in former reports to include in our summary fires occurring in Dukes, Barnstable and Plymouth counties. As this area is largely so-called "Plain Lands" covered with the scrub oak and pine and carries a very high fire risk as compared to the balance of the State it is very misleading to include in this summary of fires and losses the fires that occur in this area. In this report we are making a separate summary of this area and the balance of the state and I believe this will be a more satisfactory generalization.

The value of power equipment was certainly demonstrated at these fires. Every piece of such equipment owned by the State was in constant use and proved it's great value. Our records show that 81 towns have some type of power equipment for use at forest fires and that 200 towns expended \$69,000 this year for equipment. Through the cooperative spirit shown by these towns this equipment is frequently available for use in neighboring towns when necessary in the suppression of large fires.

The unsatisfactory thing in the use of State equipment is the fact that invariably the fires get beyond control of the local wardens before we are called on for assistance and many instances have occurred when it has been impossible to render assistance owing to our equipment already being in use.

One new fire truck fully equipped was placed with district forest warden Frederick R. Stone at Sudbury. This gives us a complete fire fighting unit in each district in addition to the larger amount of equipment on our State forests.

A new telephone line two and one-half miles in length was constructed leading from the residence of Horace Brown in Drury to the New England Telephone Company trunk line near the Hoosac Tunnel. This is a very

important line giving us direct communication with the foremen having charge of our Mohawk Trail and adjoining holdings.

The telephone leading to our Lenox Mountain observation tower was relocated by the building of two and one-half miles of new line connecting with the New England Telephone Company lines in Lenox. This line is more accessible and should give us improved service.

Weather conditions made it impossible to complete all the repair and construction work planned. Several towers were repainted and telephone lines put in order but it was necessary to carry over a large amount of such work until this coming spring. It was found necessary to replace the old tower on Marthas Vineyard and a new galvanized iron tower 68 feet high with a 10 x 10 room at the top was erected. This tower is 20 feet higher than the original one and will give added protection to our own state land as well as the other forested area on the Island. A new wooden tower was erected in the town of Granville primarily for the protection of the Springfield and Westfield water sheds but the location is such that a large area of adjacent lands are covered from it to advantage. While the construction of this tower was supervised by our Mr. Ordway, the expense of such construction and the maintenance of the tower is paid by the cities of Westfield and Springfield.

The many incendiary fires made it necessary to prosecute a large number of cases and several boys were sent to reform schools and many others were either fined or received jail sentences. In the setting of fires without first procuring a permit, which is a violation, nearly 100 parties were either prosecuted and fined or made to settle the expense of extinguishment.

The county patrol law which was enacted last year was accepted by Barnstable county and two patrolmen equipped with small trucks and fire fighting equipment were on duty during the season. These patrolmen traveled 32,645 miles, interviewed 7,479 people, discovered 60 violations and attended 91 fires. The results have been satisfactory and the patrol will be continued again this year. In addition we expect that a patrol will be in operation on Marthas Vineyard this coming year. The counties of Plymouth, Norfolk and Bristol should make provision for a like patrol. It is endorsed very strongly by the wardens in these counties and should receive the endorsement of the County Commissioners.

A new town patrol law was enacted by the General Court this year giving the State Forester authority to order forest wardens to put on a patrol covering the dangerous forested area of their town during dry periods. This is being done at the present time by a large number of towns in eastern Massachusetts; in fact, over \$10,000 was expended this year by these towns.

The permit law was amended this year and now applies to the Metropolitan District as well as the balance of the State. A permit is required at all times except when the ground is covered with snow and no permit shall be granted for over ten days.

A new law carrying a penalty for discarding burning matches or smoking material in or adjacent to forest lands was enacted this year. This is largely an educational measure and when properly enforced and respected should reduce our roadside fires very materially.

The nine forest warden organizations are wide-awake and doing a remarkably fine piece of work. Several hundred wardens, fire chiefs and people interested in forestry matters belong to them. Meetings are held by each organization once a month and instructive talks on the work are given. These meetings are well attended and a great deal of interest is shown. Results of these meetings were brought out very forcibly in the handling of fires this year and the cooperative work showed remarkable results and was certainly appreciated by our department.

Our annual forest fire conferences were held again this year during January and February at Middleboro, Boston, Fitchburg, Worcester, Springfield, Greenfield and Pittsfield. These meetings were well attended

by wardens, chiefs of fire departments and selectmen. They are held for the purpose of instructing our wardens relative to their duties and the best methods of handling forest fires. A great deal of interest was shown in these meetings.

We are using every precaution possible in the protection of our state forests from the ravages of forest fires. In our holdings throughout the central and western part of the State we are clearing out old wood roads, locating water holes and making them accessible, cleaning up debris and inflammable brush along road sides. In the increased hazard district throughout eastern Massachusetts, Cape Cod and Marthas Vineyard we are giving them added protection by a system of fire lines surrounding the forests and by cutting up the interior into tracts of from 200 to 500 acres each and protecting each area by wide plowed fire lines suitable for the transporting of fire fighting equipment. We have had very few fires on the forests this year and only two serious ones. These were caused by the railroads, one on the Otter River Forest and the other on the Barre Forest. The railroads in each instance reimbursed the State for the damage.

We certainly appreciate the cooperation received from the State Police and Fish and Game wardens. They have given very valuable assistance at many of our fires and continually warned the traveling public of the importance of using care when in or near woodlands.

The United States Weather Bureau cooperating with the United States Forest Service has furnished us with very valuable weather reports during the season and we appreciate the painstaking service rendered by Mr. Reid, who is in charge of the work here.

The cooperative work between the Federal Forest Service and our department has continued under the Clark-McNary Act. The State allotment under this act was \$28,627. Mr. C. R. Tillotson, in charge of the Federal work in this section, has taken a very active interest in our work and has given instructive talks at our various meetings which he has attended.

I desire to take this opportunity to express to my associates in this branch of the work and to the forest wardens of the various towns and cities my appreciation for their hearty cooperation in this work.

The following tables show the comparative damages, costs, etc. for the past three years.

Respectfully submitted,

M. C. HUTCHINS,
State Fire Warden.

FOREST FIRES FOR THE PAST THREE YEARS

Year	Number of fires	Acreage burned	Cost to extinguish	Damage	Average acreage per fire	Average damage per fire
1928	930	12,516	\$20,402.00	\$58,824.00	13.46	\$63.25
1929	1,198	16,569	31,836.00	67,731.00	13.83	56.54
1930	1,922	72,988	122,478.00	309,662.00	37.97	116.11

TYPES OF CLASSIFIED DAMAGES

	1929	1930
Standing trees	\$16,444.00	\$131,640.00
Logs, lumber, cordwood	29,596.00	128,953.00
Buildings	16,510.00	38,585.00
Bridges, fences	95.00	852.00
Sproutland	5,086.00	9,632.00
Total	\$67,731.00	\$309,662.00

TYPES OF LAND BURNED OVER (ACRES)

	1929	1930
Timber	1,646	13,997
Second growth	3,668	31,841
Second growth, not merchantable	3,456	13,951
Brush land	5,086	9,632
Grass land	2,713	3,567
Total	16,569	72,988

FOREST FIRES OF 1930

Months 1929	Number	Acreage burned	Cost to extinguish	Damage
December	2	11	\$17.00	\$10.00
1930				
January	6	9	41.00	—
February	13	45	73.00	219.00
March	444	4,874	8,397.00	22,515.00
April	631	19,138	25,840.00	113,934.00
May	332	21,011	30,409.00	124,906.00
June	51	857	2,710.00	2,178.00
July	38	57	494.00	455.00
August	59	9,454	15,506.00	22,624.00
September	154	14,587	29,709.00	15,739.00
October	167	2,836	8,794.00	6,608.00
November	25	109	488.00	474.00
Total	1,922	72,988	\$122,478.00	\$309,662.00

CLASSIFIED CAUSES OF FOREST FIRES, 1929 — 1930

	1929		1930	
	Number	Per Cent	Number	Per Cent
Railroad	237	19.78	309	16.08
Brush burning	141	11.77	200	10.41
Incendiary	52	4.34	156	8.12
Unknown	210	17.53	233	12.12
Miscellaneous	558	46.58	1,024	53.27
Total	1,198	100.00	1,922	100.00

RAILROAD FIRES OF 1930

Railroad	Mileage of track	Number locomotives	Number of fires	Acreage burned	Cost to extinguish	Damage
New York, New Haven and Hartford	1,906	957	109	963	\$2,554.00	\$4,753.00
Boston & Albany	974	318	48	3,113	2,964.00	13,334.00
Boston & Maine	1,923	784	146	3,670	5,307.00	32,656.00
Central Vermont	73	23	3	28	31.00	100.00
Hoosac Tunnel and Wilmington	9	3	3	650	327.00	650.00
Total	4,885	2,085	309	8,424	\$11,183.00	\$51,493.00

FOREST FIRES IN BARNSTABLE, DUKES AND PLYMOUTH COUNTIES

Counties	Number	Acreage burned	Cost to extinguish	Damage	Average acreage per fire	Average damage per fire
Barnstable	97	16,629	\$21,301.00	\$8,753.00	171.05	\$90.24
Dukes	7	2,133	1,959.00	6,085.00	304.71	869.29
Plymouth	161	5,889	19,927.00	41,302.00	36.57	256.53

REPORT OF THE EXTENSION FORESTER

The Extension Forester has stressed the same problems as during the year 1929, namely, thinning, weeding and planting. These sub-projects were chosen because in them there is still a great field for work. The first two sub-projects, thinning and weeding were stressed considerably more than planting, because planting has been carried on through its own momentum, while the other more important lines of work to the farmer have received only a somewhat superficial attention.

The market conditions are not very encouraging, consequently there is need of considerable study to locate outlets for the farm woodlot products. Whenever the Extension Forester visits a farmer with recommendations for the improvement of his woodlot, he receives inquiries as to his product. Unless there is an outlet for material cut, it is rather difficult for the Extension Forester to get the farmers to cooperate with him. Of course the farmer uses considerable fuel wood annually. He can cut this with an eye for improvement of his woodlot, but further than that he is loathe to go. The problem of markets has always been attacked from the farmers' standpoint. The farmer is not always in a position to market his products, consequently, it is believed that by a scheme of locating market requirements and submitting them to the mill men and the farmers, a much better income may be derived for the producer. This will create a greater incentive to practise woodlot management.

This year the Extension Forester tried a new method of teaching subject matter — visual education. On well travelled highways, spots were chosen where the conditions of growth were right to show the benefits of thinning and weeding. In all seven of these places roadside show windows were established. The influence of these plots has been felt in every section where they were placed. In other sections where demonstrations were held, the Extension Forester would number 50 trees and have those assembled decide whether it were proper to take out a tree or leave it. After the discussion, the group would actually remove the trees, so that every one could see the finished thinning operation.

Twenty-five 4H forestry clubs were established last year with an enrollment of 217; 74 completed the work, while the others obtained a great deal of forestry education even though they failed to report progress. This year the Governor and Council authorized the Department of Conservation to allow 250 trees to each member who takes the second year work. The requirements are that he or she must plant 500 trees. Having 250 given them makes it necessary for them to purchase 250. This allowance was made because it was felt that an incentive to carry on the forestry work was needed.

This year the Extension Forester spent two weeks in each county acquainting the county agent with the work. Twelve thinning demonstrations were held with an attendance of 79, 4 new roadside plots were established, 53 farm visits were made and 14 lectures given.

The specific results of the work this year are as follows:

<i>Operation</i>	<i>Owners</i>	<i>No. Trees</i>
Planting	56	178,300
Woodlot thinning	70	—
Woodlot Weeding	55	—

These accomplishments are a part of the five-year program laid out in 1928.

Besides this definite outline of work, the results of the educational campaign cannot be estimated in figures.

REPORT OF FORESTER IN WESTERN MASSACHUSETTS

The following is a brief report of the forestry work conducted through the West Springfield office of the Division of Forestry during the fiscal year ending November 30, 1930.

The work, which comprises forestry on state forests and extension forestry, has been conducted by Dennis C. A. Galarneau, in charge under instruction from the chief forester in Boston. Mr. R. M. Hick who has

worked under his supervision since 1924 as forest and type surveyor resigned on January 31 to take a position as a district forester in the Conservation Department of New York state. No permanent appointment has been made to replace Mr. Hick.

The forest type surveys on state forests have been continued. Nineteen tracings of field maps covering 16,826.7 acres of state forest lands were completed. Included within this area were all or portions of the Barre, Brimfield, Colrain, Erving, Hawley, Mount Grace, Oakham, Otis, Otter River, Pittsfield, Savoy Mountain, Warwick, and Wendell State Forests. It will be necessary to have the data on the resurvey of the boundaries before the final tracing for the D. A. R. State Forest of 1,020 acres can be finished. With this exception, all the field surveys completed to the end of 1929 have been put in final form. Although these nineteen new maps have not been colored, on account of lack of office assistance, blueprints have been made available for the home office and for the district field men. When the colored prints have been submitted there will be a total of fifty-two forest type maps representing 57,748.6 acres in the state forest atlas in the Boston office.

The field season of 1930 was started with a crew of six men, which was gradually reduced to two. As in the past, two men worked together, one acting as compass-man while the other gathered the field data. At the end of the fiscal year approximately 12,640 acres had been typed. This included all of the Swann, Beartown, Bash Bish, Clarksburg, and a portion of the Monroe State Forests. In the case of the Clarksburg State Forest, data on additional lands consisting of interior holdings was typed, since these lands may eventually be purchased and form a part of that forest.

Forest type surveys now have been conducted on a total of 71,596.16 acres in connection with the state forests. This includes state owned lands and adjacent properties that may be purchased. Shortly after the close of this fiscal year, the field work will have been completed on the Monroe State Forest and some interior holdings not state owned. This will add about 3,500 acres to the above total. With the completion of the present field season, all the large blocks of state forest lands in the western district will have been typed. The remaining lands consist, for the most part, of smaller lots for which boundary surveys have not been available.

By special instructions, examinations have been made and reports submitted on lands for possible purchase for state forest purposes in Huntington and in Middlefield. Several other parcels were offered to the State for similar purposes, but since little or no land was being acquired these were not examined.

Advice, cooperation, and educational work along forestry lines, which service has been rendered by the Division of Forestry since its inception, is now termed extension forestry. The service includes examination of lands, planting, town forests, shade trees, insect damage, meetings, cooperation, exhibits, and talks. Requests for this service come from individuals, organizations, schools, towns and cities. The advice given is based on personal examinations of conditions on the ground.

Among individuals, planting still is of greatest interest, but many have turned to the improvement of their woodlands and cut-over areas. This is especially true where the ice storm of 1921 caused such extensive damage to the hardwoods, and where it is pointed out that good natural reproduction may be benefited by a partial removal of the crown cover which usually consists of inferior species. Some requests have been received for advice as to the care of woodlands to be retained as park areas.

During the year it was possible to cooperate with the Westfield River Parkway Association in its program of establishing so-called "sky line" routes through the Berkshires from Westfield. Assistance both in the office and in the field was rendered to the Appalachian Mountain Club in locating a section of the Long Trail through October Mountain State

Forest. As a member of the Springfield Chamber of Commerce and the Hampden County Improvement League Forestry Committee, it was possible to guide these groups of interested men in their forestry programs. By request of the Northeastern Forest Experiment Station, arrangements were made for the annual meeting of the New England Forest Research Council at Springfield, as has been done for the past several years. Advice was given to the Girl Scouts of Springfield in the development of their camp sites at East Otis and in Springfield, and trees were marked for cutting on the Springfield Girls' Club property in Holland.

Since the inclusion of watershed lands as town forests was possible, the western district has held the record of having the largest town forest within the State. First came Russell, followed by Westfield, and now North Adams holds the lead. While planting continues to be the major project, the town forests are devoting more attention to the areas already wooded. Dalton and Williamstown have completed improvement cuttings in old and ice-storm-damaged hardwoods, and other towns have made release cuttings and thinnings on their lands. Walpole, Norton, and Scituate took advantage of the State's offer to assist the smaller towns in the development of their forests, and this office has made type surveys for these towns.

This year the Federal Government working with the State has extended the Japanese beetle quarantine to include Hampden County. An agent has been placed at the Hampden County Improvement League building at West Springfield, and a field force has been provided to enforce the provisions of the quarantine.

REPORT OF THE SUPERINTENDENT OF MOTH WORK

MR. WILLIAM A. L. BAZELEY, *Commissioner*,

SIR: It is with great pleasure that I submit to you my annual report for 1930. As you will see from the figures I give below, conditions are much improved in the whole State. Much less stripped area is reported by the division men, the district north of Boston being particularly free from feeding, and showing a lighter deposit of eggs. South and southwest of Boston, a heavier egg deposit shows this fall. A total of about 27,000 acres show feeding, of which about one-third were practically stripped. A little more than one-third of this area shows only very light feeding. This is a great improvement over the 90,000 acres reported stripped last year.

There are several contributing causes to this result: the wilt disease of the caterpillars and pupae which follows heavy feeding of one year by its prevalence the next, careful work on the part of towns and cities, good weather for spraying, and the usual help from parasites which we can depend on to reduce numbers when the insect occurs in great numbers.

The heaviest egg-laying this fall is to be found in the following towns, all situated south or southwest of Boston. Middleborough, Wareham, Sandwich, Falmouth, Mashpee, Barnstable, Dennis, Yarmouth, Harwich, Brewster and Chatham, Tisbury, West Tisbury and Chilmark, Acushnet, Berkley, Dighton, Dover, Franklin, Freetown, Mansfield, Medway, Norfolk, No. Attleborough, Plainville, Rehoboth, Seekonk, Sharon, Stoughton, Swansea, Taunton, Walpole, Westwood and Wrentham.

A few towns that have given us some trouble in the past have at last been awakened to the seriousness of the situation and have done good work this last year. There are some towns where a change in local superintendent would be a help in the work and we hope to have this condition rectified in the opening of the new year. I hope that the State will not withdraw any of its support from the work at this crucial time and that we may depend on the cities and towns to cooperate as well the coming year as they have in the past year.

In the spring of 1930 a considerable increase in browntail webs was noted. These were cut and burned and observations this fall show a marked decrease. Usually the worst district in Massachusetts for this

insect is that comprising the towns bordering the New Hampshire line, and we have never had before such good cooperation from the New Hampshire authorities. Mr. O'Kane, State Forester of New Hampshire, has done his best to clean up the towns in southern New Hampshire, thus preventing this reinfestation of our state. We hope that the work will be effective. Another bad spot was at Oak Bluffs on Marthas Vineyard. That was thoroughly cleaned up, the webs all burned and we hope this colony is eliminated. With the good work that is now being done by the combined efforts of state, city and town, there seems little fear that the brown-tail moth will ever become a serious menace again.

The usual work has been carried on under the North Shore Special Fund, all the money being furnished by private funds, with the city of Beverly and the town of Manchester contributing. This division has contributed supervision and clerical assistance.

North Shore Financial Statement

Balance from 1929	\$1,886.64
Interest on bank deposit	16.97
Town of Manchester	1,000.00
Highway Division	255.88
B. W. Palmer	28.00
Norumbega Council Boy Scouts	100.00
Wm. D. Sohler, Jr.	6.57
Wm. D. Sohler	5.00
Wm. D. Sohler, Agt.	2,000.00
City of Beverly	999.17
	\$6,298.23

Expenses

Rent	\$385.00
Lead	304.16
Telephone	14.75
Travel	20.35
Payroll	2,842.05
	3,566.31

Balance to 1931 \$2,731.92

I append reports submitted to me by Mr. A. F. Burgess, Director of the Federal Gypsy Moth work in New England, and Mr. C. W. Collins of the U. S. Bureau of Entomology.

Yours very truly,

GEORGE A. SMITH,
Superintendent of Moth Work

FEDERAL GYPSY MOTH AND BROWN-TAIL MOTH WORK IN
MASSACHUSETTS, 1930

By A. F. Burgess

During the calendar year there has been no change in the quarantine lines in Massachusetts, and the materials requiring inspection have been examined and certified by inspectors of the Plant Quarantine and Control Administration. The number of shipments have not varied greatly from those of previous years. The great majority were forwarded from the eastern part of the State, which has been infested with these insects for many years. Very careful inspection is therefore required to make certain that no infested material is allowed to move from the quarantined area.

The number of infested locations in the Barrier Zone, which includes Berkshire County in Massachusetts, showed a considerable increase over those found during the previous year. Most of these were confined to the southern part of the county where scattering infestations were found in many woodland areas. These discoveries were made as the result of an intensive campaign of woodland scouting. Up to July 1, 1930, all

woodlands in the southern half of the county had been scouted. Clean up and treatment measures were applied to all infestations found; over 1,400 acres were sprayed during June and July.

Records of defoliation in Massachusetts were secured cooperatively with the district superintendents of the State Department of Conservation, the acreage during the summer of 1930 showing a considerable decrease from that of the previous year, and being confined principally to the eastern part of the State.

In July large collections of female gypsy moth pupae were collected in territory south of Boston. From the moths that emerged an extract was secured which was used in areas in Berkshire County as an attractant for the male insects. This attractant was placed in small cages and used to check up the results of treatment work in towns where only slight infestation was found earlier in the season. The results indicated that the work had been effective, only a few moths being captured in the areas which had the worst infestations. This is not a thoroughly reliable method of determining the presence of the gypsy moth in the area where close inspection work is necessary, but is of some value as a check on the results of scouting and treatment.

The cooperative relations which exist with the Department of Conservation have contributed materially to the good results secured in the Barrier Zone during the year.

NATURAL ENEMIES OF THE GYPSY MOTH AND THE BROWN-TAIL MOTH IN MASSACHUSETTS, 1930

By C. W. Collins
U. S. Bureau of Entomology

The total acreage of heavy defoliation by the gypsy moth was much less in 1930 than in 1929. The sections suffering most severely were in Barnstable county and smaller areas in Plymouth and Bristol counties together with some spots of heavy feeding in other parts of the State.

The parasitism among the gypsy moth eggs was very similar to that of 1929 without any appreciable increase while the larval collections and rearings in 1930 did show an increase. The pupal collections over the same area in 1930 showed slightly less parasitism than in 1929. The "wilt" disease among the larvae and pupae was prevalent as usual in the medium and heavy infestations. The *Calosoma* beetles maintained their usual abundance in many woodland areas which were favorable to the survival of the host as well as the predator.

The importation of parasites from Europe has been continued and two additional species attacking the gypsy moth have recently become established in Massachusetts.

The condition of infestation of the brown-tail moth in the eastern part of the State is not serious other than in a few isolated localities where it showed some increase over 1929. The parasitism of the summer larvae was about the same in 1930 as in 1929 while there was a slight increase in parasitism of the hibernating larvae during the winter of 1929-30 over that of 1928-29.

APPENDIX
FINANCIAL STATEMENT
*Report and Expenditures for Year ending
November 30, 1930*

Purpose of Appropriation	Amount	Balances, Refunds, Transfers	Expendi- tures	Balance to 1931	Balance to Treasury
Salary of Commissioner	\$6,000.00	—	\$6,000.00	—	—
Personal Services	14,100.00	—	13,958.00	—	\$142.00
Expenses of Commissioner	250.00	—	36.61	—	213.39
Office Incidentals	4,000.00	—	3,387.27	—	612.73
General Forestry and Nurseries	15,000.00	—	14,816.37	—	183.63
Purchase and Planting of Forest Lands	2,000.00	—	1,997.40	—	2.60
Prevention of Forest Fires	63,300.00	\$68.00	63,367.97	—	.03
Reimbursement to Certain Towns —Fighting Forest Fires	2,000.00	—	1,753.36	—	246.64
Protection against Forest Fires	3,500.00	—	3,454.41	—	45.59
Suppression of Gypsy and Brown Tail Moths	65,000.00	6,990.42	68,294.48	3,695.94	—
Maintenance of State Forests	25,000.00	—	24,999.21	—	.79
Purchase and Development of State Forests	175,000.00	10,918.64	183,641.05	2,277.59	—
Maintenance of Mount Grace	500.00	—	492.53	—	7.47
Maintenance of Standish Monument	2,000.00	—	1,990.97	—	9.03
Land for Willard Brook State Forest	—	19,346.65	12,817.49	6,529.16	—
Repair of Standish Monument	8,500.00	—	2,095.25	6,404.75	—
Forest Fire Patrol	4,000.00	—	3,780.08	—	219.92
Federal Forestry Fund	—	39,438.07	30,055.70	9,382.37	—
Comfort Station at Mohawk Trail	4,000.00	—	3,549.13	—	450.87
Totals	\$394,150.00	\$76,761.78	\$440,487.28	\$28,289.81	\$2,134.69

STATEMENT OF EXPENDITURES AND RECEIPTS ON STATE FORESTS
FOR THE YEAR ENDING NOVEMBER 30, 1930

State Forest	Planting and Nursery	General Upkeep, Fire Lines, Roads	Surveying and Titles	Land	Totals	Receipts
Arthur Warton Swann	\$217.49	\$1,747.69	—	—	\$1,965.18	—
Ashburnham	326.50	1,571.64	511.87	—	2,410.01	—
Barre	—	—	—	—	—	\$4,400.00
Bash Bish	—	—	401.00	—	401.00	—
Beartown	304.50	255.65	2,187.48	930.15	3,677.78	—
Blandford	—	1,086.44	—	—	1,086.44	50.00
Brimfield	1,675.00	713.25	318.79	2,402.43	5,109.47	—
Campbell's Falls	—	—	49.00	—	49.00	—
Clarksburg	—	111.97	1,412.20	500.00	2,024.17	—
Colrain	—	333.00	—	—	333.00	100.00
Conway	—	—	—	—	—	—
D. A. R.	—	2,029.00	10.00	—	2,039.00	—
Erving	1,350.87	3,270.17	16.05	—	4,637.09	334.50
Federation of Women's Clubs	—	2.35	188.31	—	190.66	—
Foxborough	450.00	1,635.67	443.35	—	2,529.02	429.50
Harold Parker	378.30	4,137.19	175.22	530.18	5,220.89	125.00
Hawley	1,878.90	—	172.08	630.00	2,680.98	25.00
Hubbardston	182.00	598.50	—	—	780.50	50.00
Huntington	—	—	27.65	1,250.00	1,277.65	—
Leominster	996.64	3,587.92	210.90	367.10	5,192.56	85.50
Marthas Vineyard	941.57	6,149.78	1.36	105.75	7,198.46	50.00
Mohawk Trail	149.50	3,002.60	52.03	20.00	3,224.13	1,938.59
Monroe	2,158.08	—	1,240.40	1,550.00	4,948.48	28.11
Mount Grace	109.12	1,075.35	52.27	—	1,236.74	10.00
Myles Standish	2,127.55	10,134.05	73.60	—	12,335.20	1,601.00
Northfield	—	—	—	—	—	—
Oakham	—	1,325.25	149.75	—	1,475.00	22.00
October Mountain	283.58	12,924.59	225.15	—	13,433.32	2,912.05
Otis	—	2,277.04	—	—	2,277.04	547.51
Otter River	2,146.27	3,346.29	20.00	—	5,512.56	2,992.31
Oxford	—	84.75	—	—	84.75	—
Peru	—	—	—	—	—	—
Petersham	—	—	—	—	—	—
Pittsfield	—	4.20	—	—	4.20	—
Sandisfield	—	1,270.86	—	—	1,270.86	—
Savoy Mountain	—	1,050.50	253.85	1,329.00	2,633.35	109.40
Shawme	3,434.91	6,443.63	23.05	313.75	10,215.34	4.00
Shutesbury	249.55	1,050.75	12.75	—	1,313.05	2.00
Spencer	281.75	1,185.80	36.50	—	1,504.05	502.01
Sutton	—	—	62.37	500.00	562.37	—
Templeton	715.54	564.10	1.29	74.38	1,355.31	—
Tolland-Granville	94.40	3,658.92	—	—	3,753.32	529.45
Warwick	141.17	272.90	376.42	1,037.80	1,828.29	—
Wendell	714.06	3,565.62	542.39	1,307.00	6,129.07	55.00
Westminster	—	152.50	1.86	—	154.36	—
Willard Brook	482.25	2,875.75	2,557.33	12,370.00	18,285.33	84.00
Windsor	—	147.95	—	—	147.95	54.53
Worthington	—	—	—	—	—	—
Totals	\$21,789.50	\$83,643.62	\$11,836.27	\$25,217.54	\$142,486.93	\$17,041.46

Receipts for 1930

For cord wood	\$1,873.47
“ books, maps, etc.	23.95
“ berries, apples, etc.	197.10
“ lumber	5,533.46
“ Christmas trees	422.50
“ fire damages	7,150.00
“ right of way	50.00
“ press brush	52.93
“ camp site rentals	1,650.50
“ buildings, loam, etc.	111.50
“ receipts at Standish Monument	677.17
“ redemption of lots	421.15
“ trees sold	12,130.71
“ examinations	75.00
“ forest fire supplies	1,611.63
“ gypsy moth supplies	1,041.74
“ interest on bank account	161.47
Total	\$33,184.28

THE DISTRIBUTION OF SUPPLIES

Supplies have been furnished as usual for gypsy moth work, to such towns as we could give aid to with our limited appropriation. We have also purchased supplies for forestry and forest fire work. For all purchases made under the appropriation for Suppression of Gypsy Moths, transfers have been made from other appropriations.

List of Towns and Amounts of Supplies Furnished for 1930

Ashby	\$221.32	Middleton	\$184.97
Berkley	222.38	Newbury	748.56
Berlin	329.18	North Reading	452.56
Bolton	539.17	Northborough	646.77
Boxborough	322.88	Norwell	487.03
Boxford	332.33	Pembroke	1,249.10
Boylston	394.23	Plainville	305.46
Brewster	534.08	Plympton	114.02
Carlisle	213.16	Raynham	32.16
Dennis	3.09	Rowley	731.81
Dunstable	799.55	Sandwich	564.13
Eastham	213.91	Sherborn	17.55
Freetown	543.00	Shirley	378.41
Georgetown	646.81	Sterling	111.63
Halifax	609.86	Stow	317.44
Holliston	159.27	Sudbury	540.93
Lakeville	356.73	Truro	145.32
Lunenburg	577.05	Tyngsborough	627.97
Lynnfield	368.81	Wellfleet	262.85
Mashpee	584.59	West Bridgewater	712.66
		West Newbury	261.64
		Total	\$16,864.37

Purchases other than Town Supplies

Animal Industry Division	1.05
Automobile supplies	276.56
Forest Fire Patrol	35.92
Fisheries and Game Division	11.90
General Forestry and Nurseries	324.39
Maintenance of State Forests	166.74

P.D. 73	20
North Shore work	29.61
Prevention of Forest Fires	833.87
Purchase and Development of State Forests	655.85
Shop and trucks	7.42
Total supplies furnished	\$19,207.68

STATEMENT OF EXPENDITURES AND REIMBURSEMENTS OF TOWNS AND CITIES FOR THE YEAR ENDING NOVEMBER 30, 1930

Cities and Towns	1930				1931		
	Required Expenditure	Total Net Expenditure	Private Work	Reimbursement	Supplies	Total Amount Received from State	Required Expenditure
Ashby	\$420.11	\$419.53	\$54.00 } *167.53 }	—	\$221.32	\$220.74	\$420.11
Berkley	404.96	832.68	148.00	\$427.00	222.38	649.38	404.96
Berlin	445.04	774.50	199.50	329.46	329.18	658.64	445.04
Bolton	532.58	684.24	49.00 } *257.66 }	151.50	539.17	690.67	532.58
Boxborough	154.67	347.73	*170.25	193.06	322.88	515.94	154.67
Boxford	545.17	1,044.28	433.47	497.75	332.33	830.08	545.17
Boylston	381.41	831.48	258.50 } *44.89 }	400.00	394.23	794.23	381.41
Brewster	781.97	1,202.69	406.05 } * 5.04 }	402.00	534.08	936.08	781.97
Carlisle	311.79	918.51	—	525.07	213.16	738.23	311.79
Dennis	1,327.14	—	—	—	3.09	—	1,327.14
Dunstable	200.64	421.09	158.76 } *221.86 }	220.45	799.55	1,020.00	200.64
Eastham	455.57	880.90	130.00	303.00	213.91	516.91	455.57
Freetown	884.69	884.76	482.81	—	543.00	543.00	884.69
Georgetown	849.58	1,397.40	701.81	547.00	646.81	1,193.81	849.58
Halifax	620.58	1,020.50	431.80 } * 28.52 }	399.92	609.86	1,009.78	620.58
Heath	200.75	358.55	9.00	157.40	—	157.40	200.75
Holliston	1,553.51	2,280.82	204.00	482.50	159.27	641.77	1,553.51
Lakeville	675.58	993.03	131.00 } * 74.76 }	299.63	356.73	656.36	675.58
Lunenburg	1,018.24	2,482.25	417.80	700.98	577.05	1,278.03	1,018.24
Lynnfield	1,354.57	1,824.46	371.00	449.94	368.81	818.75	1,354.57
Mashpee	446.76	1,450.47	95.85	746.39	584.59	1,330.98	446.76
Middleton	698.15	948.15	166.40 } * 54.93 }	250.00	184.97	434.97	698.15
Newbury	1,036.09	2,006.30	1,135.00 } * 421.96 }	498.00	748.56	1,246.56	1,036.09
Norfolk	741.07	1,231.88	159.50	490.81	—	490.81	741.07
North Reading	955.49	1,592.35	825.50	526.50	452.56	979.06	955.49
Northborough	920.15	927.85	589.05 } *164.97 }	—	646.77	646.77	920.15
Norwell	861.61	857.19	878.59 } * 29.82 }	—	487.03	482.61	861.61
Pelham	285.43	474.71	51.00	189.00	—	189.00	285.43
Pembroke	1,160.06	1,758.13	482.75	450.40	1,249.10	1,699.50	1,160.06
Plainville	734.76	1,269.89	124.00	510.00	305.46	815.46	734.76
Plympton	311.93	812.47	156.00 } * 3.00 }	500.54	114.02	614.56	311.93
Raynham	847.56	849.18	231.85	—	32.16	32.16	847.56
Rowley	685.23	1,194.59	538.18 } *298.15 }	509.35	731.81	1,241.16	685.23
Sandwich	1,090.60	1,662.54	75.90 } *175.70 }	498.00	564.23	1,062.23	1,090.60
Sherborn	724.43	—	—	—	17.55	—	724.43
Shirley	1,005.40	1,506.51	187.31	501.11	378.41	879.52	1,005.40
Sterling	720.70	1,225.08	—	504.00	111.63	615.63	720.70
Stow	736.94	1,198.66	151.05	460.75	317.44	778.19	736.94
Sudbury	1,081.94	1,434.64	207.96	300.00	540.93	840.93	1,081.94
Truro	462.26	810.83	111.00 } * 4.00 }	335.00	145.32	480.32	462.26
Tyngsborough	556.86	998.41	350.25 } * 98.42 }	441.55	627.97	1,069.52	556.86
Wellfleet	605.03	902.09	170.40 } * .51 }	297.06	262.85	559.91	605.03
West Bridgewater	1,326.78	1,896.92	796.00 } * 71.54 }	520.70	712.66	1,233.36	1,326.78
West Newbury	516.40	699.03	100.00	181.28	261.64	442.92	516.40

