Massachusetts State Forestry Programs

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TODAY, THE MASSACHUSETTS Department of Environmental Management, the Commonwealth's leading forestry agency, manages 280,000 acres of state forests and parks, administers programs that both regulate and promote forest management on 2.9 million acres of private forestland, and protects these same forests from fire, insects, and disease. The state's official involvement in managing the environment had its beginnings at the turn of this century. The DEM itself is relatively recent; its immediate predecessors include a number of organizations and state administrative units that ultimately became the Department of Environmental Management in 1975. All were involved with developing policy for Massachusetts' public and private forests. These entities include the Trustees of Reservations, the Massachusetts Forestry Association, the Office of the State Forester, the State Forest Commission, the Department of Conservation, the Department of Natural Resources, and others you will read about in this account.

The first major step taken by the Massachusetts legislature to become more directly involved in forestry matters was in 1892. In the 1890s there was no state-owned forest or park land in Massachusetts, with the exception of several thousand acres of desolate sand dunes and contorted pitch pine on the outer reaches of Cape Cod, known as the Province Lands. This once-productive forest had been common land since the early days of the Massachusetts Bay Colony. For almost 300 years it had been cut repeatedly to provide both lumber and fuelwood for nearby Provincetown. The organic matter and the nutrients in the sandy soil became so depleted that they could barely support tree growth. It was a classic example of a land that had been taken beyond the limits of sustainability — the Massachusetts Bay Colony's "Dust Bowl."

But the Province Lands were not representative of Massachusetts forests. At the turn of the century, much of the land in the rural areas of the state that was not under the plow or pastured was in transition from abandoned farmland to forest and consisted primarily of what was known as "old-field" white pine. While the biological process of succession was under way on hundreds of thousands of acres across the state, an ever-increasing demand for the products that could be manufactured from this second forest was being created in an economy that transcended Massachusetts and reached to foreign shores. A great deal of unregulated timber harvesting, fueled by both greed and ignorance, was undertaken to fill that demand. Estimates of the amount of timber harvested ranged from five to ten times the amount of that harvested today — from a forest about half the area of today's. The slash (tops and branches of trees that have been harvested for lumber) left in the wake of this cutting made Massachusetts' woodlands a virtual tinderbox. This circumstance and the fact that there were no organized rural fire-suppression agencies led to uncontrolled wildfires that often burned for days and scorched tens of thousands of acres of woodland each year.

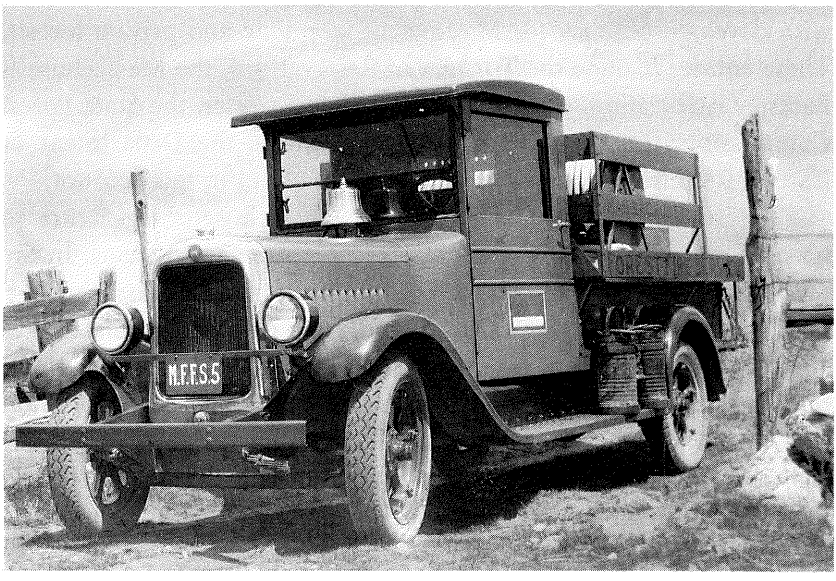

Figure 1. Early-twentieth-century state fire truck used to assist town forest wardens in the suppression of forest fires. Edgar S. Burton lantern slide collection, Massachusetts Department of Environmental Management.

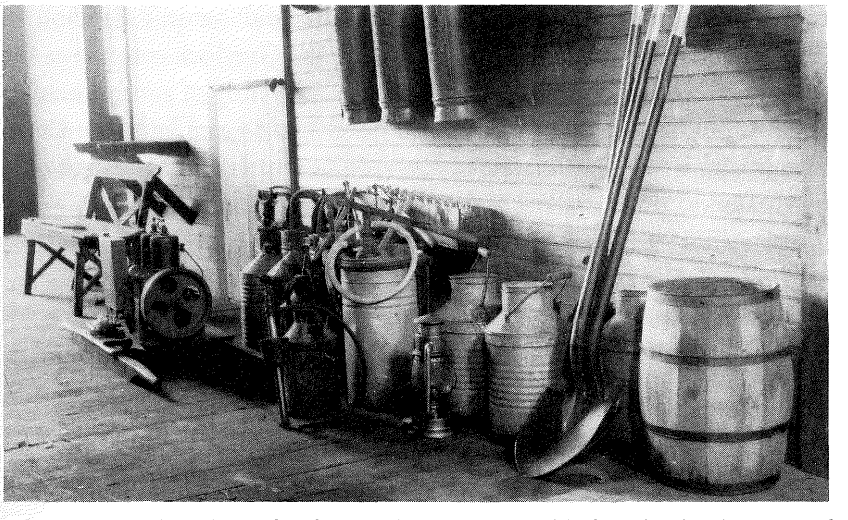

Figure 2. Standard forest fire fighting hand tools used before the development of the Fitzhenry-Guptill pump and the modern, mechanized brush-breaker. John H. Thurston lantern slide collection, Massachusetts Department of Environmental Management.

A public outcry against these conditions prompted the Massachusetts legislature to establish the Trustees of Reservations in 1892, which was authorized "to purchase, preserve and administer areas of unusual scenic, historic or natural interest for the benefit of the public." Its first accomplishments were to carry out a study regarding the advisability of establishing a park system in the metropolitan Boston area. Over the next eight years, one of the most revered park systems in the world was created at a cost of over $6 million as nearly 10,000 acres were acquired and connected by 17 miles of parkway. Included in this system were the Blue Hills and the Middlesex Fells Reservations.

In the latter part of the same decade, a private organization presented to the state its first state forest reserve. In 1897, a number of conservation-minded citizens united to form the Massachusetts Forestry Association (MFA). At that time, Mount Greylock in northern Berkshire County, the Commonwealth's highest peak, was under assault by loggers. The highly visible east face of the mountain had been clear-cut and plans were being made to harvest the timber on its north slope. There was a great deal of local concern about this and it was brought to the attention of the MFA. The association lobbied for and

received $25,000 from the state legislature and secured $16,000 in donations from private sources to acquire the Greylock summit as the first state reservation in 1898. This was the beginning of a movement to acquire public forest land in Massachusetts; six years later the Commonwealth would have a state forester; and eventually the means would be created to put a system of forest reserves in place.

The Place of Foresters and Forest Policy in State Government

THE STATE FORESTER'S OFFICE

In 1904 the Commonwealth of Massachusetts, by an act of the legislature, created the Office of the State Forester and appropriated the sum of $5,000 to support the office. On August 12 of that year Alfred Akerman, who had been the state forester of Connecticut, became the first man appointed to the post of state forester. The responsibilities of the position were clearly stated in Chapter 409, Acts of 1904: the state forester was to promote the "perpetuation, extension, and proper management of forest lands within the Commonwealth, both public and private."

One of the state forester's many duties was to conduct a course of instruction at the Massachusetts Agricultural College (which ultimately became the University of Massachusetts, Amherst) on the art and science of forestry. Akerman's perspective on the course was as follows:

> This course is designed to prepare prospective farmers for the management of their woodlots. It is not designed to fit men for the practice of the profession, which usually takes two or three years of close application after the undergraduate courses have been finished. The course at the Agricultural College would no more fit a man for the practice of forest engineering than a short course on home sanitation would fit a man to practise medicine.

The first course was held in February and March of 1905. It consisted of 12 lectures and 2 field exercises and had an enrollment of 29 men.

Further, "The state forester may, upon suitable request, give to any person owning or controlling forest lands aid or advice in the management thereof," and charge the landowner or organizations he lectured

to for traveling and subsistence expenses. The act also gave the state forester the authority to establish a forest nursery on the grounds of the Massachusetts Agricultural College at Amherst.

In his first year in office, Akerman began two projects that would last for several years: a study of the growth and yield of eastern white pine, in cooperation with the U.S. Forest Service and Harvard University, and the development of a forest map of the Commonwealth, in cooperation with the state Bureau of Statistics of Labor. A forestry library of 141 books and pamphlets was also assembled, both as reference material for the staff, and for the benefit of "all who may wish to use it."

In the previous eight years the legislature had appropriated $6 million for the acquisition of metropolitan parks and additional amounts to acquire a number of state reservations, but Akerman felt that "the Commonwealth ought to extend its policy of park reservation to include genuine State Forests." He also suggested that portions of the existing state reservations could produce timber "without any reduction in their value as parks. . . . But the lands mentioned are small in area, and the State might well follow the precedent established by several other states, and acquire lands for the purpose of growing timber on them." By then the state of New York had acquired a 1.4 million-acre forest reserve, and Pennsylvania, 572,000 acres of public forestland. Citing a recent 900-acre land purchase by the state of Connecticut, Akerman declared that "large areas of overgrown, stony, abandoned pastures, cutover lands that have been burned repeatedly, scrub oak lands and the like, that are in such condition that an individual owner cannot afford to improve them" could form the basis for a state forest system in Massachusetts. Such lands could be acquired for less than $5 an acre — a statement that those who followed him would wish hadn't been made. Not until 1955 would this ceiling be eliminated. Akerman went on to describe further uses of such reservations. They would:

> . . . furnish recreation grounds for the people. This use for recreative purposes under reasonable restrictions is not inconsistent with the production of timber. . . . The educational effect of well-managed State forests is one of their chief advantages. They should, as far as is consistent with their economical management,

> be widely distributed over the State, in order that they may serve as object lessons in practical forestry.

Akerman's third annual report, submitted on September 15, 1906, ended with an announcement of his resignation. He had been elected chairman of the Forest Engineering Department at the University of Georgia, his alma mater. In a note to the governor he stated:

> I do not leave the service of the Commonwealth because of dissatisfaction with my work; on the contrary, I have enjoyed my service here as only one man who loves to fight for a good cause. Nor does the place in Georgia carry a larger salary; but I believe that it offers a better opportunity to forward the cause for which we foresters are working, and I feel it my duty to go.

After 25 months of service Akerman could look back on successfully laying the foundations for many of the programs that are still with us almost a century later.

Frank William Rane assumed the position of state forester immediately following Akerman's departure in 1906. Rane had spent the previous eleven years at New Hampshire College (now the University of New Hampshire), where he taught agricultural economics and forestry. Initially he saw his charge as being "to carry forward the work already in hand and get thoroughly in touch with the purpose of the office." In a letter addressed "To All Interested in the Forestry Problems of Massachusetts," he extended an invitation "to consult my office at any and all times on forestry matters, and let it be generally known that the office is established by the state to accomplish great good for the whole state in general and each individual in so far as practicable." Three months later, in closing his first annual report, Rane pointed out the need for the enactment of some "practical laws" to do the following:

- Improve forest-fire protection
- Regulate forest taxation
- Develop a state-forest reserve policy
- Develop an educational program to enlighten citizens on the great economic importance of the forest crop

In 1910, Rane increased his general staff to include a total of four assistant foresters charged with moth work, forestry management,

nursery work, and one to be a general assistant. Two motorcycles were purchased for the foresters' use. He also had an administrative staff of one secretary and four clerks. The increased staff necessitated a move from the drafty office in Room 247A of the State House to the tenth floor of number 6 Beacon Street.

Basking in the wake of a major budget increase, Rane, speaking to the Third National Conservation Congress in Kansas City in September 1911, stated:

> Speaking of fishing and game, forestry, natural history and Appalachian clubs, I am frank to say that I believe there are no people on earth who are more in love with nature herself, heart and soul, than our Massachusetts people. We have organizations galore, and they are not only organized, but bubbling full of real activity, and are accomplishing things. Were you the State Forester of Massachusetts, I can guarantee that you could spend your whole time simply lecturing on conservation or forestry, as the demands are so great and the work so popular.

Rane had the support not only of the general public, but also of the legislature. In the closing paragraphs of his 1914 annual report, he stated:

> I am pleased to say that with the legislation of the last General Court, the general program outlined by this department for securing the fundamentals of a State forest policy, which has extended over a period of eight years, has been covered. We are, therefore, now in a position to exert our best energies in accomplishing results. Let us all have a part in this splendid work.

By then, the legislature had created a Bureau of Forest Fire Control, had established a process to acquire a system of state forest reserves, had established a demonstration reforestation program and several forest-tree nurseries, and had put in place a more equitable approach for taxing forestland.

Following this period of great gains, Rane faced difficult times during the First World War, when his program was depleted by decreased appropriations and the resignations of a number of his staff to serve in the military. The greatest demands placed on his program during this period centered around developing supplies of fuelwood to

alleviate shortages of coal brought about by increased wartime demands. Nearing the end of his tenure, a tired Rane, looking back over the previous year, stated in his 1919 annual report:

> When an organization is running well and its policies are clearly defined and understood, there is little trouble meeting all ordinary emergencies. When, however, such calamities as war conditions break in upon a department like this and fairly strip it of labor, both skilled and ordinary, and materials of all kinds advance in price while appropriations remain the same, or are made less, it inevitably follows that a department is powerless to do aught else than to adapt itself to the new conditions.

CREATION OF THE DEPARTMENT OF CONSERVATION

In 1918, a state constitutional convention was held whose end result was a complete reorganization and reduction in the number of agencies, boards, and commissions in the state government into just 20 departments. The Office of the State Forester, the State Forest Commission, the Commission of Fisheries and Game, and the Department of Animal Industry were combined into a newly formed Department of Conservation which included a Division of Forestry, a Division of Fisheries and Game, and a Divison of Animal Industry. A. L. Bazeley of Uxbridge was appointed commissioner of the Department of Conservation and also the director of the Division of Forestry.

This reorganization also created the position of Chief Forester. Harold O. Cook, a 1907 graduate of the Harvard Forestry School, who went to work for the State Forester's office that same year was appointed to that position. He served in that capacity until his death in May of 1962. Of particular note were his efforts in overseeing the implementation of the CCC program in 1933. In eulogizing Cook in his 1962 annual report, Director Raymond J. Kenney stated: "Perhaps no monument of marble or bronze will be erected to his memory but wherever forests grow on hill or in dale — there will be his lasting memorial unmarred by winter snow or summer sun." Interestingly, a granite memorial bearing his name was placed in a meadow in the Colrain State Forest in 1967 and that forest renamed in his honor.

Cook was followed in the Chief Forester's position by John H. (Jack) Lambert, Jr. who served in that capacity until his retirement in 1976. While a student, Lambert began his career with the agency in the 1920s as a member of a forest inventory crew involved with preparing a county by county inventory of the state. State forester Robert Parmenter was his supervisor. After his graduation from the University of Maine and later the Yale Forestry School he served a brief stint (ended by the Depression) with the Hollingsford and Whitney (now Scott) Paper Company in Waterville, Maine. He came to work for the Department of Conservation in 1932 and served in several short-lived temporary positions. He eventually became the supervisor of the Beartown State Forest in Monterey in December of that year. He was promoted to forester during the CCC era where he was placed in charge of the planning and overseeing the forestry activities of the CCC camps in the southern Berkshires. Following that he worked as a district fire warden and district forester and was the district forester in the northeastern part of the state prior to assuming the office of Chief Forester in 1962. The indefatigable Lambert's name was often associated with "special projects" that were in addition to his normal duties. The most notable of these was his assignment as an assistant to the State Forestry Committee in the 1940s in the development and early administration of the Forest Cutting Practices Act.

During Bazeley's tenure with the department (1920–1933), a significant amount of state forestland was acquired and great progress made in many other aspects of the department's work, particularly the accommodation of recreational use of state forestland. In 1931, no doubt prompted by increased demands for recreation in the state forests resulting from widespread automobile ownership and the free time created by the Great Depression, the legislature created a Division of Parks within the Department of Conservation.

In 1933, Samuel York of Cummington was appointed to succeed A. L. Bazeley as Commissioner of Conservation. That year the Department of Conservation was reorganized. Now the conservation commissioner acted as state forester and had three divisions under him: the Division of Forestry, the Division of Parks, and the Division of Fisheries and Game.

In 1935, Ernest J. Dean of Chilmark was appointed by Governor

James Curley to succeed York as Commissioner of Conservation. Both York and Dean served in the tumultuous Depression years; their tenures were indelibly marked by the activities of the Civilian Conservation Corps (CCC), which had a a tremendous impact on the state forests and on the establishment of a system of state recreation facilities.

The late thirties saw the Department of Conservation roiled by political controversies. The cleanup work following the 1938 hurricane prompted a number of allegations about fraudulent contracts. During the same period, there was a general dissatisfaction about the conduct of the department. This was related primarily to the practice of relying on political patronage to fill management positions rather than utilizing technically trained career employees. In 1939, no less than eight different proposals for the reorganization of the department were considered by the legislature.

The end result of all of this turmoil was the passage of Chapter 491 of the Acts of 1939, which created five divisions within a newly reorganized Department of Conservation: the Divisions of Forestry, Parks and Recreation, Wildlife Research and Management, Fisheries and Game, and Marine Fisheries. Raymond J. Kenney, who had joined what was then the Fish and Game Commission in a clerical position in 1918 was appointed Commissioner of the Department in 1940. Prior to that Kenney had served as the Director of the Division of Fisheries and Game from 1931 until 1936 and, following that, to various positions within the Division of Forestry. Kenney served as commissioner until 1944 when he returned to the Division of Forestry and was replaced by Archibald Sloper. Kenney would serve the Commonwealth in various positions (his last appointment was as the Director of the Division of Forests and Parks, from June of 1945 until his death in 1963). Kenney was followed by former District Fire Warden Francis B. Mahoney who served until 1966 when he retired and was succeeded by Bruce Gullion, a former Service Forester from Berkshire County. Gullion served into the period of the Department of Environmental Management which began in 1975. Commissioner of Conservation Archibald Sloper served until January of 1948 when he was succeeded by Arthur Lyman who had been the Commissioner of the Massachusetts Department of Corrections. Lyman served as Commissioner through the last years of the Department of Conservation and briefly into the era of the Department of Natural Resources in 1953.

THE DEPARTMENT OF NATURAL RESOURCES AND THE DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

In 1953 the legislature again reorganized the agency: it created a Department of Natural Resources, governed by a board, made up of five individuals appointed to staggered terms by the governor. Arthur Lyman remained on as commissioner of the agency for a brief time until Francis W. Sargent, who would later become governor, was appointed the new department's second commissioner by the members of the Board of Natural Resources. He served from 1953 until 1959.

The Division of Forestry and the Division of Parks and Recreation were combined into a single Division of Forests and Parks, which was comprised of the Bureaus of Forest Development, Fire Control, Insect Pest Control, and Recreation.

The third commissioner was Charles H. W. Foster, who was appointed to fill the vacancy left by Sargent when he left to head the national Outdoor Recreation Resources Review Commission, which was in existence from 1959 until 1962. In 1971, with the creation of the Executive Office of Environmental Affairs, Dr. Foster became the Commonwealth's first secretary of environmental affairs. The Division of Forests and Parks remained basically unchanged, but as of 1975 it was under the Department of Environmental Management, as the Department of Natural Resources was renamed in that year. Its commissioner, Arthur W. Brownell, reported directly to the secretary of environmental affairs. Basically, this administrative structure remains in place today.

Forest Protection

WILDFIRES

Though forest fires blackened the landscape early in this century, there was no means by which the damage could be quantified. Informal estimates by Akerman and Rane placed the acreage burned each year in the tens of thousands — often up to 100,000 acres. The first attempt at creating an organized fire-suppression system in Massachusetts was in 1907, when the legislature passed a law empowering the selectmen in each of the Commonwealth's towns to appoint a forest warden, their salaries to be the responsibility of the individual towns. The state

forester could, from time to time, require the fire wardens to supply information to him relating to forest acreage, reforestation work, insects and disease conditions, and forest fires. For their time spent on these activities for the state they were to be compensated by the state forester at the rate of 35 cents an hour. In his 1907 annual report, State Forester Frank Rane stated:

> Through this law we now have a thoroughly systematized plan of usefulness, a natural channel through which it is believed much good to our forest interest must result. When we once get a corps of competent forest wardens, one in each of our three hundred and twenty (eligible) towns, who can intelligently handle forest fires and other forestry matters of vital concern, we shall have made great progress, both from the economic and aesthetic standpoints.

Within one year, 343 wardens had been appointed by the towns and cities having forest land within their borders. To give his cadre of wardens their "proper credentials," Rane distributed numbered badges. His vision for the forest wardens went far beyond fire control work:

> As I stated last year, the State Forester hopes to so educate his wardens that they will become, in a sense, town foresters, who shall keep the importance of forestry and how to perpetuate and manage the same practically directly before the people. With such an organization, when gypsy moths, pine blight, fires, etc. are troublesome, or, on the other hand, when people desire to reforest lands or thin and give proper care to their woodlots, in either case here is a man to whom they may look for advice.

In 1910 there were 1,531 forest and grass fires in the state, affecting a total of 42,808 acres. State Forester Rane would declare that "the fire demon each year lays its insidious claws on a valuable portion of our natural heritage." The principal causes of these fires were "railroad locomotives" (34 percent), "unknown" (25 percent), "burning brush" (8 percent), "smokers" (6 percent), and "boys" (6 percent). Some of the other, lesser causes listed for that year include: berry pickers, carelessness, children playing (as opposed to "boys"), fire balloons, fireworks and fire crackers, mayflower parties, steam sawmills, and steam rollers.

In 1911 significantly more fires were reported (2,536) and more acreage was burned (99,693 acres) than in the previous two years. Most of the fires occurred during a droughty spring — over 90,000 acres burned by June. That year proved to be a banner year not only for forest fires in the Commonwealth but for the state forester's fire control budget as well. The passage of the Weeks Law that same year, which provided federal financial assistance to states that had established fire control organizations, was no doubt influential as well. That year the Massachusetts legislature appropriated $10,000 to create a forest fire control agency; the same amount was allocated for the general forestry and the reforestation accounts.

This generous budget allowed Rane to appoint Maxwell C. Hutchins as the Commonwealth's first state fire warden and allowed him to begin the process of assembling what has evolved into today's Bureau of Forest Fire Control. Hutchins was recruited from New York, where he had been employed by the New York Forest Service in the Adirondack region for seven years. He set about his work that fall by organizing the Commonwealth into five districts and appointing a district fire warden in each one. He and his wardens were mandated by statute to "aid and advise" the municipal forest wardens, unlike the case in some states, where the state fire control organization has complete jurisdiction over fire suppression activities. Public support for fire control as well as other forestry programs continued. Along with the legislation that created the Bureau, there was a provision allowing the state to reimburse smaller rural towns for 50 percent of the cost, up to $250, of fire-suppression equipment that they might purchase. With this encouragement many towns began to assemble efficient fire fighting forces with equipment they might not have been able to afford otherwise. Hutchins's budget for the bureau continued to grow, and for 1915 it was $28,000, almost three times his first budget.

In closing his 1924 annual report Hutchins stated:

> I do not feel that this report would be complete without saying a word here about the splendid spirit shown by my assistants, the district fire wardens. They are in constant attendance at the fires in their districts, often being absent from home day and night, sometimes obliged to snatch such rest as they can get by sleeping

> out on the ground. . . . There is no reward for such service as this, the men simply doing it as a matter of duty. But at least the public should know that such service is being given.

The Bureau of Forest Fire Control continued to grow. In 1929 there were 9 districts; in 1950 a twelfth district was added, and today there are 13 fire districts. Interestingly, district thirteen is not shown on any map, nor is it listed on any roster. However, there is a district fourteen! Legislation providing for a state patrol system was enacted in 1929. Initially, only Barnstable County took advantage of the law by putting two fire patrolmen in place. Eventually, all fire districts would have at least one patrolman.

Another early goal of Hutchins's was to erect across the state a total of 15 "observation stations," as they were then called, along with the necessary telephone lines and a staff of observers. Massachusetts only had one fire tower at that time, in Plymouth, which had been built by the town. The first of these new observation stations, put into operation on August 14, 1911, was the observatory on the top of the Summit House on Mount Wachusett in Princeton. A similar arrangement was made in the Mount Tom Summit House in Holyoke. In that first year, towers and their communications systems were put in place at 17 locations; two more than Hutchins's goal. Some were constructed of wood or were former windmill towers. Some of these did not even have cabs to protect the observer from the elements.

The following winter, Hutchins' staff prepared maps and developed a triangulation system that would be used

> . . . in extreme cases where the observer is not sure as to the exact location of a fire. This system is not in general use, as far as known, in any other section of the country, Massachusetts being the first to adopt it for forest fire purposes. By this method fires can be located more quickly and much more accurately than would otherwise be possible.

The system proved to be quite effective. In 1914 observers in the 24 stations in operation spotted 3,013 fires out of a total of 3,181 that were reported that year.

Public interest in the program was great: in 1930 the fire-tower sites attracted 100,000 visitors "from every state in the Union and nearly all

the foreign countries." Eventually, picnic tables and fireplaces were installed at a number of towers and were well received by the recreating public. The towers suffered with each major hurricane, but they were always replaced quickly. At the peak of the program, in the 1950s and 1960s, approximately 50 towers were in operation. Today those that are still in operation, are supplemented by aerial surveillance from fixed-wing aircraft during severe fire weather.

Two major forest fire laws enacted early in the century had a profound effect on both the occurrence and the severity of forest fires. The first of these was the "Permit Law" (Chapter 209, Acts of 1908) that required any person having an open air fire to receive a permit from the town forest warden. Presumably the forest warden would only issue permits when burning could be done safely, although this did not always prove to be the case. The second of these laws was the "Slash Law" (Chapter 101, Acts of 1914), which required landowners and timber harvesters to treat the slash left from logging by lopping it and removing it from the areas adjacent to property lines. Both of these laws have been amended a number of times since their passage, but they remain in effect today.

Beginning in the 1940s, through the efforts of U.S. Forest Service publicists, Smokey the Bear, an orphaned black bear cub from the Lincoln National Forest in New Mexico, became the symbol of the nation's forest fire prevention program. The Forest Service made available all manner of promotional material, ranging from bumper stickers to comic books, for distribution by the Bureau of Forest Fire Control. Several Smokey suits were acquired and were employed at schools, fairs, parades and other public gatherings to get the prevention message across to schoolchildren as well as adults. The Smokey character is one of the most universally recognized symbols today in American advertising.

As the science of forest fire control became more sophisticated, meteorology was increasingly recognized as a basis for planning fire suppression activities. Beginning in 1919, forecasts from the Blue Hills Meteorological Bureau were used as a basis for planning daily activities. In 1927 a cooperative venture between the U.S. Weather Bureau, the U.S. Forest Service, and the Department of Conservation established four weather stations across the state. By 1931 both WBZ and WEEI radio were broadcasting daily forest fire weather reports during the fire season. Hutchins assessed the service as follows:

> We find it a distinct advantage, especially during a drought, to be able at a moment's notice to get weather forecasts which we can transmit to our observers, as so much depends not only on upon when rain is expected, but also upon wind direction and velocity, all of which play an important part in extinguishing forest fires.

This much-appreciated service continued through the 1930s, but was halted in the interest of national defense in 1942 for fear that it would provide enemy aircraft with useful information.

On April 12, 1927, the relative humidity dropped to 10 percent, the lowest reading ever recorded in the state until that time. During the 13-day period following that date, 1,251 fires were reported by the observation towers. Although the total number of fires during that period was not especially high, the difficulty of controlling them was reflected by the fact that the average acreage burned per fire was approximately 50 percent greater than in the two previous years. Nineteen thirty also proved to be an especially difficult year for fire control forces in Massachusetts with periods of drought occurring in both the spring and fall. That year a total of 72,998 acres were burned by 1,922 fires, the worst year since 1911. The high rate of unemployment resulting from the Depression may have exacerbated the situation. Hutchins stated that not only the extreme weather was to blame for the great number of fires that year, but also many of the unemployed, some of whom 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.

Cape Cod and Plymouth County, owing to the extremely flammable nature of their pitch pine and scrub oak vegetation, have been the scene of many large wildland fires. According to Hutchins:

> Each year great waste and destruction from forest fires seem to visit some section of the Cape country. This condition has continued so long and become so common that not only are many thousands of acres reduced to acorn brush deserts, but from their being burned over every few years as they accumulate enough vegetation to feed the flames, there is little likelihood of conditions

improving until something is done. It is generally acknowledged that these fires originate from mayflower gatherers and berry pickers.

These fires often burned several thousand acres at a time and, on at least two occasions, cost firefighters their lives. Two Plymouth firefighters were killed in 1937 and three firefighters were killed in a fire on the Shawme State Forest in Sandwich in 1938.

Myles Standish State Forest was the scene of perhaps the most serious Massachusetts forest fire in this century. At three in the afternoon on May 7, 1957, three incendiary fires were set in the southwest corner of the forest. Winds were from the southwest at 20 to 25 miles per hour and the forest was tinder-dry. Two of the fires were controlled quickly. The third one gained momentum while the other two were being extinguished. By the time firefighters reached the third fire, it was too late. By the end of the day, the fire had traveled 12 miles and burned 12,500 acres, 3,000 on the forest itself, much of it white pine plantations that had been established in the 1920s and 1930s. On its way to the ocean, where it finally stopped, the fire jumped Route 3 and several backfires that had been set to stop it.

On May 23-25, 1964, another serious fire burned on the Myles Standish State Forest. On the first day it consumed 1,000 acres. On the third day, several outbreaks merged to form one fire that burned 4,500 acres in 2 hours and 15 minutes.

As stated previously, the railroads were the single greatest cause of forest fires in the Commonwealth at the turn of this century, causing as much as 42 percent of all fires. At that time it was estimated that there were over 2,000 locomotives operating on 2,500 miles of right-of-way in Massachusetts. The first legislation directed at the problem was to require spark arresters on all locomotives and establish a number of state inspectors within the state's Railroad Commission to enforce the law. While this was somewhat effective in dealing with local traffic, a number of tramp locomotives from out-of-state lacking the spark arresters continued to cause fires. In 1909 legislation was enacted that required the railroads not only to pay for damages from fires caused by their trains, but to reimburse the cities and towns for the cost of extinguishing the fires they caused. Eventually, it became more cost-effective for the railroads to undertake hazard-reduction work along

their rights-of-way. In 1929 Hutchins stated: "It is only within very recent years that the railroad officials have realized that it was to their advantage to expend money for prevention (spark arresters and fuel reduction along their tracks) rather than to pay fire payrolls for fighting fires." That year railroad fires, once the leading cause of fires, accounted for less than 20 percent of the Commonwealth's forest fires.

The state forester's staff assembled two fully equipped fire wagons in 1910 as demonstrations of how the town fire wardens might assemble their own equipment:

> The larger wagon is intended for two horses, and costs, all equipped, about $450. The equipment consists of fourteen chemical extinguishers; fourteen galvanized cans, each holding two extra charges of water and chemicals; shovels; rakes; mattocks; and spare chemical charges. The equipment is carried in racks and cases, not only so that it will ride safely, but also so that it can be conveniently carried into the woods. Eight men can find accommodation on this wagon. The smaller wagon, drawn by one horse, has all the equipment of the larger, but less in amount. It will carry four men, and costs, all equipped, about $300.

Prompted by a number of large fires in 1913 that could not be brought under control by several inefficient town forest-fire organizations, Hutchins reported that there had been

> . . . 6 serious fires that were allowed to burn several days without extinguishment. . . . A careful investigation of these 6 fires has revealed in each case the presence of one or more common causes, namely, inefficiency in the town forest fire organization, lack of proper forest firefighting equipment and indifference on the part of the general public until such time as the fire assumed sufficient proportions to threaten their villages and homes.

As a consequence, Hutchins proposed that the Department of Conservation acquire "at least two motor trucks equipped with modern fire apparatus and capable of carrying from 10 to 15 men trained in forest fire work." He suggested that one of these trucks be stationed on Cape Cod and another in central Massachusetts so that any serious fire in the eastern part of the state could be reached in two or three hours.

In 1916 the State Forester's Office purchased the first fire truck to be

used as a demonstration to the towns of an ideal fire truck. It carried "three double forester pumps, six extinguishers, five one-man pumps, ten 5-gallon Marshfield cans for water, six shovels, six wire brooms, two axes and two grub hoes." The unit went on tour that summer and fall and was exhibited at a number of fairs.

"We have had an opportunity this year of giving the power gasoline pump a thorough tryout and it certainly has proved its usefulness" was Hutchins' comment following the 1924 season's trials of portable pumps manufactured by the Fitzhenry-Guptill Company of Cambridge. That year, four pumps went into use, in Carver, Westborough, Winchendon, and Westfield, and the following year, 10 more units were purchased. There were plans to acquire more pumps and trucks for conveying them when funding would permit. By 1928 the department had 22 of these units in service.

The Fitzhenry-Guptill pump was quite heavy compared to its contemporaries, weighing close to 300 pounds, but its durability and efficiency overshadowed the weight limitations. It was also unaffected by sand and other debris, and it could use from 4,000 to 5,000 feet of high-pressure one-inch hose.

As more of the pumps came into use, efforts were made to construct "water holes" throughout the state forest system. These water holes might be "an abandoned well, a hole dug in a swamp, or a natural pool in a running brook. . . . They serve the same purpose as a fire hydrant on a city street." The system of water holes would be expanded substantially by the CCC (Civilian Conservation Corps) and later by state forest crews. In addition to their value as water sources for firefighting, water holes also benefited wildlife and were attractive landscape elements.

Hutchins' 1934 report concerned itself with the matter of communications:

> The importance of the radio in forest fire prevention has been demonstrated in a small way at our Hanson and Harvard towers. Two-way sets were tried out and results obtained were very satisfactory. There is no question but radio will play a very important part in the future in our forest fire work. It is simply a matter of funds to equip our observation towers and district cars with two-way sets so that the men in the field can get in direct touch with

> the fire situation. I believe that within a very short time radio equipment will be within reach of not only our department but also the various town wardens.

An experiment in the use of two-way radios was undertaken at Myles Standish State Forest in 1935. One radio was installed in the fire tower and another in the superintendent's car. Although these were only amateur sets, they had an effective range of 10 miles. Following this impressive demonstration, the county forest wardens association lobbied for an appropriation of $2,000 to equip five towers and three patrol cars with radios. In 1936 additional monies were sought for radios for five towers and three patrol cars in southeastern Massachusetts, and in 1937 monies were appropriated for radios in Worcester County. In time, the entire agency would be dependent on radios, not only for firefighting but for day-to-day communications.

In 1935 the department replaced four older trucks with custom-built new fire trucks that Hutchins felt were more suitable for forest-fire fighting than anything on the market. The larger of these trucks had a front-mounted 100-gallon-per-minute pump, a 500-gallon tank, and a portable pump with 4,000 feet of hose. These units were stationed at the Myles Standish and Shawme state forests. Two smaller units in the central part of the state had smaller tanks, but otherwise carried the same pumps and hoses.

The largest single addition to the department's stock of firefighting equipment came in 1939 in the wake of the 1938 hurricane. Fourteen cab-over-engine, short-wheelbase trucks, each equipped with a 100-gallon power takeoff pump, a portable Fitzhenry-Guptill pump, 2,500 feet of one-inch hose, and 500 feet of one-and-one-half inch hose were purchased. These trucks, added to the department's existing 24 units, brought the state's total number of fire trucks to 38.

Of perhaps even greater significance that year was the introduction of what was claimed to be the first "brush-breaker," a truck invented by Charles Cherry, superintendent of the Myles Standish State Forest. The unit was equipped with a 1,000-gallon tank with rear-mounted pumps and was capable of being driven through brush and small trees. Today, these vehicles have evolved into high-clearance, four-wheel-drive vehicles surrounded by a rugged pipe frame for pushing over small trees.

Skid plates protect their undercarriages, and they are equipped with a water- or foam-delivery system.

Maxwell C. Hutchins retired on December 26, 1943, after 31 years of service to the Bureau of Fire Control. Through his pioneering efforts he had built one of the most effective wildland-fire fighting organizations in the Northeast.

INSECTS AND PESTS

In 1868 a visiting instructor in astronomy at Harvard University, Dr. Leopold Trouvelot, was engaged in trying to breed a variety of silkworm that could survive in New England's harsh climate. His plan was to cross-breed the Asian silk moth with the hardy European gypsy moth. When the cages were damaged, a number of the caterpillars escaped into his suburban Medford neighborhood. Trouvelot warned of their potential danger in several entomological papers and stated that efforts should be made to eradicate them. His warnings went unheeded for several years while the insect established a viable population. Ten years later, in 1889, the gypsy moth population had reached alarming proportions and in 1890 the legislature appropriated a sum of $25,000 for its control. Initially this task was delegated to the Massachusetts Board of Agriculture.

To complicate matters, another insect of European origin, the brown-tail moth, was discovered in Somerville in the early 1890s. At first its origins were unknown, but eventually circumstantial evidence pointed toward shipments of dormant rose bushes from France and Holland made to a florist's greenhouse near the Somerville depot of the Fitchburg Railroad. By 1897, a serious infestation, two miles in diameter and centered around the greenhouse, was under way. The infestation "made up in severity what it lacked in extent":

> In the central district the devastation was almost complete. The pear and apple trees, on which the majority of the winter webs had been spun, were first stripped. Such remarkably large numbers of these insects were harbored by these trees that their leaf supply was soon consumed, and the half-grown caterpillars were forced to migrate in search of food. In this migration shade trees suffered

> as severely as fruit trees from the attacks of the insects. Willows, elms, maples and lindens often were completely defoliated. In their mad search for food the insects swarmed along fences and sidewalks, making the latter slippery with their crushed bodies, and even entered houses. Rose bushes, grape vines, garden crops and even grasses were consumed by the hungry insects. By the middle of June the trees in the central infested district appeared as if swept by fire (Fernald and Kirkland, 1903)

Not only was the defoliation of fruit and shade trees problematic but, in addition, the bodies of the older caterpillars and, to some extent, the moths contained microscopic hairs that caused severe rashes when they came in contact with one's skin. One did not necessarily have to come in direct contact with the caterpillars to be affected. The skins cast by the larvae in molting and pupal cases contained these same hairs. The slightest breeze in a heavily infested area was enough to expose individuals to this discomfort. People could not work outside of their homes in their yards or gardens without being "poisoned" by these hairs. Fernald and Kirkland (1903) cite this description of the affliction by Dr. O. A. Givson of Somerville:

> The trouble began with an intense irritation; then an eruption appeared, resembling exzema [*sic*], with a sort of watery blister on the top. There was intense irritation all over the body, on the head, arms and limbs. I saw numbers and numbers of cases of this poisoning; I should say nearly a hundred cases in all came under my observation. The irritation seemed to remain, and was much worse than that caused by poison oak or poison ivy, and was not so easily gotten rid of. . . . Some cases were decidedly obstinate, but no case was serious enough to menace the life of the patient.

Vaseline, numerous coal-tar disinfectants and alcohol were applied topically to reduce the inflammations. "So prevalent is the dermatitis from the caterpillar in the metropolitan district in the summer months that druggists put out special lotions for the brown-tail moth itch, many of which are meritorious" (Fernald and Kirkland, 1903).

The localized infestation of 1897 spread rapidly in a northeasterly direction following gale winds on July 12-14 of that year. These winds

coincided with the peak of pupal emergence and scattered moths all the way to Seabrook, New Hampshire, 40 miles away. Eventually the pest made its way into Kittery, Maine, on a shipment of household goods, and to St. Johns, New Brunswick, presumably on a vessel that had sailed from Boston.

In 1898 the Massachusetts Board of Agriculture was directed "to take charge of the work of exterminating the brown tail moth" in addition to its previously assigned duties relating to gypsy moth control. Control efforts for both the gypsy moth and brown-tail moth consisted of spraying with various arsenical compounds; wrapping tree trunks with burlap, under which the larvae would hide in the daytime, after which they could be killed by crushing; painting egg masses with creosote; and applying a sticky compound first made up of printers ink, coal tar, or other sticky substances and, later, a commercial compound known as "Tanglefoot" in bands around tree trunks. Another method used for the control of the brown-tail was to remove the nests in which the larvae overwintered and destroy them by burning or other means. While this was effective on small numbers of trees whose nests could be reached from the ground, it was obviously not efficient on tall trees where climbing was necessary.

After 10 years, the gypsy moth control program, which began in 1890, appeared to be so effective that the Massachusetts state legislature appointed a committee to study the need for continuing the control program. In part, the committee's report stated:

> It appears that the fears of the farmers throughout the state have been unnecessarily and unwarrantably aroused, evidently for the purpose of securing the effect of those fears upon the matter of the annual appropriations. . . . We do not share these exaggerated fears, and the prophecies of devastation and ruin are unwarranted and in the most charitable view are but the fancies of honest enthusiasts.

During the next five years, unencumbered by any control program, the gypsy moth increased in both numbers and range, expanding northerly in a band along the seacoast through southern New Hampshire and into southern Maine, and southerly through Plymouth County and over the western half of Cape Cod. In addition, two new, large infestations were discovered in Providence, Rhode Island, and

Stonington, Connecticut. The infested area now included 124 cities and towns and 2,224 square miles in Massachusetts alone. This prompted the Massachusetts legislature to act again and create the Office of Chief Moth Suppressor in 1905 under the Board of Agriculture, with a sizable staff to be headed by Archie Kirkland, who had been involved in the earlier suppression efforts. That same year the Board of Agriculture and the federal Bureau of Entomology established a laboratory, first in North Saugus and later in Melrose, and began importing and studying parasites of the gypsy moth from Europe and Asia for release. One of the most prominent of these (not a true parasite, however, as it does not attach itself to its host) was the European calasoma beetle — a large (1 to 1.5 inches), voracious, iridescent beetle. Unlike the two native species of calasoma beetles, both the larvae and the adults prey upon lepidopterous insects in their larval and pupal forms.

Kirkland's generous budget prompted allegations of waste and inefficiencies. It was even suggested that his men spread the pest to ensure that their jobs would be secure. Because of the controversy, the legislature moved the responsibility for controlling the gypsy moth to the supervision of the state forester. As Chief Forester Harold O. Cook would later observe, placing the chief moth suppressor under the state forester in 1909 was "truly a case of the tail wagging the dog" — at the time the chief moth suppressor's budget was eight times that of the state forester's. From that point on the State Forester oversaw all moth suppression activities until 1921. At that time, following the creation of the Department of Conservation, George A. Smith, who had worked in the suppression program for many years, was placed in the newly-created position of Superintendent of Moth Work. Smith served in that capacity until his death in 1936.

The battle against the gypsy moth and the brown-tail moth continued. In the next 10 years the gypsy moth spread well into Worcester County. In 1912 the Bureau of Entomology took over the entire program of experimentation with parasites, as the rapid spread of the pest was rightfully perceived as an interstate problem. The chief moth suppressor and the municipalities were responsible for control efforts in the "infested area," and the federal Bureau of Entomology was responsible for quarantine, control and scouting activities in the "barrier zone" along the western edge of the infested area — where, it was hoped, the moths' spread could be stopped. By 1922 the barrier zone

had become the Berkshire County line. The brown-tail moth never extended its range, nor was it as destructive in later years as the gypsy moth, although occasional, localized infestations occur to this day in eastern Massachusetts. In 1963, Charles S. Hood, Chief of the Bureau of Insect Pest Control, stated: "Natural enemies and disease have, in recent years, reduced the brown-tails almost exclusively to pests of beach plum in certain coastal areas." One can only wonder if the parasite introductions made early in this century are responsible for this.

In time, it became apparent that "Tanglefoot" and burlapping were not economical methods of gypsy moth control. The development of horse-drawn, kerosene-powered sprayers and the introduction of sprayers mounted on motor trucks in 1911 made spraying with lead arsenate and creosoting egg masses the control methods of choice. As the official reports asserted, spraying "has become one of the most efficient methods used in suppressing injurious insects, it being beneficial to the crop and detrimental to the insects." For a brief period it was felt that "improvement thinnings" in forested stands that reduced or eliminated favored food species was a viable control method. However, the high cost of this method ($32.88/acre as opposed to $9.44/acre for spraying, as of 1910) and perhaps its impracticability in most situations as a result of inappropriate stand composition and the potential for seriously understocking the residual stand led to its falling from favor in 1920. Other control efforts consisted of destroying neglected orchards, which were held to constitute a menace because of their attractiveness to gypsy moths, and treating stonewalls, which were ideal places for the moths to lay their eggs, with spray and creosite.

Concerns about the safety of spraying were voiced by some, but public sentiment supported the program. Questions were raised about lead arsenate's effects on songbirds, and whether it might be a causal factor in the spread of infantile paralysis, but the public's concern over the damage caused by the pests was so great that little attention was paid to these suggestions.

In addition to suppression efforts, the state moth superintendent administered a warehouse program whereby the state purchased equipment and materials in large quantities and passed the savings along to the towns. Each year one of the largest purchases of materials was lead arsenate. In 1916, one million pounds were purchased. The shipment filled 29 railroad cars and was valued at $81,000.

TREE DISEASES

While the battle was being waged against the insects, two tree diseases made their way into the United States. One of these was white pine blister rust, which was discovered in Massachusetts in 1910. It is believed to have been brought here on a shipment of nursery stock from Germany. Unfortunately, it was not discovered until several years after its introduction. Although an embargo was placed on foreign seedlings in 1912, infected seedlings had already been planted across the state.

At first it was thought that the disease would only affect nursery and young plantations and not large trees, but that proved not to be the case, prompting a great deal of debate within the forestry community as to whether or not it was still practical to establish plantings of eastern white pine. In commenting on this issue in 1916, State Forester Frank Rane spoke about the efforts by some "to discourage and thwart all our laudable reforestation endeavors." Two years later, in 1918, a committee representing 12 northeastern states and Canada passed a resolution stating that white pine blister rust was not menacing enough to stop the planting of white pine.

The disease continued to spread rapidly throughout the state and by 1927 had infected trees in 236 towns. Initially, control of the blister rust was the responsibility of the state Department of Agriculture; eventually it became a joint effort with the U.S. Department of Agriculture. The only involvement of the state forester was on state-owned forest land.

Control of the blister rust was undertaken by eliminating its alternate host, plants of the *Ribes* genus (gooseberries, currants, etc.), by pulling the plants from the ground. In 1922 the program was administered through eight federal agents and 21 temporary state employees. That year 200 landowners cooperated in the program. In practice, the state paid for the foreman of the crew and the landowner for the laborers. A great deal of this work was accomplished by the CCC. In later years, most of the state was on "maintenance," that is, the *Ribes* had been eliminated from most areas and the work now consisted of scouting with occasional removal. This practice continued for many years under state auspices utilizing federal funds.

Chestnut blight was first noted in the vicinity of New York City in 1904. Within a few years, this disease would virtually eliminate one of

the most important tree species in the eastern United States, the American chestnut, and change the composition of the eastern hardwood forest from the southern Appalachians to New England. In 1912 it was estimated that American chestnut stands were concentrated in the central part of the state and constituted the equivalent of one-sixth of the total forest area of the state. The species was said to be either "scanty or wanting" in the extreme northeastern and southeastern portions of the state and the higher elevations in the Berkshires.

At first there was a great deal of debate over whether chestnut blight constituted a menace and whether or not it was truly a disease or merely a condition caused by climatic extremes. That year State Forester Rane concluded, "It is believed to be unnecessary for us to worry at present over the Chestnut Bark Disease in Massachusetts." Nothing could have been further from the truth. In 1909, Robert Edson, the forest warden in Wilbraham, noted the first occurrence of the disease in the state. By 1911 it was reported in 72 towns . . . in 1913, in 200 towns . . . and in 1914 it was said to be found "nearly everywhere chestnut grows."

At first the state forester's office published two bulletins that dealt with identifying the disease and offered suggestions for controlling it or at least slowing its spread. In 1912 the disease's severity was recognized, and perhaps not coincidentally, the book *Chestnut — Its Market in Massachusetts* was published. It was clear that the only thing left to do was to salvage the dead and dying trees.

In 1908 Massachusetts industries used approximately 4 million board feet of chestnut lumber, one half of which was utilized by the furniture industry and much of which was used locally for bridges: "Perhaps the most important [use] for the native article [American chestnut] is in bridge construction. It is especially adapted to this, owing to its durability when exposed to moisture. . . . It is difficult to form any estimate of the amount of lumber employed in bridge and building construction, since these uses are largely local" (*Chestnut — Its Market in Massachusetts*).

Chestnut's resistance to decay also made it valuable for railroad ties, which had an average service life of eight years, and for telephone poles. The elimination of this species as a forest tree was a loss not only from an economic standpoint but also from an ecological one: many species of wildlife — for example, many species of birds, squirrels and

white-tail deer — depended on the fall crop of nuts to build up their body fat and ready themselves for winter. The nuts were also gathered by rural residents and sold, or dried and stored for later use. Today the American chestnut continues to survive as rootstocks throughout its former range. Unfortunately, as soon as the sprouts achieve any size they are killed back to the roots by the disease.

AERIAL SPRAYING

Although the chestnut blight had everyone's attention for a time, the battle against the gypsy moth still continued, but the financial burden of the program was gradually shifted to the municipalities. By 1926 the state only employed seven division (district) superintendents. The actual work of spraying and other control work was done by the towns. During the late 1920s and through the 1930s, the WPA (Works Progress Administration) and CCC federal jobs programs devoted a great portion of their energies to gypsy moth, brown-tail moth, and blister rust control. Harry B. Ramsey was appointed chief moth suppressor in 1937, following the death of George A. Smith, and was succeeded by his son Harry L. Ramsey in April 1942.

Attempts to confine the gypsy moth to the barrier zone were unsuccessful. By 1943, scattered infestations were reported in the Albany and Schenectady areas of New York and in Pennsylvania. During the 1940s two control methods were instituted that would change the methods of gypsy and brown-tail moth control. In 1942, 1,200 acres were sprayed with lead arsenate from the Department of Conservation's autogiro. It was felt that it would not be long before conventional aircraft could be employed using substances that were much less toxic to warm-blooded animals than lead arsenate. This substance proved to be DDT, which had proved itself to be a very effective insecticide in wartime use. Eventually DDT was employed in low-volume, mist-blower applications and in low-volume aerial applications from fixed-wing aircraft.

The first large-scale application of this material from the air was in 1948, when 7,000 acres on lower Cape Cod were sprayed. It was later reported, "The results have shown the value of air spraying, especially where we can secure complete kill, lower costs, and an immense saving in time and labor, with no injury to humans or warm-blooded ani-

mals." The following year 250,000 acres were sprayed on Cape Cod by airplane, helicopter, and ground equipment. It was said that wildlife and birds were more abundant than ever and that collateral benefits included a lack of weeviling in white pine and an 85 percent reduction of the tick population.

In 1949, 500,000 acres were sprayed on the Cape and in Plymouth County with an ultimate goal "to eradicate the gypsy moth to all intents and purposes from the confines of Massachusetts and at the same time to effect the saving in governmental cost of a minimum of $800,000 a year." A mixing plant was established at the Plymouth Airport in 1950, where kerosene, solvents, and concentrated, technical-grade DDT, purchased in bulk, were mixed at a savings of over $100,000 per year as opposed to purchasing the spray material in dilute form. Several years later it would be mixed at the Department of Conservation's service building in Stow.

Various aircraft were employed in this work, including Bell helicopters that carried a 50-gallon payload, Stearman biplanes that carried 100 gallon payloads, and former B-17 bombers that carried 2,700 gallons. Precautions were taken to maintain a minimum altitude of 500 feet over mink farms lest the hyperactive animals kill their young when exposed to the loud noise of the aircraft. All told, 27 mink ranches were sprayed and only two reported any kit mortality. It was also a matter of policy to not spray either fish hatcheries or stocked trout ponds. The program was extremely effective. In 1952, an optimistic Conservation Commissioner Arthur Lyman stated that the gypsy moth could be eradicated in the next five years.

With the establishment of the Department of Natural Resources in 1954, the chief moth suppressor, Harry L. Ramsey, became the chief of the Bureau of Insect Pest Control. The scope of the bureau's activities was expanded to include three major areas of emphasis: (1) insect pest control, (2) the control of Dutch Elm disease, which had been rampant since 1951, and (3) matters relating to agriculture and public health, including blister rust control, poison ivy, wood ticks, and other nuisances. By 1958, 3 million gallons of DDT solution had been sprayed on the Commonwealth, and it was felt that the gypsy moth had finally been brought under control. That year only 10,000 acres of state-owned land were sprayed. In 1959, following a controversy over the privatization of the DDT mixing plant, Harry Ramsey retired and was replaced by

Charles S. Hood, an entomologist who had worked for the Maine Forest Service. Without the mixing plant, there was no need for the 75,000 pounds of technical DDT that was in stock, and it was traded for 249 50-gallon drums of finished (25 percent emulsion) insecticide supplied by the Nu-Brite Chemical Company.

Although not related to forests per se, Dutch elm disease control consumed a great deal of the bureau's efforts in the 1950s. This introduced disease was spread by the elm bark beetle. The principal control measures were spraying to control the beetle and the removal of infested trees to deprive the beetle of a place to breed. Unfortunately, these control efforts only slowed the demise of the Commonwealth's elm-lined village streets — it did not save the trees.

During the late 1950s and early 1960s, there was mounting criticism of the use of pesticides and on several occasions legislation was introduced to control their use. The Massachusetts Pesticide Board was established in 1962 charged with regulating the use of pesticides and training applicators and issuing them licenses. The publication of Rachel Carson's *Silent Spring* in 1962 further increased public sentiment against the use of pesticides, both in Massachusetts and nationally.

Reforestation and Timber Management

REFORESTATION LOTS

The legislature responded to Akerman's and Rane's pleas for the establishment of a system of forest reserves by passing the Reforestation Act on May 1, 1908, which authorized the acquisition of lands "for the purpose of experiment and illustration in forest management." While it would not create the forest reserve system the state foresters had requested, it was, nevertheless, a move in that direction.

The price of the land acquired under the act could not exceed $5 per acre, and no more than 40 acres could be acquired in any tract in a given year. If they wished, the former owners, or their heirs or assigns, could repurchase the parcel within 10 years for the purchase price plus 4 percent interest and the cost of any improvements made by the state forester. The law also stated that the state forester should "replant or otherwise manage all land acquired . . . to produce the best forest growth both as to practical forestry results and protection of water supplies."

During the first year, close to 1,000 acres were turned over to the state for reforestation purposes, though only 160 acres were actually purchased by the state to remain in state ownership. In most instances, the parcels were acquired with the option for the owners to repurchase them.

In his discussion of the legislation in his 1908 annual report, State Forester Rane stated: "With our depleted, neglected and waste lands reharnessed and made a live factor throughout Massachusetts, one of our natural resources will be headed in the right direction." Rane's plan was to replant as many of the lots as appropriations would allow and to plant one or more lots in each town in the state. Planting costs in the first years of the program ranged from $6 to $10 per acre. While much of the planting stock was acquired from sources in the United States, including the State Forester's nursery in Amherst, 500,000 white pine transplants were imported from Germany in 1909 to satisfy the demand (unfortunately, these were probably the source of the white pine blister rust).

To expedite the work in remote areas where no room and board was available for the planting crew, the State Forester's office built five, 12-by-12-foot shed-roofed, portable steel shacks that could each accommodate a 12-man planting crew. The shacks were constructed of panels of galvanized iron that could easily be transported and erected using bolts and clamps. The only wooden parts were the door and two window sashes. The shacks were part of a kit containing camp equipment, cooking utensils, and planting tools. Each crew member furnished his own bedding.

By 1913 there were 4,489 acres in the program, 1,000 of them owned by the state with no redemption clause. By 1927 the Reforestation Act had passed its experimental stage, and the following year the policy of accepting any new lots was discontinued. This was due primarily to the fact that when the lots were not redeemed the Department of Conservation was forced to take under its control a great number of isolated, small tracts across the state for which efficient administration was impossible.

FOREST TREE NURSERIES

In 1906, under the legislation that created the office of the state forester, the state's first forest-tree nursery was established on the grounds of the Massachusetts Agricultural College. State Forester Akerman's vision for

the nursery was that, in addition to supplying trees for reforestation, it would be a part of the course of instruction in forestry he was required to teach at the college. Apparently, the trustees of the college did not share Akerman's enthusiasm for this endeavor, for in his second annual report (1906) a perturbed Akerman stated:

> Through an inexplicable delay on the part of the trustees of the college to act in the matter, work on the nursery did not begin last spring until all the good land available for the nursery had been assigned for other purposes. The only ground left was the worst for a forest nursery that there is on the college grounds. Rather than throw away the seeds that had been collected, the nursery was begun.

The nursery's purpose was to provide seedlings at cost to private woodland owners "operating under a systematic planting plan" and "free of charge to State Reservations." Initially, trees were planted in several separate areas at the college totaling three acres. In the spring of 1907, 4,450 chestnut and 100 red oak seedlings were sold to the public for $3 per thousand.

Akerman's plan called for expanding operations over the next several years until an annual output of 125,000 seedlings was reached. In 1906 the stock on hand was 152,000 trees of varying ages, 90,000 of which were white ash, 45,000 white pine, and the balance a mix of species. It is unknown why white ash was in such favor in those early years. Perhaps it was merely a matter of having a large supply of seed on hand. The writer is unaware of any successful surviving white ash plantations, and the only reference found relating to one is a comment by Harold O. Cook in *Fifty Years a Forester* regarding the 1910 plantings in the Colrain State Forest (now H. O. Cook State Forest), where 110,000 white ash were planted: "The ash trees we planted did not do so well in Colrain State Forest because deer and rabbits browsed on them and trampled them." This was the probable fate of most of the white ash produced at the nursery.

The following year the trustees of the college were more generous and allowed the nursery operations to be relocated to a more favorable site. The following year, R. S. Langdell, a graduate forester and former student of Rane's, was placed in charge of the facility, a tool

and packing shed were built, and all operations consolidated at the new site.

In 1907, Rane stated, "As State Forester I am very anxious to get just as many trees set out on our waste and unproductive lands as possible." To stimulate public interest in planting trees, he promoted what might be referred to today as an introductory offer of a quarter-acre planting package consisting of 150 white pine and 150 white ash seedlings for the price of $1. By the end of the year, 120 individuals had responded to his offer. That same year, in a circular letter sent to school superintendents throughout the state, he advertised a packet containing 12 white pine, 24 white ash, 12 red spruce, and 5 beech seedlings. It also contained seeds — 900 white pine, 12 chestnut, and 50 white ash seeds and 25 acorns. The purpose of the packet was to encourage schools to establish a small forest-tree nursery on their grounds. Bulletin no. 4 published by the State Forester's Office, which contained instructions for handling and care of the nursery, was also enclosed. The packet cost $1, and 47 schoolteachers placed orders. In his letter Rane stated:

Our new power sprayer complete. This outfit was planned and built by the State Forester's department. Four-cylinder engine, triplex bronze pump, 300 pounds pressure capacity, weight 3,000 pounds. (Illustration from the Eighth Annual Report of the State Forester, 1911.)

> It is hoped that in this small beginning we may foster in the young, our coming generation, not only a fundamental economic recognition of forestry, but return to Massachusetts and New England the natural beauty we all would so much love to see.

In 1908, whether Rane's promotional activities were responsible or not, public orders for planting stock increased and the Amherst nursery could not meet the demand. With the passage of the Reforestation Act in 1908, Rane came to the realization that the Amherst facility alone could not begin to satisfy the demand for planting stock on both the soon-to-be-acquired reforestation lots and on private land. Thus, the sale of stock to private individuals was discontinued. That year, fatefully, the demand for stock for planting on the reforestation lots was met by purchasing 500,000 three-year-old white pine transplants from Germany that were infected with blister rust and an equivalent amount from domestic growers and the Amherst facility; 929 acres of "state plantations" were started that year.

The high cost of privately produced stock ($5 per thousand as opposed to $2.25 per thousand) prompted Rane to propose enlarging the Amherst nursery to fully meet the needs of the Reforestation Act. If the trustees of the college would not allow a doubling in size, "it will necessitate making plans elsewhere." The Amherst nursery was also in need of improvements as it needed a reliable water supply, a better work shed, and fencing to reduce the damage that "has repeatedly resulted from animals getting loose and trampling the beds." Apparently permission was granted to expand, for the nursery remained at the college and the improvements were made.

The results of a successful one-acre planting experiment in Woodstock, Vermont, made in 1876 were responsible for the promotion of Norway spruce as a desirable species to use in reforestation work in Massachusetts. In 1908 Rane wrote: "At age 32 the Vermont plantation yielded 172½ cords per acre valued at $1,120.00. For the first time the State Forester expects to set out quite a large number of Norway spruce in Massachusetts the coming spring." Until the Amherst facility could supply these trees, they were purchased from European sources.

As the acreage of reforestation lots grew, so did the demand for planting stock. Nurseries were established in East Sandwich to grow species "suitable for planting on Cape land." A nursery for transplant

stock was established at Hopkinton in 1910. At the end of that year the Amherst facility had on hand over 5 million seedlings and over 300,000 transplants; the Hopkinton facility, 250,000 transplants; and the East Sandwich facility, 482,000 seedlings.

Another expansion of the system took place in 1913 when a nursery was established on the state farm at Bridgewater with a plan for expanding it to 10 acres the following year. Other than the great amount of available space, the main advantage of using this facility was the free labor provided by the inmates in planting 500,000 transplants that first year. Only the foreman's salary was paid by the State Forester.

The following year (1914) a seven-acre tract "having remarkably fertile soil" was leased in the village of Barnstable to replace the East Sandwich facility, which was discontinued because of the lack of a dependable water supply and infertile, sandy soil. At Amherst, the three "shanties," referred to as sheds when they were first built, were torn down in 1915 and replaced by a one-and-a-half-story cottage, quite likely the core building of the present-day regional headquarters.

By 1916 an official state "nursery policy" was in place. The Amherst and Barnstable nurseries were to be regarded as the primary nurseries in the system. Seedlings would be raised there for transplanting to auxiliary nurseries. Transplants would be raised in the primary nurseries only if space allowed. The Hopkinton facility was phased out that year and auxiliary nurseries for raising transplants were established at Myles Standish and Otter River state forests, and at Norfolk State Hospital. In the 1920s, auxiliary nurseries were opened at the Savoy Mountain, October Mountain and the Swann (Monterey) state forests. Small-scale "display" nurseries were also maintained at the Erving, Mohawk Trail, Windsor, and D.A.R. state forests.

There were two primary reasons for creating auxiliary nurseries. One was the great difficulty in transporting trees over inadequate roads to the planting sites during the spring mud season. The other was a matter of economy — 40,000 seedlings could be shipped for the same cost as 3,000 four-year transplants. The display nurseries' role was primarily educational, although stock produced in them was usually planted locally.

The Barnstable nursery was eventually phased out and replaced by one at the Shawme State Forest, which by 1931 became the major source of planting stock for the Cape. Eventually, the roles of the Amherst and

Clinton facilities were clearly defined — the Amherst facility would be used for producing seedlings that would be shipped to Clinton for transplanting and eventual distribution.

The labor shortages during World War I beset nursery operations as well as the other activities of the State Forester's Office. Because of a shortage of men in the planting crews, only a fraction of the acreage of previous years was planted on the reforestation lots. In addition, the discovery of white pine blister rust several years prior to the war caused a great deal of anxiety on the part of the public and reduced the demand for white pine planting stock. Unfortunately, this species made up about two-thirds of the stock on hand in the state nurseries. To move this surplus of older stock, Rane's staff, through "considerable advertising and other methods of salesmanship" sold 600,000 trees for a minimal amount of money, but at least the nursery beds were cleared. Seed was also in short supply during the war years, due not only to a war-time labor shortage that meant reduced seed collection, but also to the fact that much of the seed used by the nurseries, particularly Norway spruce, Scots pine, and Austrian pine, was imported from Europe.

During the life of the nursery program, stock on hand and distributions varied greatly, and it seemed that supply and demand would never be in balance. By 1924, interest in planting picked up and it looked as though the supply would not be able to satisfy the demand. It was hoped that another 70 acres of suitable land could be acquired so that an annual production goal of 4 million to 5 million trees could be met. In 1925, through an arrangement with the Metropolitan Water District (now the MDC), a suitable tract of 25 acres was acquired in Clinton near the Wachusett Reservoir. Over the next several years the Clinton facility was developed with an ultimate distribution goal of 3 million transplants per year.

Beginning in the late 1920s, prompted by the promotion of the practice by Robert Parmenter, the extension forester, there was an increasing interest in planting trees for Christmas trees. The department responded by making more balsam fir and Norway spruce available. In the early thirties the effects of the Depression were felt as the total distribution dropped by 33 to 50 percent of what it had previously been. However, several years later, the availability of CCC labor and an accelerated state forest acquisition program in the mid-1930s caused a brief resurgence, and some 4 million trees were distributed in 1935.

With the exception of several display nurseries, by 1940 only the Amherst (15.7 acres), Bridgewater (14.6 acres), and Clinton (20.5 acres) facilities remained in production.

Another severe labor shortage accompanied the onset of World War II. High school boys, college students, and inmates of state facilities were used as sources of labor. Women students from Massachusetts Agricultural College and Smith College "in particular proved to be excellent workers in the nursery." Again, the seed of some species were in short supply, repair parts could not be had, and many items of mechanical equipment were used beyond their ordinary lifespans. The end of the war did not bring an end to shortages and inflated prices. Postwar seed prices for some species were five times their prewar levels.

Following World War II, distributions dropped below 1 million trees per year. Although demand was up, the stock on hand, which normally would have been 12 million trees, was only 4 million. This shortage led to limits on the number of trees any one landowner could purchase. Even this rationing and a radical rise in the prices of trees, the first one in 25 to 30 years, failed to diminish interest in planting. During the 1950s, annual distributions varied from a half million to 1 million trees. Most trees planted on the state forests were used to reforest areas burned by large fires on the Myles Standish State Forest in 1957 and on the Martha's Vineyard State Forest in 1946. Two tractor-drawn Lowther wildland tree planters were acquired and used to plant the burned areas. After some experience with the machine, it was said that "the machine planting was much superior to the hand planting, not only because it was cheaper but also because it does a better job." No mention was made of the fact that the workers who operated the machine considered this work to be very unpleasant due to the fact that they were tossed about like rag dolls as the bulldozer pulled them through the planting area.

The demand for Christmas-tree stock increased in the 1950s. In his 1958 annual report, H. O. Cook stated: "We are still disturbed by the demand for stock to grow Christmas trees. The fact [is] that many of the landowners do not realize that they not only have to grow the trees but they have to market them."

The Bridgewater nursery was closed in 1955. The soil at that facility had a high clay content, and recent winters with little snow cover had

caused a great deal of winter damage from frost heaving. A radical change in policy took place that same year: a switch from transplants to three-year seedlings. It had become common practice in other states to supply three-year seedlings for distribution rather than the larger, more expensive four-year and five-year transplants. This not only shortened the time needed to grow a salable tree with equal survival and comparable vigor, but also reduced by 25 percent the nursery area needed and saved the labor required for transplanting.

A lack of mechanized equipment and a reliance on expensive hand labor (25 people were employed in nursery operations at the Amherst and Clinton nurseries in 1956) began to take their toll on the program. Appropriations did not keep pace with the cost of supplies and equipment. Over the preceding 20 years, prices of supplies had doubled but appropriations had remained almost constant. In 1960 two catastrophes occurred that set the program back. On April Fool's Day two youths from a nearby reform school set fire to the Clinton headquarters building, and it burned to the ground. In addition, a heavy accumulation of snow that winter attracted large numbers of mice to the seedling beds. After the snow melted, it was discovered that over 300,000 trees had been girdled and killed by the hungry rodents. The Clinton facility was rebuilt over the next two years, but production continued to decline. The last large-scale digging there took place in the spring of 1967, leaving Amherst as the sole remaining facility.

The 1960s saw a continued decline in the demand for trees used for reforestation purposes and an increased demand for Christmas trees. In addition, there were now a number of private nurseries offering a greater variety of species at competitive prices without restrictions on ornamental uses or required state inspections and approval of planting sites. Over the years federal monies had been supplied to the state to support reforestation activities, but by 1962 the federal share had been reduced and only paid 12 percent of the program's expenses. The cost of producing seedlings that year was $31 per thousand; they were being sold for $20 to $30 per thousand.

In the mid-1960s bird repellents and fungicides were developed that made direct seeding a practical method of reforestation, until their toxicity caused the practice to be banned. During this period, annual distributions from Amherst continued to drop from approximately 500,000 to 250,000 trees. In 1969, almost half of the 262,000 trees

distributed were surplus trees purchased from the New York State Nursery in Saratoga Springs, New York.

The Amherst nursery closed after the spring shipping season in 1970. In the 1970 annual report of the Bureau of Forest Development, Chief Forester John H. Lambert, Jr., stated:

> Due to prohibitive unit costs, nursery operations will be discontinued this year. The U.S. Forest Service estimates that a production of at least six million seedlings annually is needed for a marginal operation.

Supporting and Regulating Private Forestlands

After his first full year (1906) as state forester, Alfred Akerman was able to state, "The offer of practical assistance which the Commonwealth makes to owners of woodlands has been responded to with alacrity." In those early years, the demand for this service exceeded the agency's ability to provide it. In the first full year of operation, Akerman and Assistant State Forester Ralph C. Hawley traveled 13,533 miles in the course of delivering lectures and other activities. They also made woodlot examinations on 34 properties totaling 6,545 acres.

To make up for a paucity of practical information on forestry, the State Forester's Office produced a great many publications for use by the general public. Akerman's hope was to reduce the many inquiries for advice of a general nature that took up so much of his staff's time. He and his staff began compiling information and publishing bulletins and leaflets. "Forestry in Massachusetts," "Forest Thinning," "Practical Suggestions for the Massachusetts Tree Planter," and "Massachusetts Trees, How You May Know Them" were among those written. Some were of a technical nature, such as *Forest Mensuration of the White Pine in Massachusetts,* first published in 1908. This fact-filled, 51-page, pocket-sized publication was prepared from a great amount of data that had been gathered over a three-year period by Assistant Foresters Hawley and Cook and contained volume tables, financial data and other information of value to forest managers. The publications must have been quite popular — by the end of 1906, 35,000 copies of bulletins and leaflets had been distributed. As time went on and more federal publications became available the demand

for these more provincial materials diminished and little effort was put into creating new titles.

Later, Frank Rane's expectations of his newly created corps of town forest wardens — "they may become, in a sense, town foresters" — never really came to pass. Few, if any, had formal forestry training, and, for the most part, they were unpaid volunteers. In addition to advice about tree planting and forest-improvement work, land owners wanted to know how to sell timber. No doubt there was some pressure on the foresters to inflate estimated volumes of timber offered for sale, for in 1917 Rane felt the need to explain, "We want the landowners to understand that in making estimates of woodlots this department must be fair to the possible purchasers as well as the owners, and that we cannot make our valuations high to satisfy the seller at the expense of the purchaser."

Through the years, the department's foresters responded to requests for technical assistance. During the CCC era, there was little time and personnel for this work, but once World War II was under way, the demand for forest products prompted the creation of two federally supported "farm foresters" who spent most of their efforts helping landowners market their timber for use as strategic materials.

Eventually these farm foresters would become service foresters and the program would expand to today's 14 districts. The original emphasis of their work, providing assistance to private landowners, has gradually changed to that of administering federal assistance programs and administering the Forest Cutting Practices Act (chapter 132) and the Forest Tax Law (chapter 61).

In addition to these early one-on-one contacts with the public, the state forester and his staff were in great demand to give lectures about forestry. In 1907, to maximize the use of their time, a minimum audience size of 100 persons was set and the sponsor was charged for the speaker's expenses. Forty-five lectures were given that year.

EXHIBITS

The department also developed a number of elaborate exhibits for sportsmen's shows and agricultural fairs. A most unusual approach was the result of a collaboration between the state forester, the Massachusetts Board of Agriculture, and the Massachusetts Agricultural Col-

lege. Between March 30 and April 2, 1910, the Boston and Albany Railroad provided "five observation cars fully equipped with exhibits representing every branch of forestry and agriculture." One car was devoted entirely to forestry and contained a number of exhibits ranging from photographs of forest fires, good forestry practices, and spraying apparatus to specimens of living calasoma beetles, gypsy moth and brown-tail moth caterpillars, and other insects. This "Better Farming Special" made 18 stops across the state and "was met by hundreds of farmers who, in many instances, had driven miles to enjoy the privilege of listening to the lectures on the many themes relating to farming. . . . The enterprise from start to finish was declared a pronounced success, and without doubt proved to be a valuable factor in stimulating and advancing the farming and forestry interests of Massachusetts." Because of the success of the Better Farming Special, the New England Investment and Security Company, which controlled about 1,000 miles of trolley line in central and western Massachusetts, offered the use of their facilities in a similar fashion for a three-day excursion several weeks later, which was also very well attended.

It is difficult to imagine the work that went into these exhibits. In 1937, Dennis Galarneau, the district forester in western Massachusetts (1922-40), and his staff put together a forestry exhibit at the Eastern States Exposition in West Springfield. The exhibit occupied the entire north wing of the building and consisted of models of forest stands undergoing various silvicultural treatments, a forest-tree nursery, a forest fire, a watershed, and a state forest recreation area complete with dolls representing people in various recreational activities. It was estimated that about 98,000 people visited the exhibit.

THE EXTENSION FORESTER

In 1924, Congress passed the Clarke-McNary Act, which in addition to replacing the funding of fire-control activities under the Weeks Act (which expired on July 1, 1925) also provided for cooperation between the federal and state governments in several other areas. One of these was in "farm forestry extension." Initially, Massachusetts was to receive $1,500 per year to fund this activity. The money was to be disbursed through the Cooperative Extension Service at Amherst. Through an agreement with the Extension Service, foresters Cook and Parmenter,

who already devoted a large part of their time to this type of work, were to be regarded as "extension foresters" and the funds used to pay for a portion of their salaries." By 1929 Parmenter was listed in the roster of the Department of Conservation having an extension function. That year he developed a very ambitious five-year plan that included the establishment of a number of demonstration areas in conspicuous locations and the support of county extension agents. After the program had been in operation for three years, Parmenter stated:

> Woodland owners . . . have been satisfied in the past to allow nature to give them whatever crop she desired, but they are now fully awake to the fact that they can improve the quality just the same as they can that of any other product which they are raising. This awakening of the owners of woodland to their prospective value is one of the most promising factors in our forestry work.

Eventually, the indefatigable Parmenter would give radio talks on topics such as "Forest Weeding," "Farm Forest By-Products" and "The Management of Weeviled Stands." He would also develop 4-H forestry clubs and travel throughout the state becoming involved in just about every imaginable forestry activity.

In 1932 Parmenter traveled to the west coast to ascertain, among other things, the potential effect that lumber-producing region might have on the New England lumber industry. After a rather lengthy discussion about denuded hillsides with no reproduction, fire-scarred areas, etc. he went on to say that: ". . . this section of the timber producing world would not be a menacing factor to the New England lumber market in the years to come." Nothing could have been further from the truth.

In November 1935 Parmenter was transferred to the staff of the Massachusetts State College at the request of President Baker, and the position of extension forester has been administered by the college and then the university ever since. Parmenter served the department in a variety of roles for 19 years prior to his departure in 1958. He was replaced by John H. Noyes, who served as extension forester until his promotion to associate dean in 1965. Despite the transfer of the extension function to the college, the department's foresters have continued to supply "practical advice" to landowners and others engaged in managing forestland through the service forestry program to the present time.

THE CUTTING PRACTICES ACT

The first attempt in this century at what one might remotely call a forest cutting practices act came in 1922, when a fire-prevention law was passed requiring that operators of "portable sawmills and others engaged in lumbering activities" notify the state fire warden of where they were operating and be subject to inspection. In time, most of these mills switched from burning slabs to gasoline or diesel fuel, which were less likely to cause sparks, and they ceased being regarded as the menace they once had been. However, the large accumulations of slash were still a concern. And how was the law accepted by the lumbermen? "There was a general spirit of cooperation that is very gratifying," the state forester reported in 1925.

During the late twenties and thirties, there was little interest in forest cutting practices for several reasons. The Depression had severely limited markets, and consequently there was very little activity in the timber industry. Another factor was that the forests had not fully recovered from the heavy cutting at the turn of the century. However, in 1940, in the shadow of a threat of federal regulation of forest harvesting practices and with a rapidly increasing demand for timber because of conflict overseas, Governor Saltonstall appointed a special advisory committee to study the forestry issues facing the Commonwealth. The result of the study was the recommendation to pass legislation (legislation was passed in 1941) to accomplish the following:

1. To create regional state forestry committees to develop standards leading to the elimination of destructive cutting practices
2. To make a major change in the tax law to tax forestland at a reduced valuation: limit assessments to no more than $5 per acre, create a method of deferring taxes on the timber until harvest, set a flat rate of 6%, and provide an exemption for personal use
3. To provide free demonstrations of forestry practices to owners of woodlands

Four regional state forestry committees were created to ascertain the most appropriate cutting practices for their respective areas. On the basis of the subcommittees' recommendations, legislation was again filed the following year to create a single State Forestry Committee to

develop minimum standards for forest cutting. On the committee, appointed in 1943, were William P. Wharton (chairman), the chairman of the Massachusetts Forestry Association; Harold O. Cook, state forester and member ex officio; and three lumbermen, Harry L. Cole from Boxford, Walter C. Jones from Amherst, and Charles J. Kittredge from Dalton. John H. Lambert Jr., the district forester for the northeastern part of the state, was given the temporary assignment to provide technical assistance. The State Forestry Committee met on several occasions in various locations throughout the state and finally presented its proposed regulations to Commissioner Kenney, who approved and promulgated them on May 15, 1944, in the Forest Cutting Practices Act.

The regulations that were promulgated by the Department of Conservation accomplished several things. They defined "desirable species" of trees whose establishment should be promoted and stated that the standard logging practice shall be that of leaving seed trees of these desirable species to restock the land. The regulations went on to specify how many trees of various sizes shall be left as seed trees. In regard to clearcutting the regulations stated that a minimum number (1,000 per acre) of established seedlings of desirable species shall be in place before clearcutting. The regulations went on to state that, "To further protect growing stock care in logging is of great importance where there is considerable immature timber or young growth already established." And finally, "The measures to be used in a given lot necessarily will have to be determined by the State Forester's representative and the operator on the ground."

By the end of 1945, the four district foresters had prepared 275 cutting plans covering the harvest of 59 million board feet of timber on 14,000 acres of forest land. These figures did not include an additional 42 million board feet that was salvaged from the hurricane of September 1944 in southeastern Massachusetts. The State Forestry Committee expressed general satisfaction with the law, but allowed that there was room for improvement, particularly in dealing with a small number of operators who refused to cooperate.

The need for strategic materials during World War II caused a significant increase in timber-harvesting activity. By the end of the war over 400 sawmills were operating in the state. The Department of Conservation's foresters worked closely with the War Production Board

to help lumber producers make their operations more productive and to help them fill defense contracts. The Korean conflict prompted similar attention on the part of the agency's foresters in the 1950s.

TAXATION OF FORESTLANDS

In 1913 the Commission on the Taxation of Wild and Forest Lands was created by a legislative resolve to study the forest tax laws of the Commonwealth and of other states and countries (State Forester Alfred Akerman was a member). The impetus for the creation of this committee was that at that time, not only was forest land itself taxed, but the timber thereon as well. As the timber grew and increased in value so did the tax burden. This had the effect of encouraging landowners to harvest their timber before it had reached maturity. This also promoted extremely heavy cutting and, in the long run, reduced potential profits to landowners and, in a general way, put the practice of forestry in an unfavorable public light.

One of the committee's recommendations, made in its report to the legislature, was that the then tax laws be amended to "relieve the growing timber crop of the unfair burden under which it now labors." The forest tax laws evolved over many years until 1981 when the legislature enacted the version in use today.

The aim of the new legislation was that the State Forester's Office should encourage private forest landowners to better manage their land. Under the new law, the owner of at least 10 acres of contiguous forestland not developed for nonforest use, upon its certification as forestland by the state, may now become eligible for an assessment reduced to 5 percent of the property's fair market value for a period of 10 years, during which a forest management plan must be developed and carried out. Declassification as forestland (if, for example, the landowner decides to develop the land in some way) is permitted upon payment of the accumulated taxes plus interest. The municipality has the right of first refusal to purchase the property within 120 days of notice of declassification.

Many Massachusetts forest landowners have taken advantage of these special tax provisions. Nearly 12 percent of the eligible forest land base (private timberland) has already received certification, and new owners are enrolling at a rate of 4 percent a year. Although the

Commonwealth may not be known for its timber production, it is recognized as a leader in many areas of forest resource use and conservation and as a state in which there are high standards for stewardship of its forests. Massachusetts' public and private foresters can take much credit for this reputation.

State Lands: The Forests and Parks

Today's Department of Environmental Management has approximately 280,000 acres of land under its jurisdiction. These lands occur as State Forests, as State Parks and as State Reservations. There is little distinction between the three categories — except on paper. They are all managed for multiple uses, although, generally speaking, the State Parks and the Reservations are managed with greater emphasis on providing recreational oppportunities. Unlike some other states' and federal park lands the harvesting of timber is not precluded. However, when it is done, it is used as a means of achieving another objective — such as improving wildlife habitat or maintaining diversity — rather than an end in itself.

THE STATE FOREST COMMISSION

As discussed above, under "Reforestation and Timber Management," State Foresters Akerman and Rane had both strongly advocated the establishment of a system of forest reserves. Though the Reforestation Act of May 1, 1908, did authorize the acquisition of lands "for the purpose of experiment and illustration in forest management," land acquired under the act did not serve as the system of state forest reserves envisioned by both Akerman and Rane, whose purpose they foresaw as acquiring large tracts of land that could be managed for timber. In 1913, the legislature's Commission on the Taxation of Wild and Forest Lands had again made recommendations concerning not only the management of small, privately owned woodlots but also the acquisition of large-scale forest reserves. The commission advocated the creation of a State Forest Commission whose purpose would be to transform the state's 1 million acres of "wild, unproductive areas [into] forested areas which would on their maturity have a commercial value." As Rane later explained:

> It is obvious that our forest problems differ in some respects from those of other states where virgin forests have been acquired by legislative enactment and are being scientifically managed. In Massachusetts the problem is essentially one of reclamation.

The State Forest Commission, created in 1914, had three members, the state forester and two members appointed by the governor. The first members Frank Rane, the State Forester, Harold Parker, and Harvey N. Shepard who had been affiliated with the Appalachian Mountain Club. It was empowered to acquire, by purchase or otherwise, land suitable for timber cultivation. But support was not universal for this project. Critics of the plan to acquire large tracts of forest as state forest preserves deemed it to be socialistic. In defense of itself and its purpose, the State Forest Commission stated in its first annual report:

> No person or corporation will to any large extent assume to do what will have so remote a return, and meantime large portions of the state are unused, — producing nothing, — and like bad associates are continually extending their evil influences. The further and sufficing answer is that by such public methods we are securing a commodity in our midst which otherwise we must import, at least in a very large degree, and at the same time we are setting a practical example for others to follow.

As with the demonstration reforestation lots a ceiling of $5 per acre was placed on these purchases. These lands would be under the care and control of the state forester, who "shall proceed to reforest and develop such lands and shall have power to make reasonable regulations which in his opinion will tend to increase the public enjoyment therefrom and to protect and conserve the water supplies of the commonwealth."

Harold Parker, a civil engineer, former chairman of the Massachusetts Highway Commission, chairman of the commissioners of the Mount Wachusett Reservation, and a former member of the General Court, was elected chairman of the commission. Parker's work with the Highway Commission gave him a knowledge of the state's geography that few had at that time. The commission's first act was to send a circular letter to mayors, selectmen, and forest wardens throughout the state soliciting ideas as to whether any lands in their towns might be suitable for reforestation purposes. The commission's goal, stated in the

letter, was to acquire forests distributed throughout the state so that they would be accessible to a large number of people and serve as "object lessons" in forest management. Two restrictions were applied to the lands sought in this first solicitation. One was that, by law, the land could be worth no more than $5 per acre; the other was that the commission hoped to secure these lands in tracts of no less than 1,000 contiguous acres for efficiency of administration. Although no land was purchased in its first year, the commission did enter into negotiations for several tracts.

The commission's second annual report included a section extolling the virtues of eastern white pine:

> The woodland and waste land in Massachusetts of today, it is probable, was originally covered with white pine to a very large extent; it is the characteristic tree of New England. It is suited to all the natural conditions, it is very easily planted and cared for, it has fewer insect enemies than most trees, and reaches maturity in a comparatively short period. It can be used in more ways than any wood known. Investigations made by the experts of the State Forester indicate that a well cared for pine forest will increase 1,000 feet B. M. [board feet] per acre per year. It can readily be calculated what would be the net gain to the State or its citizens if all of the estimated 2,000,000 acres of woodland and waste land within our borders were fully developed and cared for.

The report went on to state "that where the reforesting of the waste lands is to be undertaken it should mainly be by the planting of white pine. And further, every state forest established by the Commission (or proposed) is adapted to the growth of white pine above all other trees."

The Commonwealth's first state forest, the Otter River State Forest, comprising 1,800 acres of light, sandy soil in the towns of Royalston, Templeton, and Winchendon, was established in 1915. The house and barn on the property were repaired for the use of "those in charge of the forest operation." That first year, 75,000 seedlings were planted in the forest.

Although it remained unnamed, the second state forest acquired was to become the Myles Standish State Forest: "south and east of Plymouth town; it extends beyond the limits of Plymouth into Carver." The forest was planned to eventually cover 10,000 acres of what was

described as "typical Cape Cod land, every acre of which is capable of growing white, red and Scotch pine. . . . It is uniformly covered with a scant growth of scrub oak and occasional clumps of jack pine [most probably pitch pine] and white pine." Much of this infertile land was tax-delinquent and its ownership could not be determined. These areas were acquired by eminent domain within a predetermined boundary. The third property acquired that year was an 800-acre tract in the towns of North Andover and Reading. This property would become the Harold Parker State Forest, named for the commission chairman after his death on November 29, 1916, following a brief illness.

To the commission, it was apparent that one of the first undertakings on the state forests should be the establishment of

> . . . a fire protective system. Because of the flammability of the State Forests in Barnstable, Plymouth and Dukes counties special measures were taken to cut their area up into 200 acre blocks, each surrounded by a fifty-foot wide fireline with a road in the middle and a ten-foot wide plowed strip at each extreme edge.

In 1916, the commission investigated other large tracts of land in Wendell in "the territory along the Millers River and its tributary waters . . . cut over by lumbermen who had no thought of future needs." Following logging, the area had burned over several times, ". . . so that now thousands of acres present the aspect of a dreary desert." The commission's investigations also included several thousand acres of land in Douglas and East Douglas that had experienced a similar fate. These lands would be acquired as funds became available.

Two legislative resolves were passed in 1916 directing the State Forest Commission to investigate the advisability of acquiring two specific forest reserves: one encompasing Mount Grace, in Warwick, and another encompassing a portion of the Mohawk Trail in Franklin and Berkshire counties. The studies were requested because it was estimated that the cost of acquiring them would exceed the $5 per acre ceiling and because the lands involved were not "unproductive or waste lands" as required by law. Nevertheless both tracts were regarded as desirable acquisitions by some members of the legislature.

In June of 1916, Forest Examiner Frank L. Haynes was dispatched to the Franklin County town of Warwick to gather information about establishing a state park or forestry reserve at Mount Grace. The

proposed 1,728-acre reservation, extending three miles north to south and one half to one and a half miles east to west, surrounded the 1,620-foot-high mountain and was located directly north of the village of Warwick. On the basis of Haynes's report, the commission concluded that a state forest could "be administered properly from a commercial standpoint and still afford every opportunity for recreation and pleasure; and that such a forest at the prices named will be profitable to the Commonwealth."

One problem associated with the purchase would be "the removal of the predominating hardwood growth at a profit" so that those areas could be planted with white pine. Some urgency was associated with this recommendation, for the chestnut blight had already killed many trees, and more mortality would surely follow. In light of these circumstances, the commission recommended that if the land were acquired, a $10,000 appropriation should be made to establish a sawmill and harvest the hardwoods and mature pine so that the area could be planted.

After completing his fieldwork on Mount Grace, Haynes traveled to the northwestern part of the state to gather information and prepare a report for the commission on the "practicability and advisability of establishing a state forest along the Mohawk Trail in the counties of Franklin and Berkshire." The Mohawk Trail was fast becoming a major tourist attraction. On at least one day in 1915, 700 cars traversed the Trail. Haynes's methodology was to divide the area along the trail into three distinct sections: Charlemont to Drury, Drury to Whitcomb's Summit, which marks the dividing line between between the Deerfield and Housatonic watersheds, and from Whitcomb's Summit west to the eastern side of the Housatonic valley in North Adams.

Because it was basically undeveloped, the first section was suitable for a state forest as prescribed by law and could be made "nearly self-supporting." But to acquire this land, a special appropriation would be required, because the price would be about $10 per acre — twice the maximum set by law.

The second, central, section of the study area, along the plateau from Drury to Whitcomb's Summit, was felt to be more suitable for acquisition as park land because of the "delightful views over the hills to the east and north." If this land were to be acquired for park purposes, a wide strip would have to be purchased to preserve unobstructed views.

The fact that most of the land was actively farmed raised its value to an estimated $40 per acre. Yet its acquisition was deemed necessary because otherwise its natural beauty "might be defaced by the erection of cheap stands and unsightly camps."

In the westernmost section, there were no long-distance views, with the exception of "the brink of sudden descent" (now known as the Hairpin Turn): "In short, nothing exists here that is different from hundreds of other wild uplands."

The commission's recommendation was to purchase only the first section as a state forest, to have "the beauty of the precipitous valley preserved forever at a cost not unreasonable, both by reason of its location and character."

The total cost of acquiring all three sections was estimated to be $114,300. Some years later, in 1920 and 1921, the legislature appropriated monies to implement the purchase of the Mount Grace and Mohawk Trail State Forests.

In 1927 the Department of Conservation (the State Forest Commission ceased to exist in 1919) was asked to study the feasibility of expanding the Mohawk Trail State Forest to include the area west of the forest from Drury to the Hairpin Turn. It was estimated that what could have been acquired for $75,000 in 1916 would cost nearly $1 million to purchase in 1927. The proposal was ruled impractical and no further action was taken.

A fourth state forest, Savoy Mountain, initially consisting of 1,100 acres, was purchased in 1918. In 1919, Mrs. Susan Ridley Sedgwick Swann donated 1,000 acres in the town of Monterey to the Commonwealth in memory of her husband, Arthur Wharton Swann; this became a portion of what is now the Beartown State Forest.

In 1922, the largest contiguous parcel of land in the state under single ownership, the 10,000-acre Whitney estate in the towns of Washington, Becket, Lenox and Lee, was acquired and renamed the October Mountain State Forest. Because it was valued in excess of $5 per acre, state monies had to be beefed up with donations from the people of Berkshire County to acquire it. That same year, Mrs. Ellen S. Auchmuty of Lenox donated 1,000 acres abutting the westerly boundary of the first tract, and the Department of Conservation purchased the 500-acre Dewey tract, which shared a common boundary with both properties. Prior to these acquisitions, the city of Pittsfield had taken 2,000 acres

adjacent to the Whitney tract for the protection of its municipal watershed. This 13,500-acre parcel is now one of the largest tracts of contiguous open space in the state forest and park system.

The State Forest Commission's work continued through 1919, when its functions were absorbed by the newly formed Department of Conservation.

STATE FOREST MANAGEMENT

In addition to the more basic physical improvements, one of the Department of Conservation's highest priorities was to conduct an inventory and forest-type survey of all the state forests. This effort was led by Dennis Galarneau, who was the district forester in western Massachusetts from 1922 until 1940. According to the State Forester's 1926 annual report of the Commissioner of Conservation:

> In order to properly manage and develop the state forests it has been necessary to survey the conditions as they exist within the boundaries of each forest. Through a method of survey the land has been subdivided into types in accordance with the distribution of growth found. The location of the various types has been indicated by lines and symbols on maps of convenient size. In order to make the types more comprehensive these maps have been colored, each type being represented by a separate color. In carrying out these surveys, data also has been secured relative to the composition of the growth by species, size and crown density; areas of cut, burned, brush land, open land and plantations have been located; and the location of streams, lakes or ponds, roads, buildings and other improvements have been noted. This information has likewise been added to the maps.

For the first 20 years of the state forest system, the on-the-ground management of the forests was the responsibility of the district fire wardens. As the system became more extensive, it became apparent that more resources were needed. Accordingly, in 1937, 33 of the state forests were placed under the control of 15 forest supervisors and 8 remained under the district fire wardens. In 1935, Commissioner of Conservation York put forth a proposal to divide the state forests into six districts, with a staff of as many foresters of "unquestionable technical ability," and a resident superintendent in charge of each of 23 state forest areas.

Prior to this the only thing resembling a district was Galarneau's assigned area in western Massachusetts.

Not until 1940, under Raymond J. Kenney, would any form of districting be put in place. His plan called for the creation of three forestry districts across the state. Further, Kenney went on to define their work as having three distinct categories: (1) general forestry, including nurseries, state forest management and technical assistance to private landowners; (2) fire prevention and control; and (3) moth suppression. As a result of the increased forestry activity on both state and private land, Commissioner Kenney in 1942 added another forestry district in central Massachusetts and placed Charles Woodman in charge. The federal government, through the U.S. Forest Service, shared the cost of two farm foresters in Berkshire and Essex Counties. These foresters were initially regarded as an extension effort although they were administered through the Department of Conservation. In 1950, the number of forestry districts was increased from four to six by splitting the western and southeast districts. Each district then consisted of no more than two counties. Worcester, because of its great size, was the exception to this and had one forester assigned to it.

GIFTS OF LAND

Not all the state forests were purchased; a number were gifts by public-spirited Massachusetts' citizens.

In the late 1920s, two women's organizations made gifts of state forests to the Commonwealth. The first of these was the 1,020-acre Daughters of the American Revolution State Forest in Goshen, which was dedicated on April 9, 1929. The second was the Massachusetts Federation of Women's Clubs State Forest in Petersham and New Salem. A first, eight-acre, parcel was presented to Commissioner Bazeley on October 9, 1930, at a ceremony at the forest "in the presence of a large number of club women and conservationists." Over the next several years the federation acquired more land to add to this original tract. In August of 1933 the final transfer of land was accomplished, bringing the total up to 950 acres, and a tablet was put in place at the entrance. The D.A.R. State Forest and a portion of the Federation of Women's Clubs State Forests were acquired as wildlife preserves with no hunting allowed.

In 1937, Mr. Bradley W. Palmer gave the Department of Conservation 1,902 acres in Ipswich and Topsfield, to be known as the Willowdale State Forest. Of this, the 1,235-acre Pine Swamp tract was to be managed as a wildlife sanctuary. In reference to the department's acquisition of a wildlife sanctuary, Commissioner Ernest J. Dean stated: "It is not the intention of the department to add to the acreage of so-called posted land unless a wildlife program is immediately instituted and continued which will warrant closing the areas to the hunters." Following the death of Mr. Palmer the remainder of his estate in Topsfield, Hamilton, and Ipswich — 721 acres — was transferred to the department to be managed as a state park, and an additional 157 acres were added to the Willowdale State Forest. The final transfer took place in October of 1944.

In 1934, two gifts of land were accepted by the department for use as parks. The widow and daughter of Roland C. Nickerson donated a 1,727-acre tract in East Brewster, on Cape Cod, to the Commonwealth to be dedicated in his name. The property contains four ponds having a total acreage of 328 acres, of which the largest, Cliff Pond, is 208 acres. And over a period of several years in the 1930s John C. Robinson donated 1,021 acres abutting the Westfield River in Agawam, West Springfield, and Westfield, which became a state park named in his honor — The John C. Robinson State Park.

In 1940, Joseph Allen Skinner presented to the department 256 acres in Hadley and South Hadley, which became the Joseph Allen Skinner State Park. Earlier, in 1915, the property had been the subject of an investigation by the State Forester's office regarding the feasibility of purchasing it as a State Reservation. Although its acquisition was recommended, the legislature had refused to fund the $40,000 purchase price. The new park was the site of a large hotel — the Summit House, with breathtaking views of the Connecticut River valley — that could accommodate 60 to 75 people; it had been reconstructed in 1851 to replace an earlier one built in 1821. There was also a tramway on the property that carried visitors from the "halfway area" up to the hotel, which, although popular with the public, proved to be a maintenance nightmare. The tramway was eventually dismantled, but the Summit House remained and was restored in the 1970s.

Other gifts included Demarest Lloyd Memorial Park, a 200-acre tract on Buzzards Bay in Dartmouth, donated by Demarest Lloyd's

widow in March 1953 in memory of Mr. Lloyd and her son. The 424-acre Lyndon Bates Memorial Park in Hancock was donated by the Bates family to be used solely as a wildlife sanctuary. Wahconah Falls State Park, 47 acres in the towns of Dalton, Hinsdale, and Windsor was a gift from the Crane Company of Dalton in 1942.

HARD TIMES

During the early Depression years, the monies appropriated for acquisition were allocated to forest management and other improvements: "Many purchases contemplated were laid aside in order that we might employ more men on our forests to relieve slightly the employment situation." In 1930, the governor and the legislature supplemented the regular forest appropriation with $25,000 to hire unemployed workers. These extra funds allowed the department to engage an additional 350 men to work for a six-week period on 20 state forests. As the Depression grew worse, the legislature made more monies available for this purpose. In 1931, the sum of $103,000 enabled the Division of Forestry to put 1,440 men to work on 54 state forests. The following year another $110,000 was appropriated and 1,288 persons were employed. Throughout the Depression, several federally funded relief programs, such as the Emergency Relief Administration (ERA) and the Works Progress Administration (WPA), were also used to supply labor for work on the state forests on a project-by-project basis. In 1938, over $200,000 in WPA monies were spent on state-forest improvements.

THE CIVILIAN CONSERVATION CORPS

The Civilian Conservation Corps (CCC) came into being as a result of New Deal legislation passed in 1933; its purpose was to provide work and vocational training for unemployed single young men through conserving and developing the country's natural resources. The creation of the CCC determined the direction of many of the Department of Conservation's activities for the remainder of the 1930s. That year the department applied to the federal government for the maximum number of camps that could be accommodated on existing state land. By July 1933, 31 camps had been established in the state housing 5,600 boys and 600 World War I veterans who were residents of Massachusetts.

The 31 superintendents and 300 foremen were recruited by the Department of Conservation. For the most part the participants were "not only under-nourished and under-developed boys, but boys who in the majority of cases had never known what it was to work. These factors seriously delayed our program until the boys could be conditioned." Their work was broken down into seven categories: "camp establishment, road building, silviculture, fire hazard reduction, pest control, recreation, and fish and game."

Commissioner Samuel York regarded the work of creating forest recreation areas as "the perfect work relief project." The CCC employed two landscape architects, Egbert Hans and Wayne Stiles, to plan these recreational improvements — Hans was assigned to the area west and Stiles to the area east of the Connecticut River. The camps in the forests with the greatest potential for recreational development were administered by the National Park Service, and the remainder by the U.S. Forest Service. The program accomplished so much in its first year that Commissioner York stated in his annual report for 1933:

> It is unfortunate that the present economic work in some of our forests is approaching exhaustion and unless sufficient additional acreage is acquired within the next three months, some of our camps will have to be transferred to other states where Massachusetts boys will do for other states what should be done for this commonwealth.

Responding to his concerns, the legislature funded the acquisition of an additional 40,000 acres of state forest land over the next three years. Due to these increased holdings, the department applied for and received permission to construct 22 more CCC camps, bringing the total number of camps statewide to 53.

By the end of 1934, the program had carried out silvicutural work on 8,856 acres and built "202 miles of road, 288 water holes and ponds, 90 tent sites, 16 bathing beaches, 12 cabins, 298 fireplaces, 66 picnic groves, 50 park areas and 106 miles of foot trails." The actual number and locations of CCC camps in Massachusetts varied considerably from year to year. A total of 165 sites of former camps have been identified. This large number is attributable to the fact that it was not unusual to have satellite camps at major work sites. It should also be noted that a number of camps were not on state forestland: three were municipal

camps, three were on MDC land, and four gypsy moth camps were located along the barrier zone in the Connecticut River Valley; they were located on private land in the towns of Belchertown, Greenfield, Millers Falls, and Westfield. It is probably fair to say that in 1933, at the peak of the CCC program, the most working camps on state forest land at any one time was between 40 and 50. From that point on, the camps were gradually phased out. The last two camps, SP-19 at Nickerson State Park and SP-24 at Robinson State Park, were closed in March 1942, when the CCC was abolished by Congress.

STORMY WEATHER

Fortunately, the CCC program was in existence during two of the most severe meteorological events of the century. The flood of March 1936 tested the ability of the department and the CCC workers to deal with natural disasters. The worst damage reported was in western Massachusetts, particularly the watersheds of the Connecticut and Millers rivers; the Merrimack valley also sustained considerable damage. The water at the Hampden County Improvement League building on Memorial Avenue in West Springfield was nine feet deep. Accounts of the relief work accomplished by CCC workers include clearing landslides from the Mohawk Trail; placing 65,000 sandbags on the bulkhead of the Holyoke Dam; removing silt deposited in the main streets of Andover, Haverhill, North Andover, and Lawrence; reconstructing a 120-foot bridge across the Ware River in Thorndike; spending 3,400 man-days cleaning streets and cellars in West Springfield; rescuing people and cattle that had been trapped by floodwaters in Northfield; repairing miles of washed-out roads; removing six to ten inches of silt from the streets and the basements and first floors of 150 homes in Hadley; and burying dead cattle and other animals that were victims of the flood.

The second of these natural catastrophes was the hurricane and flood of September 21, 1938, which has been called

> . . . not only the worst catastrophe of the kind to come to the New England section, but, measured in the destruction of life and property values, the worst that ever occurred anywhere in the United States at any time in recorded history.

Over the 10-day period preceding the hurricane winds as much as 15 inches of rain had fallen, not only filling rivers and streams, but softening the ground, allowing trees to be easily tipped over when the hurricane winds started to blow. The greatest flood damage was sustained by the area west of the Connecticut River, where the shallow soils, steep terrain and narrow valleys exacerbated the effects of the heavy rainfall.

Although millions of acres, particularly in the southern New England states, received some degree of damage, the central part of Massachusetts, the so-called "pine area," received the most wind damage: some 600,000 acres were damaged to the point that fire hazard-reduction work was warranted. An estimated 1 billion board feet of merchantable timber was blown down. Of this, 600,000 million board feet was deemed salvageable. Within a month of the storm, the New England Timber Salvage Administration (NETSA) was formed within the U.S. Forest Service and an administrative hierarchy created that included a director in each of the New England states. The Massachusetts legislature also passed emergency legislation in April of 1939 to create the Massachusetts Timber Salvage Administration, whose purpose was to determine the best methods to deal with the aftermath of the storm and to advise landowners as to what their options were. While it was in existence, it was overshadowed by NETSA although it worked very closely with it.

There were three distinct types of tasks that had to be accomplished following the storm: the elimination of the increased fire hazard, the salvage of downed material, and the repair of the tremendous damage that had been wrought by the floodwaters that accompanied the storm. To deal with the fire hazard-reduction work the NETSA created 10 resident DA (Department of Agriculture) camps in central Massachusetts in May of 1939. Eight of these, located in Ashburnham, Harvard, Pepperell, Townsend, Royalston, Warwick, and two in Petersham, were staffed with 50 men each. Two camps with 100 men each were located in Petersham and Winchendon. In addition, an estimated 15,000 WPA workers were involved in the cleanup throughout New England during the winter of 1938-39.

In the state forests an estimated 6 million board feet of damaged timber was on the ground. The Division of Forestry, the CCC workers, and 500 temporary workers set about the work of cleaning up through

the 1938–39 winter and spring. They were able to salvage more than half of the damaged timber: 2.75 million board feet were sold to the NETSA and another 1.3 million were processed by an expanded crew at the Mount Grace State Forest on a sawmill manufactured by Chase Turbine in the neighboring town of Orange.

In addition to salvaging timber, repairing the damage to the state forests included repairing roads and bridges that were damaged by the flood, which required heavy construction equipment. Although the CCC had some heavy construction equipment at its disposal, it was insufficient to deal with the aftermath of the storm. No one Massachusetts construction firm was willing to undertake the cleanup work and wait a number of weeks before it would be paid. The Benjamin Foster Company of Philadelphia was the only large firm to come forward and assume the task of repairing the damage on the state forests. Because of the magnitude of the job and the fact that winter was fast approaching, there was little time for detailed planning and preliminary estimates. The Foster Company agreed to do the work on a cost plus basis and began work on October 5, 1938. By the end of the month 2,500 men were at work on 30 of the state forests. The work was finished before the following spring.

Over the next two years, the cleanup efforts were gradually phased down. The last of the 10 U.S. Forest Service DA camps was closed in December 1940. It was estimated that three million board feet of small, scattered, and deteriorating timber that was uneconomical to salvage remained on the ground on the state forests, and another 250,000 acres containing submarginal timber was left untreated in central Massachusetts "largely along the New Hampshire line from Dracut to Northfield and extend[ed] south for 5 to 15 miles." The chief fire warden faulted the NETSA for much of this remaining hazard, because its utilization standards would accept only logs greater than eight inches in diameter at the small end, which left many upper logs and unlopped tops in the woods.

WORLD WAR II

During the thirties the CCC improvements to the Department of Conservation's recreation areas continued to attract more and more visitors, but the outbreak of hostilities in Europe and the Pacific

brought this all to a halt. America had little time to play. Shortages of many strategic materials, particularly automotive items such as gas and tires, led to rationing, and bans on pleasure travel caused attendance figures at state forest and park facilities, particularly the more remote ones, to plummet. Furthermore, the work of the forest and park staff near urban areas was made difficult by children unattended by their elders, who were presumably either away at war or at work in the defense industries.

The same shortages that reduced attendance made getting to work difficult for many of the Conservation Department's employees. Some had to resign for that reason, and others left their jobs to take employment in higher-paying defense industries closer to home. In addition, a number of employees either were drafted or enlisted in the armed services. By 1943, 38 staff members were on active duty. Labor shortages prompted the department to hire high school boys to tend the Bridgewater nursery, and young women from Smith and Massachusetts State College worked at the Amherst nursery. German prisoners of war housed at Fort Devens were put to work at the Clinton nursery.

To help alleviate the wartime fuel shortage, the Cut-a-Cord program was resurrected from the days of the 1915 fuel crisis. Through the program, people could buy standing wood that they cut themselves for $1 per cord; in 1943, 200 people took advantage of the program.

In several instances, transfers of land were made from the state to the federal government in the interest of national defense. The largest of these was a tract of approximately 7,000 acres located in the towns of Bourne and Sandwich that became an extension of the Camp Edwards (now Otis Air Force Base) artillery impact area on Cape Cod. This left approximately 1,700 acres of state forestland in a three-mile-long strip one half to one mile wide along Route 6 from the Sagamore Bridge to Route 130.

A one-square-mile block was taken from the center of the Martha's Vineyard (now Manuel F. Correllus) State Forest and transferred to the U.S. Navy for use as the Martha's Vineyard Naval Air Station. It was used as a training facility for pilots of the "Hellcat" night fighter. The area is now the Martha's Vineyard Airport. One of their target ranges was located at what is now South Beach, which is now administered by DEM and the town of Edgartown and the island of No-mans Land off Martha's Vineyard's southwest coast.

During the war, the creation of three 40-to-50-man public service camps for conscientious objectors in Petersham, Royalston, and Ashburnham helped to alleviate the Department of Conservation's personnel shortage, at least locally. These men were used for fire control, water-hole construction, and hazard-reduction work relating to hurricane slash.

Despite the great amount of lumber salvaged after the 1938 hurricane, by the war years there was a shortage: the war effort required immense quantities of lumber and other forest products. A significant amount of timber was harvested from the state forests to help meet the need for strategic materials. By the end of the war, the harvest amounted to 2.5 million board feet from these young forests. For Conservation Department projects, even abandoned CCC camps were dismantled and the lumber was used.

Lumber was not the only material needed from the state forests. Mica was another sought-after material, necessary in the manufacture of radio equipment. In 1943 the forester for western Massachusetts made a considerable effort working with the Chester Granite Company prospecting for mica on the Chester State Forest. As the state forester later reported, "Although federal and state geologists found outcroppings of considerable promise, the prospecting work so far carried out has given discouraging results. Good mica is scarce and much needed in the war effort."

THE POSTWAR ERA

After the war, a number of factors led to a rapid intensification of use of state forest and park facilities. Thousands of veterans returned, started families, and bought now readily available automobiles. The 40-hour work week, which had become the norm, afforded ample leisure time on the weekend with the automobiles easing the rigors of travel. Attendance at state forest and park recreation facilities trebled from what it had been before the war.

Because of minimal staffing at these facilities and increased recreational use, ordinary maintenance activities were often deferred, especially the road system that the pre-Depression crews and the CCCs had rehabilitated or built. There were an estimated 700 to 800 miles of roads in the state forests and parks system, and most of them were in need of

serious repair. Help seemed to be on the way in the late 1940s when a special appropriation of $25,000 was made for road-maintenance equipment — but the seven tractors purchased proved to be inadequate. Finally, in 1953, the legislature appropriated funds to the Department of Public Works, and nine major thoroughfares that passed through state forests (10 miles of road) were reconstructed and blacktopped. While utilizing the resources and expertise of the DPW seemed like a reasonable approach, the differing standards between a gravel state forest road and a paved state highway prevented this relationship from working.

The demands on the department's forestry staff increased along with the demand for recreation. In the postwar period, state forest crews spent half of the year on forestry work and the other half — during the high-use season centering around the summer months — on work related to recreation such as keeping recreation areas clean, selling tickets, etc. This arrangement meant that the crews had to carry out forestry work during the most difficult time of the year for outdoor work. The situation was also exacerbated by the fact that in some cases workers were allowed to take their own vacation time only during the off-season. In 1948, State Forester Harold O. Cook suggested that forestry and recreation activities be separated completely.

Through the years, there has never been a lack of special projects to take state forest workers away from their regular duties. One unusual activity in 1949 that took up a significant amount of the forest personnel's time was a survey to locate hazardous abandoned wells on the state forests. This was prompted by the death of a small child in California who had fallen into a well. Two hundred wells were located and were rendered harmless by filling them with rocks and other material.

THE PRISON CAMPS

In May 1952, the Department of Corrections and the Department of Conservation established a forestry camp for 50 prison inmates at the Myles Standish State Forest in Plymouth. This concept had been considered by the Department of Conservation for some time and was brought to fruition under Commissioner Arthur Lyman, a former

commissioner of the Department of Corrections. Lyman pointed to successful cooperative programs in New Hampshire, Michigan, Wisconsin, and California as examples of his vision for Massachusetts. However, not everyone shared his enthusiasm for the program. Similar camps proposed for the Douglas, Beartown, and Harold Parker state forests were withdrawn when local citizens voiced their objections. Later, two more camps were established: at the Monroe State Forest, in 1955, and the Warwick State Forest, in 1964. The inmates carried out a number of tasks for the Conservation Department. In addition to constructing new facilities and undertaking road maintenance and forest-improvement work, they manufactured thousands of picnic tables, concrete fireplaces, and signs for recreation areas.

The Monroe camp was closed following a murder in North Adams committed by an inmate on work release. The Warwick camp was phased out in the late 1980s because of inadequate waste-disposal facilities. Most of its staff was absorbed by a new correction facility on the grounds of the former Gardner State Hospital. The camp at Myles Standish State Forest is still in operation.

ACCELERATED FOREST MANAGEMENT

By the late fifties the need was seen to intensify and refocus forest-management acitivities. In 1960 the foundations were laid for an accelerated forest management program whose purpose was to improve the forests of the state forest and park system. The specific areas it targeted were timber stand improvement that was no longer being accomplished by crews whose priorities had changed to recreation; administering forest products sales; and establishing a continuous forest inventory system on the state forests. Initially participating in the program were three foresters, each with one assistant, and three summer crews of six forestry students each.

In 1961, to streamline the operations of the rapidly growing agency, five regions and five regional supervisor positions were created. These staff members were responsible for the coordination of all of the 4 bureaus within the Department of Natural Resources within their respective regions. This administrative structure is still in place today, although some regional boundaries have changed.

Recreation and Wildlife

In the early 1900s, it was recognized that the production of timber could coexist and even enhance recreational activities on public land. In reference to existing state reservations, State Forester Akerman stated: "The reservations that have been made so far are distinctly for park purposes; there are, however, considerable areas in these areas that could be used for timber growing." If portions of them were managed for timber, "their park features would be enhanced," because if they were managed in the proper context they would have more diversity and hence, resilience to pests and storms, more diverse wildlife habitats and the practices could have been used to create a more pleasing visual appearance. Consequently, the development of permanent campsites became one of the major activities engaged in on the Myles Standish State Forest in its early years of operation:

> There has been a great demand for camp sites and, therefore, surveys were made of College, Fearings, Widgeon, Clew (sic, Curlew) and Rocky Ponds, and on these ponds, two-hundred and fifty camp sites with 100 feet shore frontage and 200 feet in depth have been laid out. Charge Pond has been reserved for the Boy Scouts and Barretts Pond for the Girl Scouts.

By 1920, 150 sites had been leased. The first public campground was developed at College Pond in 1920 and was continually upgraded throughout that decade. An auto camp was developed at the Mohawk Trail State Forest shortly after its acquisition in 1921. During the 1924 season, the facility "was used overnight by 1,050 auto parties, containing about 3,500 people, representing 28 states and 4 Canadian provinces. Five cars were from California."

While the department did promote recreational use in some areas, it was clear that the priority in those early years of the state forest system was the production of a forest crop. In 1925, the state forester observed: "We are setting apart and growing these forests for the reason that we need the lumber. The fact that such a forest will be a beautiful thing on the landscape must of necessity be a secondary consideration." Prior to the CCC era minimal recreational facilities had been developed at some of the state forests, they were neither elaborate nor particularly inviting:

> During the year 1932 we improved the camping places on our State forests. There are now 19 camping grounds on our forests, many supplied with water and all equipped with tables. There are in all 71 tables with benches, 70 fireplaces, and 10 comfort stations or toilets. Nine of these camping grounds are for overnight use and week-end camping, and are among those equipped with fireplaces, tables and comfort stations.
>
> Over 50,000 people enjoyed these various camping grounds during the season. About 100 tables with benches are in process of being made at the present time, and we expect to construct several more fireplaces, as our present equipment does not suffice for the public demand.

By 1932, two hundred permanent camp lots had been leased at Myles Standish State Forest. The new areas developed by the CCC were so well received that Commissioner York was prompted to state: "We have discovered that recreation is the most important by-product of our forest area." To deal with this increasing interest in outdoor recreation, the department developed under Commissioner York what was known as "The Massachusetts Plan of Conservation" in 1934. It called for the eventual creation of 26 state reservations, all of them within 20 miles of a large population center. Commissioner York summed up a rather simplistic, three-point approach to resource allocation on these properties as follows:

> Having set aside recreational areas and a wildlife sanctuary, or game refuge, in one of the forest-parks, all the rest of the area is turned over to the state forester to be developed on a strictly forestry basis; in other words, to be devoted to raising a timber crop. . . . Upwards of 75 percent of any one given area will be devoted to forestry, thus forming perfect surroundings for wilderness recreation and the restoration of the wildlife that is so valuable to the Commonwealth.

Also, to minimize administrative difficulties in the complex management of these areas, Bazeley felt that the minimum size of these areas should be at least 5,000 acres. This acreage would justify a full-time superintendent and would allow enough room for both recreation areas and a wildlife sanctuary. Eventually, a total of 40,000 acres were

acquired and 21 of the 26 areas in the "Massachusetts Plan" were established.

The public's response to the recreation facilities built by the CCC was much greater than anyone would have thought, due no doubt to the factors enumerated above, plus the fact that outdoor recreational activities could be engaged in at little or no cost. In 1934 user fees (25 cents for the use of a table and fireplace, $2.50 a week for a tent site) were instituted at five areas on a trial basis. The thought was that the cost of acquisition and development of these recreation areas should be borne by the taxpayers in general, but that the cost of their maintenance should be borne by the users through fees.

Another initiative begun during the CCC era was the development of winter sports areas to accommodate downhill and cross-country skiing and snowshoeing. Facilities were developed at the Mount Grace, Mohawk Trail, Chester, Brimfield, Pittsfield, Beartown, and East Mountain state forests. The most elaborate facility was at the Pittsfield State Forest, where 13 trails and a well-equipped base lodge were developed by the CCC. Snow reports were provided to local newspapers and radio stations, and these areas were very well received by the public. Several of these areas continued to be used heavily throughout the World War II years, with weekend ski trains running from New York City to Pittsfield and Great Barrington.

State reports indicated that in 1937, 2,000 persons used the East Mountain State Forest area in Great Barrington and "a few hundred" used Beartown. During the winter of 1938, "in spite of a poor ski season last winter, there were at least 4,500 skiers" using the East Mountain area and 2,500 using Beartown. In 1939, these facilities "were taxed to capacity whenever the snow conditions were favorable during the winter season." In 1940, it was reported that 6,100 persons had used the Pittsfield facility, and "thousands of persons enjoy Mount Grace's ski trails and slopes in the winter."

In 1944, a report by the Division of Parks and Recreation stated that the Chester and Brimfield ski areas had not been used at all for three or four years, and by 1947 it was becoming apparent that the efforts put into the development of winter recreation facilities despite some early successes were not paying off, though the reason for this remained a bit of a mystery.

In his 1947 annual report of the Division of Parks and Recreation, Director George J. Keville stated:

> With the end of the war, and gasoline rationing, it was anticipated that there would be a great impetus to the areas where there were skiing facilities. The snow conditions were good, if not excellent, for skiing yet the patronage wasn't what was anticipated. The New York, New Haven and Hartford Railroad ran their special Sunday trains from New York to South Lee and Pittsfield. The report of this company was to the effect that travel in these "specials" was light, and they could offer no plausible explanation. . . . This Division is vitally interested in all types of recreation, but it is the opinion of the Director that the cost of clearing away new ski trails, and building ski tows is so prohibitive that no new areas should be opened for skiing purposes.

WILDLIFE

In their early years some state forests were managed as game sanctuaries where game was protected and was often propagated, as the 1918 Report of the State Forest Commission stated:

> We have arranged with the Fish and Game Commission so that bird and animal life is protected in these forests, and there is no reason why they shall not be used for the recreation of the people of the Commonwealth.

In fact, on the Myles Standish State Forest the protected deer herd proved to be a nuisance. It was reported in the 1923 annual report of the Department of Conservation that "deer have become too plentiful and they are injuring the young pines in the nursery and the plantations." By 1924, the problem had become worse:

> Deer continue to cause damage to the plantations and nursery. . . . It has been demonstrated in the Myles Standish State Forest that deer and a State Forest do not always get along well together, and in such an event the deer will either have to be driven off, or else reduced in numbers to a harmless minimum.

In 1926, a fence had to be erected to protect the nursery from the deer, but the deer continued their onslaught. In 1927, the fence of barbed wire put around the nursery to keep out the deer proved inadequate and was replaced with woven wire. Apparently, that fence worked, or some other means of control was employed, as no further mention was made of the problem.

In a discussion about conflicts that might be caused by the management of these lands for both forestry and wildlife, Commissioner Bazeley cited the question of whether to eliminate underbrush which, although of value to wildlife, "may be an intermediate host in the spreading of diseases of our trees." Eventually, the bottom line was that "the development of a forest is a business proposition, and such considerations as can be given to the welfare of the wildlife on the area are of decidedly secondary importance."

The policy of allowing hunting on the former Whitney Game Preserve, now October Mountain State Forest, opened Commissioner Bazeley to public criticism, since the tract had been closed to that activity while it was in the hands of the Whitney family. In defense of the policy, Bazeley stated in his 1922 annual report:

> The foundation of our policy in the management of the forests is that they shall serve the greatest number of people. With the increasing tendency on the part of private landowners to post their lands against hunting and fishing the time is fast coming when the sportsman of small means will have no place to hunt or fish unless he does it on State forests. . . . The Commissioner is desirous of doing the best thing possible for the forests, both public and private, and for the sportsmen, both rich or poor.

In 1925, legislation was passed allowing the commissioner of conservation to declare an open season on deer in the state forests upon the issuance of a written permit. During the early part of the CCC era (1934) a program was developed to establish wildlife sanctuaries on the state forests, undertaken in cooperation with the Division of Fisheries and Game, which was a part of the Department of Conservation. The approach was to designate from 10 to 25 percent of a forest's area and treat it

> . . . from a strictly wildlife standpoint. The object is to provide year-round food for animals or birds which it is desired to in-

> crease and protect. Therefore, berry-bearing bushes, apple trees, hawthorns and grains are planted and open spaces and water provided within this area, so that it is possible for wildlife to exist. The inner area is closed to hunting.

Initially, these areas were established on Shawme, Beartown, Savoy, and October Mountain state forests, and a number of others were under consideration. Citing the success of a similar program in Pennsylvania, Bazeley stated: "Where hunting is prohibited in such an inner area, the area surrounding this territory actually becomes a hunter's paradise." When the program was fully implemented, in 1938, there were 18 refuges with a total area of 15,527 acres established within the state forest. In 1937, it was reported in the Department's annual report:

> Approximately 44 miles of graveled fire lanes have been constructed as well as 50 water holes for fire protection. To supply cover, 247,560 coniferous seedlings have been established in scattered groups adjacent to feeding grounds, escape covers have been established, 7.3 miles of food strips cleared, cultivated and planted, and 42.75 acres of food patches established. By the planting, transplanting, grafting and pruning of some 20,000 fruit-bearing shrubs and trees, including 2,839 malus grafts, the winter food situation, as it affects wildlife, has been greatly improved in many areas.

Although Bazeley promoted habitat management on the state forests, he was quite critical of the Division of Fisheries and Game's program of stocking both fish and birds for harvest by sportsmen, stating that their program was "merely carrying water in a sieve" — i.e., the animals stocked seldom became established populations being caught or shot immeditately after their introduction through this "put and take" program. The habitat management work went on for several years, and the program was substantially completed by the fall of 1940 (there had been a hiatus after the 1938 hurricane, when cleaning up became the highest priority).

The first annual report (1940) of the new Division of Wildlife Research and Management that was created as part of the reorganization of the Department of Conservation noted a shift in the department's policy regarding the management of the state forests for forest

wildlife that was in place during the CCC era. It stated: "In general, good forest management seems to be also good wildlife management, but certain modifications of the forester's proven methods are apparently going to prove desirable for the benefit of wildlife."

WOODLANDS AND WATER RESOURCES

Most of Massachusetts' 359 cities and towns depend for their water on surface water supplies drawn from forested watersheds, so it is not surprising that woodland-water relationships have received priority attention over the years. Forests are now known to protect water quality, moderate runoff to streams and reservoirs, and, in some instances, actually increase water yields. The management of forested watersheds can also improve wildlife habitats, furnish recreation, produce materials and economic returns from the harvesting of timber and other products, and improve landscape diversity and aesthetics as it can on other forested lands. The Commonwealth's approximately 80,000-acre holding of land and water at Quabbin Reservoir in central Massachusetts (some two thirds of the entire watershed) is a case in point. The Metropolitan District Commission/Massachusetts Water Resources Authority (MDC/MWRA) water supply system of which it is a part currently serves 2.4 million water users, about 40 percent of the population of Massachusetts. The land is also managed for timber production, and for wildlife and is of course one of the state's major recreational facilities.

According to the MDC's Natural Resource Specialist, Thom Kyker-Snowman, two forms of change, often powerful and oppositional, have been at work in the Quabbin forest throughout time. Disturbances have ranged from major natural climatic shifts and events to the abandonment and reclamation by forest of formerly cleared agricultural land. In that regard, the Quabbin forest mirrors events described elsewhere in this history. The pre-Colonial forest at Quabbin was likely a patchwork of varying composition due to natural disturbance, though stands of mature, mid-to-late successional species of great size are also in the historic record. This mosaic of forest types occurred again as a result of the history of human use of the area.

Chapter 321 of the Acts of 1927 made possible a general taking of land at Quabbin; farms and commercial properties were acquired and

removed; the reservoir site was cleared of trees; four entire townships were officially discontinued; and ultimately, about 500 families were displaced. Shortly after its acquisition, the MDC embarked upon an active program to reforest the 10,000 acres of open upland it had acquired. Most of this work was accomplished in a period of 10 years. During this time, two major floods and a catastrophic hurricane also occurred.

Today, Quabbin is a model of sound watershed management. The MDC's Land Management Plan for 1995-2004 contains the long-term goals of assuring the availability of pure water for present and future generations; effectively managing, protecting, conserving, and enhancing its natural resources; ensuring public health and safety; and preventing adverse environmental impacts from degrading watershed resources. At the same time, Quabbin has been able to host a varied and flourishing population of forest wildlife (including several endangered species), serve as the site for some 700,000 low-intensity recreational visits each year, and return $300,000 annually in revenues from timber sales.

State Forestry Programs: Summing Up

It might be interesting to ponder how Alfred Akerman or Frank Rane would view the state of forestry in Massachusetts today after nearly a century of evolution. No doubt they would be pleased to note that the forest tax law has been used successfully to "relieve the growing timber crop of the unfair burden" that it once labored under. They would also be pleased that some state foresters are still dispensing "practical advice" to those who seek to improve the management of their land, although the demand for this advice has diminished with the growing corps of private consulting foresters. This advice has not always been well taken. In spite of the fact that there may very well be more standing timber in the Commonwealth today than at any other time since the days of the Massachusetts Bay Colony, the quality of that timber is not as good as it would be if woodlands had been intensively managed. Since they had departed the scene before the debates that raged about the regulation of forest practices at both the state and national level through the 1930s and 1940s, Akerman and Rane would probably puzzle over a forest cutting practices act that, today, deals more with water-quality issues than forest-management practices.

Akerman and Rane would be quite pleased to see that the system of forest reserves they advocated and pushed for has grown to over a quarter of a million acres — not the 1 million-acre goal put forth on several occasions, but still a respectable accomplishment. The fact that these lands have not been nurtured sufficiently would certainly be a disappointment to them. The thousands of acres of planted conifers, both native and introduced, that were not always suited to the site and, consequently, did not flourish could certainly be considered an "object lesson" in forest ecology. Neither forester would be pleased that the relationship between timber production and forest recreation that they both envisioned as blissful coexistence has instead often become contentious; they would be astonished that in a society that consumes vast amounts of wood, often drawing upon supplies from other parts of the world, in some quarters the idea is championed of not managing the forests at all.

How would Akerman and Rane react to today's myriad of special interest groups? Not that they did not exist a century ago — it's just that there are more causes being championed today than in their time. It would be a bitter pill for them to swallow that the once highly visible Office of the State Forester is now buried deep within a bureaucracy of secretariats, departments, divisions, and bureaus, and that its piece of the fiscal pie is smaller than ever before. And, few members of the public would come to listen to Akerman and Rane lecture about forestry — they could not begin to compete with cable or satellite TV.

Nowadays these early state foresters would not encounter the fervor that centered around efforts to reclaim the many acres of "waste and unproductive lands" at the turn of this century, since no one is currently predicting a timber famine. Instead, they would note a public that, more often than not, takes for granted the forests that cover almost two-thirds of the Massachusetts landscape.

Yet, Akerman and Rane could probably be convinced that better days for forestry are in the offing — that as global forest resources continue to shrink, Massachusetts forests will become more cherished than they ever have been. As happened a century ago, public interest in the forest's fate will be renewed. The dialogue about how these forests will be used will result in better management for both commodity and noncommodity values, and state forestry agencies, which are as much

an extension of society today as they were a century ago, will play a large part in helping bring about this renewal. In short, both Akerman and Rane would undoubtedly be optimistic about the future.

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