State of New Hampshire

BIENNIAL REPORT

of the

FORESTRY DIVISION

Concord, New Hampshire
1953 - 1954

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REPORT

To His Excellency the Governor
and the Honorable Council:

The Forestry and Recreation Commission submits herewith its report for the two fiscal years ending June 30, 1954. This consists of a record of the activities of the two Divisions and brief accounts of related agencies prepared by the State Forester and Director of Recreation and their staffs.

HARRY K. ROGERS, *Chairman,*
OWEN JOHNSON,
RANDALL E. SPALDING,
CHARLES E. GREENMAN,
JASON C. SAWYER,
Forestry and Recreation Commission.

WILLIAM H. MESSECK, JR.,
State Forester

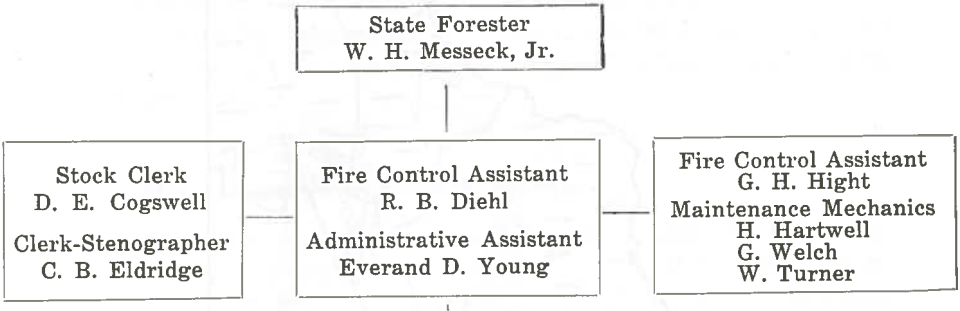
RUSSELL B. TOBEY,
Director of Recreation

Warren F. Hale, Assistant State Forester, 1927 - 1953.

FOREST FIRE SERVICE

Administration

A few changes were made in the administration of the forest fire service. Mrs. Shirley Chamberlin left the service and Administrative Assistant Everand Young was appointed to cover the statistical work, payment of fire bills, dispatching and to assist in administration. Due to the nature of most of his work, H. C. Hartwell's title has been changed to Maintenance Mechanic, although he still assists in fire prevention and training. The revised organization chart follows:

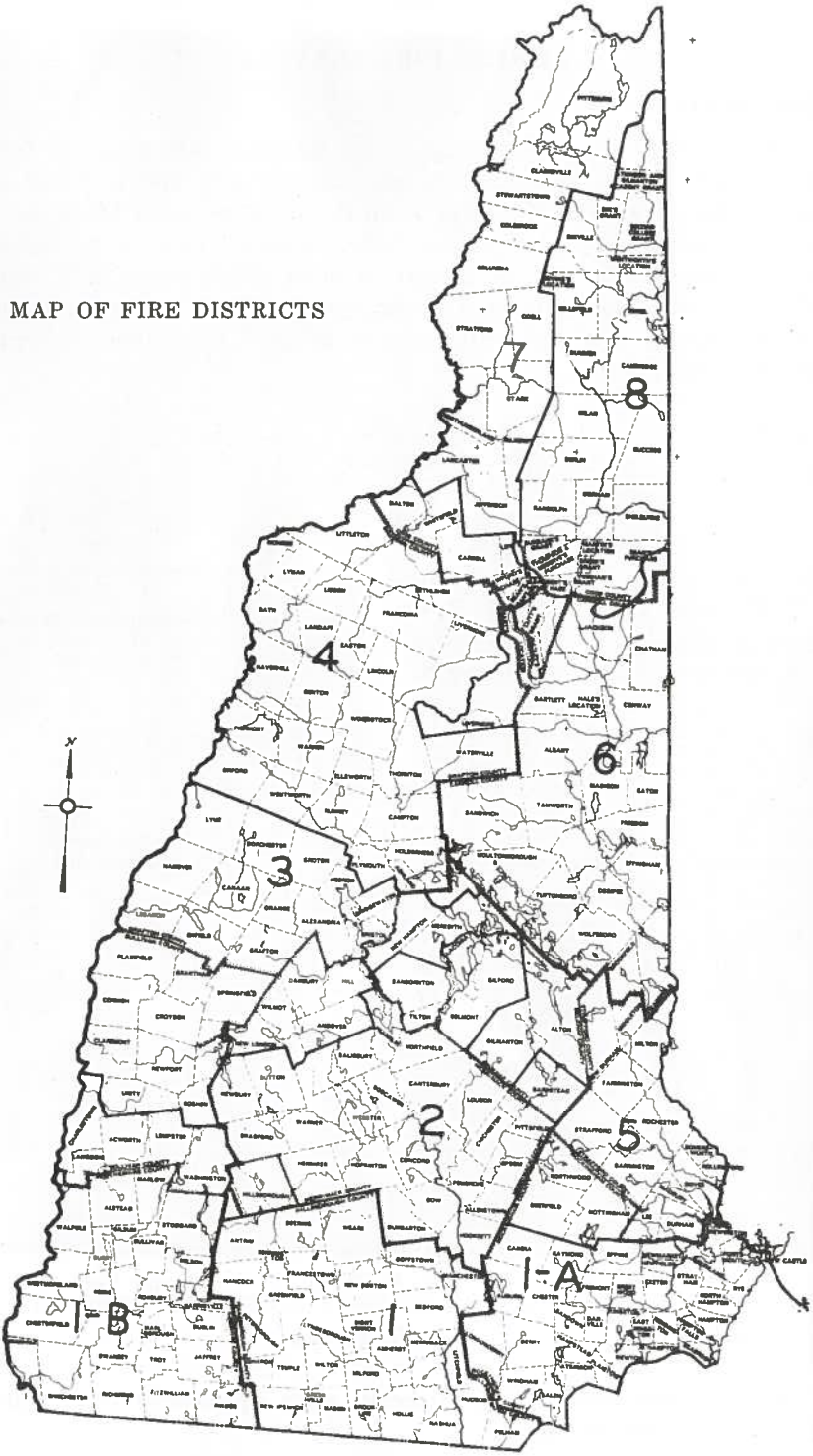


District Fire Chiefs and Lookouts

District	Counties	Chief	No. Lookout Watchmen
1	Hillsborough	G. O. Hollis	4
1A	Rockingham	M. A. Webber	3
1B	Cheshire and Sullivan	F. J. Baker	2
2	Merrimack and Belknap	T. J. King	4
3	Sullivan, Grafton, Merrimack	J. Q. Ricard	3
4	Grafton - Coos	S. Goodhue	1
5	Strafford, Belknap and Rockingham	R. W. Smith	2
6	Carroll and Belknap	R. B. Smith	3
7	Coos - West	H. B. Chase	4 and Conn. Lakes Patrolman
8	Coos - East	E. R. Buckley	2

The district chiefs deal directly with appointed town forest fire wardens and deputies.

MAP OF FIRE DISTRICTS



The administrative staff is able through radio to keep in close touch with all districts. Daily special fire weather reports are sent out to all district chiefs and lookout men and close watch is kept of fire incidence and fluctuations of the fire build-up index.

Frequent attendance at the various forest fire warden's associations and Federation meetings keep the members advised of the latest developments as well as keeping the office informed of the thoughts of those who actually handle the fire work in the towns. A simplification of the method of keeping records of and reporting on inspection of sawmills has saved many hours of district chief and office time.

The town resource sheets for Districts 1, 2 and 4 were revised. The difficult fires in the summers of 1952 and 1953 presented many new problems and greatly increased the work load and work time of the staff.

Central Supply and Warehouse Building

A nearly new steel and concrete block building off Ferry Street in Concord was purchased on October 21, 1952 for $35,000 from capital funds, to be used as a central warehouse for fire equipment and a supply depot for the maintenance service. This building had a clear floor area of 4,000 sq. ft. plus a partially-roofed loading platform, a wash and toilet room, and a boiler room. There are two large doors at each end. When acquired, partitions partially divided the interior of the main floor into two offices and a parts room. There was also a heavy duty floor lift with compressor, a gas pump and tank and a floor drain area for washing cars. The heating system was a stoker-fed boiler with thermostatically controlled blowers. After one year's experience with the dust from the coal-fired boiler, an oil burner and supply tank were installed. The roofed portion of the loading platform was closed in with cement blocks to add 360 sq. ft. additional storage space for paints, oils, tires, lumber, etc. Bins were rearranged in the supply room, benches built for the work rooms and office space arranged for District Chief King of District No. 2 and the Merrimack County Blister Rust mapper. A partition was built to divide the main floor and save heat. The building stands on a 4-acre plot of land with plenty of room for future needs. Plans call for building additional storage facilities for fire equipment, an indoor fire hose drying rack and improving the heating system of the office.

Table 1

AVERAGE ANNUAL FIRE LOSS

Period	No. of Fires Reported	Area Burned (Acres) Total	Av. Per Fire	Damage Total	Av. Per Fire
1912-1954* (43 years)	419	6,446	15.4	$55,428	$132.32
1941-1950 (10 years)	480	6,962	14.5	72,292	150.00
1951	462	3,008	6.5	63,649	137.76
1952	272	579	2.1	2,843	10.45
1953	556	5,043	9.1	42,347	76.16
1954	605	924	1.5	4,364	7.21

*For detailed statistics of earlier years see 1949-50 Biennial Report, Page 12.

Stock Records

A complete inventory of all state property was completed in the fall of 1953. All forest fire property thus inventoried was compiled into district lists signed for by each district chief. Warehouse fire equipment is under the responsibility of Fire Control Assistant Hight and the supplies under Stock Clerk Cogswell. A complete stock-keeping system keeps a check on all inventory through purchase lists and transfer slips.

Review of Forest Fire Conditions

The 1952 Season (July 1 — December 31)

The first ten days of July were clear and hot with a build-up of fire danger especially in the central part of the state. General rains on the 11th, while heavy in the south and central areas, were rather light in the north. The weather continued hot and dry with only a light general rain on July 19th and scattered light thunder showers until August 5th. A ban on smoking was declared from July 18th to August 6th and outside fires were permitted only with permission of the district chief. Light to heavy showers reduced the fire danger in the southern part of the state during the rest of the month. A light build-up of fire hazard was effectively stopped by heavy rains on September 2nd. September weather was relatively normal with a slight hazard ended by heavy rains on October 3rd. Heavy frost occurred on October 9th, followed by dry weather. A "No Smoking — No Open Fires" ban declared on October 24th was followed by a full woods closure on the 27th. Rains in the north permitted the lifting of this ban in northern Coos County on the 28th and the rest of the state on October 29th, after snowfall over most of the state, but the original "No Smok-

ing — No Open Fires" ban was in effect until November 10th. The lower counties were closed from November 5th to 10th. Coos County lookouts were closed on October 31st, those in the south from November 10th to 20th, since rains on the 16th and 17th ended the fire season.

There were a number of rather large and difficult fires in 1952. Some of these follow:

Date	Town	Acres	Cause	Cost
July 2	Epping	8	Lumbering	$217.69
3	Randolph	5	Railroad	624.24
17	Success	84	Lightning	70,338.42
23	Candia-Deerfield	250	Logging	3,866.76
23	Sutton	4	Smoking	479.08
Oct. 24	Pelham	40	From Massachusetts Believed Incendiary	815.47
24	Franklin	5	Dump	145.79
25	Epsom	40	Smoking	820.86
27	Gilford	58	Smoking	1,538.30
27	Fitzwilliam	30	Railroad	500.00
27	Nottingham	5	Lumbering	354.70
Nov. 2	Brookline	8	Smoking	520.11
2	Peterborough	6	Incendiary	222.05

The Fire in Success Township

A lightning strike that first showed up on the steep spruce-covered east face of Bald Cap Mountain in Success Township on July 17th proved to be one of the most stubborn and costly fires in New Hampshire history. The east face is very steep with high cliffs and rocky shelves. A thick growth of spruce and fir grew on the duff that had accumulated for centuries. In spite of hard-working crews risking their lives on the cliffs, the fire kept flanking the lines along places where man could not reach. As the fire burned, slides carried masses of burning trees, duff and rocks to the bottom and buried fire that burned for months. A fire line was established around the top edge. A hose line with 10 relaying pumps carried water the whole length of this line. The fire smoldered for days and then broke out when weather conditions were favorable. On August 4th it broke around the south line but was stopped on the upper edge. On August 18th, a re-burn flashed over the heads of fire fighters and burned across the top of the mountain. Then men could work on the edge of the fire and control was effected although at great effort. Large crews of men recruited throughout the whole northern part of the state cut and dug a wide fire line with hand tools. As bulldozed roads were passable only part way up the mountain all food and drinking water had to be packed in. A complete network of field telephones covered the area and there was a limited use of radio.

A fire camp was set up with rented and borrowed equipment providing rough shelter and furnishing plenty of food for the men who stayed on the fire. The pump relay alone required 25 to 30 men, including pump operators, telephone men, packers, mechanics and hose movers, and these men worked long hours since there were none to replace them. Soldiers from Camp Dodge in Pinkham

Firebreak on North Baldcap Mt., Success, N. H., August 9, 1952

Notch and the University of New Hampshire forestry students from Passaconaway performed well when the going was heavy. The Brown Company moved in whole camp crews with their chain saws by busses from 80 miles north. The Franconia Paper Company in Lincoln sent a crew that "stayed with" the fire for days. Pump men were recruited all over the state. Three district chiefs and one assistant were constantly on hand and special deputies worked long hours in supervisory jobs.

Pumps ran night and day for weeks and breakdowns were inevitable. Pumps from all over the northern end of the state were sent in to keep the water moving. A Brown Company trailer unit pumped water for a week until it broke down. Much hand equip-

ment and hose were lost but no one was seriously hurt. The fire was held to 84 acres in an area, where, if allowed to get out of hand, it could have burned the whole mountain range. This fire showed the need for more power pumps and hose, and for camp equipment to keep a crew constantly on the fire and eliminate extensive travel costs, and for training of more supervisory personnel to relieve the load on a few. Since men were paid from the time they left their town until their return, much of the labor cost was consumed in travel time pointing up the need for establishment of a fire camp.

SUCCESS FIRE COSTS

Labor	$29,593.99
Mileage	914.11
Repairs to Equipment	1,140.62
Supplies	2,032.02
Rentals	1,902.13
Food	2,641.49
Gas and Oil	909.48
Telephone	32.98
Total	$37,162.62

The 1953 Fire Season (January 1 — December 31)

Following a comparatively mild and short winter with light snowfalls, the first grass fire opened the season on February 19th. From then until March 24th grass fires were common, with woods fires becoming frequent from mid-March on. The worst days were March 7th, 11th, 22nd and 23rd. On March 12th, a Chichester man lost his life fighting a grass fire. Most fires reported in this period started from brush or rubbish fires, railroads and careless smokers. The greatest threat of these fires was to buildings.

The rains on March 24th continued with only brief periods of a few dry days until May 3rd. It was generally cool with a heavy wet snow on April 13th and 14th and snow in the north on April 20th, which remained until the first week in May. Federal Hill and Jeremy Hill lookouts were open on a day to day basis from March 2nd and 3rd respectively and Oak Hill from March 18th. All stations were manned on April 1st or soon after, the northern lookout men working on telephone lines during the wet periods. During occasional short dry periods fires occurred with increasing frequency until May 11th when 11 fires were reported. Following a wet spell, 7 fires were reported on May 24th that burned 35 acres. High fire danger occurred again from June 1st to 3rd with 24 fires reported, many in the north country. Most were held to a fraction

of an acre or small areas. A few light rains kept the danger down until June 9th.

Fire danger mounted rapidly in mid-June when 4 to 12 small fires were reported daily. Temperatures generally were very high with drying winds. Following record hot days on June 19th and 20th thunderstorms were widespread with heavy local rains. Generally the rainfall was very light and lightning strikes caused fires that showed up during the next week. In all, 51 lightning-caused fires that required suppression work occurred, and many strikes were found later that did not cause fire. All such fires in hardwood areas were held to a fraction of an acre or small areas but 6 strikes in mountain spruce or in slash caused the worst fire suppression task since 1947.

Following the lightning storms the weather remained clear and dry until July 13th when over an inch of rain fell. The woods, except for northern Coos County, were closed on June 28th and the ban was lifted in the north on July 7th and all over the state on July 13th. During this period (June 20th-July 13th) 188 fires were reported, the worst periods being June 23rd-27th and July 3rd-6th. The problem fires which resisted all efforts to control in the initial stages, or burned 5 acres or more were the following:

Date	Town	Area	Cause	Suppression Cost	Damage
June 22	Lincoln, Bog Pond	10	Lightning	$2,927.95	$10.00
23	Middleton-Milton	237	Lightning	8,434.05	0.00
23	Millsfield	5	Lightning	1,296.79	0.00
24	Tuftonboro-Mt. Shaw	1,554			
	Moultonboro	240	Lightning	104,775.57	20,286.00
24	Milan	75	Railroad	3,929.70	378.00
25	Deerfield	5	Incendiary	422.04	50.00
26	Acworth	6	Lightning	4,883.46	0.00
27	Hart's Location-				
	Mt. Webster	25	Lightning	5,711.78	0.00
27	Enfield-Cornish-				
	Grantham Mt.	1,570	Lightning	152,814.69	15,020.00
28	Newmarket	25	Unknown	1,396.73	0.00
28	Sargent's Purchase-				
	Mt. Resolution	7	Lightning	U. S. Forest Service	
July 3	Rochester	10	Power Line	380.59	15.00

Some of these fires occurred during what is normally the least hazardous part of the fire season and deserve special mention.

Lincoln-Bog Pond. This was caused by a lightning strike in spruce at the edge of Bog Pond. It burned deep and was difficult to put out but water was plentiful and near at hand.

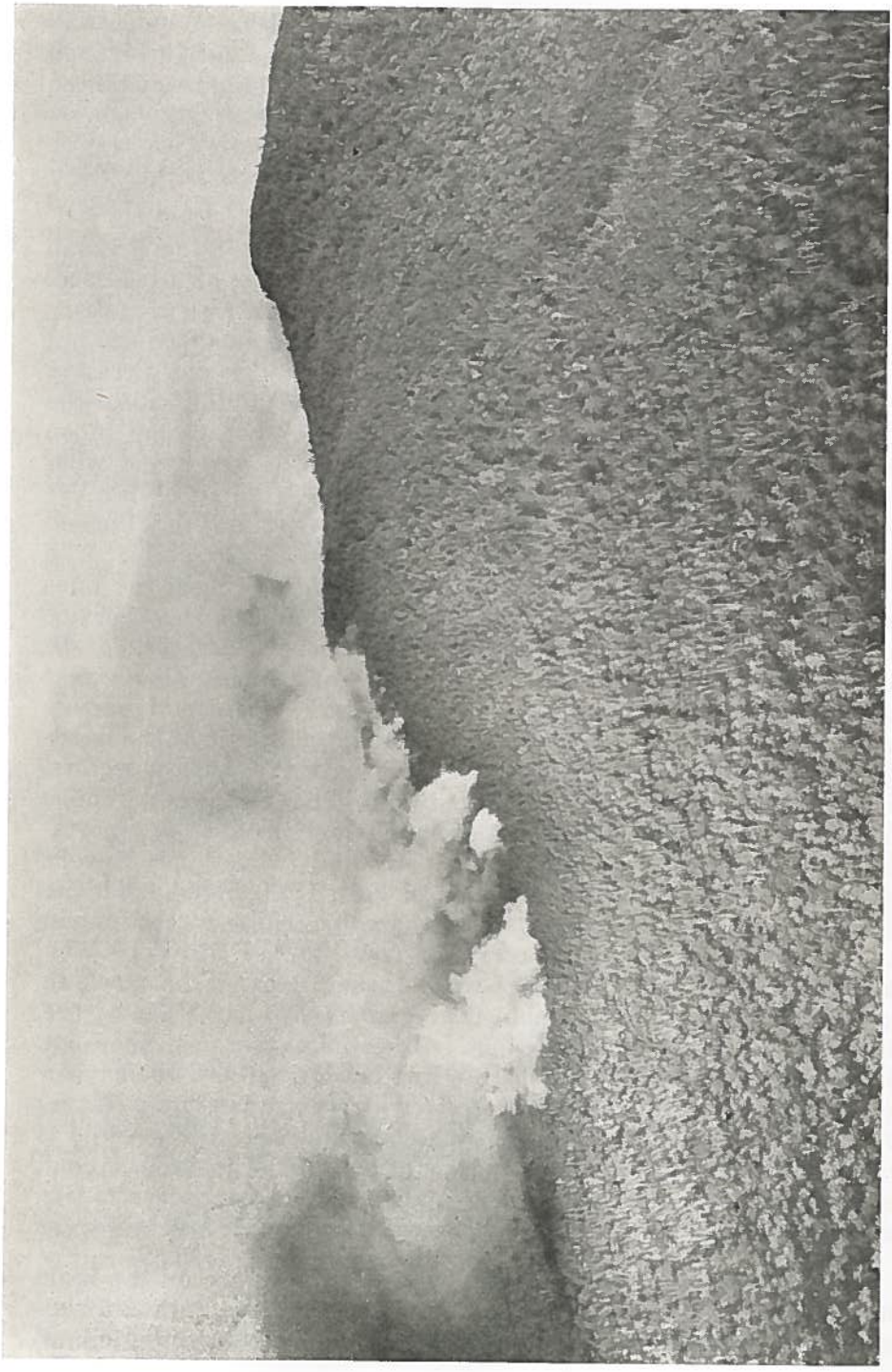
Middleton-Milton. Fire caused by lightning strike in a tree broke out on June 23rd in a large slash lot and burned 140 acres

before it was stopped at a road. The next day it broke out across the road and burned practically all of the slash area until it reached the green timber when it was easily stopped. This fire exhibited high resistance to control and persistence in the duff and slash.

Millsfield. Another lightning fire in a bad area was stopped by exceptionally fast and thorough work.

Moultonboro 240 A.-Tuftonboro 1554 A. A lightning strike in spruce high up on Mt. Shaw first showed up as a fire on June 23rd. The fire was reached late on June 24th by two men who then came out for more help. A small crew worked on the one-acre fire but could not control it when it blew to 4½ acres. This was arrested by a shower in the early afternoon. A road was bulldozed to the foot of the mountain and crews were beginning to come in on June 27th when the fire blew up before a strong northwest wind and continued down the ridge until late that evening. This fire stopped only when it reached the hardwood. On the 28th it burned northward and on the 30th burned over Canaan Mountain. The fire continued to burn at the head of White Brook until the lines were joined on July 9th. A loan from the Maine Forest Service under the Northeastern Forest Fire Protection Commission of 15 pumps and 3,500 feet of hose on July 29th augmented 45,000 feet of hose and 20 pumps from the towns and state. Fire headquarters were set up in the Highway Garage in Ossipee. Radio at the headquarters and on Mt. Shaw kept in touch with the various sectors, while miles of telephone lines served pump lines and access routes. The National Guard helped with communications and transportation. The 300-man unit of Army personnel from Camp Devens came in on July 6th and stayed until July 13th. Men from the Naval Prison worked on the fire for a week. These forces helped the hundreds of fire fighters recruited from Carroll, Strafford, Belknap and Merrimack Counties who worked around the clock to get the fire under control, hold it and extinguish it. Miles of fire line were hand cut and hand dug. Other miles were smashed out with bulldozers while much of the line bordering hardwood types was soaked from long hose lines, some with six and ten pump relays. After the rains on the 13th, patrols continued for weeks while a tremendous amount of hose, pumps and tools was brought out and sent to Concord for cleaning and repair. District fire chiefs and special deputies from 6 districts worked on this fire.

Hart's Location-Mt. Webster. This lightning fire on the high ledges above Crawford Notch was first noted on June 25th and was reached at 3:30 A. M. on June 28th. It was fought on the ledges



Mt. Shaw Fire from the Northeast, June 27, 1953

until it broke out at 4:00 P. M. June 28th and flashed to the top where it burned some 22 acres before the line was completed on July 2nd. The fire was declared out on July 10th. No water was used on this fire although a line of hose and pumps was laid up the trail from the head of the notch as a safety measure. Help was recruited from upper Grafton County and Coos County, the fire being handled jointly by Districts 4 and 7.

Grantham and Plainfield. A smoke was reported on Grantham Mountain in Corbin Park on June 25th but disappeared before it could be located. It showed up again on June 27th and was lo-

Fire on the White Brook Sector, Mt. Shaw Fire, July 1953

cated in thick spruce on the mountain top. As the men reached the fire, it blew up and the men had to retreat for their lives. Help from Sullivan County towns was rapidly recruited and a fire organization set up to handle the fire. The fire headquarters was established in Grantham with a west side sector headquarters established inside Corbin Park in Plainfield. Access routes were bulldozed and fire lines cut and cleared at the fire edge. The fire

was persistent in the spruce and remained dangerous until July 25th. Patrol crews remained until July 29th. Water was pumped in from Lily Pond 1½ miles north of the fire, and when this pond began to dry up a 2½" hose line brought water from Chase Pond a mile farther away. Massachusetts sent 11,000 ft. of 1⅛" hose and 5 pumps under the Northeastern Forest Fire Protection Commission to augment the 21 pumps and 34,000 ft. of hose from the towns and state. Help was recruited from Sullivan, Cheshire, Merrimack, Hillsborough and lower Grafton Counties. The Air Force sent in 221 men from Grenier Air Force Base and 100 men under Major Anderson from Dow Air Force Base at Bangor, Maine, from July 7th to July 16th, and the Army furnished 359 men from Fort Devens Quartermasters Group from July 3rd to July 16th. These men under Lt. Col. McKetchum performed very valuable services. They were completely self-sustaining, providing their own transportation and communications and worked well under direction of our sector bosses. The National Guard provided transportation and communication from the start until July 17th. The use of their 4-wheel drive power wagons was especially helpful in getting men and equipment up on the fire line. During this fire, six district chiefs and special deputies from six districts supervised or provided technical assistance.

Milan. This railroad fire burned 75 acres in the old 1948 burn in Milan and kept fire fighters from this area occupied for several days.

Acworth. Smoke from the lightning strike that started this fire was first seen on June 2nd and could not be located. It did not flare up again until June 26th. It was on a mountain top and persisted until drowned out with water pumped in relays from Crescent Lake.

Newmarket. A fire in 25 acres of old slash and pine reproduction was brought to a fast stop by 6 town crews.

Financial and Manpower Problems

The problem of recruiting fire crews became critical on June 30th. Also the fires were rapidly becoming a financial burden to the state at the rate of over $6,000 a day and the town's share of fire bills was exceeded. Governor Gregg was authorized to use $151,000 of reserve funds from the previous year. After a conference called by Governor Gregg on July 2nd an appeal was made to President Eisenhower for aid. The President declared the state

a major disaster area and made available $50,000 with a promise of more, and ordered 300 soldiers from Camp Devens. Later 225 men from Grenier Air Force Base and 100 men from Dow Air Force Base in Bangor, Maine, were assigned to fire duty. These two groups arrived at the Grantham fire on July 3rd and July 7th. Another 300-man group from Fort Devens arrived on the Mt. Shaw fire on July 6th. The total federal aid in cash received amounted to $149,933.17. The Army units were self-sustaining and worked at no cost to the state. Governor Gregg obtained the use of 250 naval men from the Portsmouth Navy Yard. Local men were still needed to supervise and operate the pumps but this help saved the state tens of thousands of dollars.

The total suppression cost of the 1953 fires amounted to $398,659.82 of which the towns' share was $98,417.16. Many towns had to wait until April, 1954, for their total reimbursement which placed a burden on the towns. This indicated the need of a change in the state laws governing the source of funds for suppression costs.

A comparison of the costs of the two difficult fires points up several other needs.

	Mt. Shaw Fire		Grantham Mt. Fire	
Labor	$74,390.65	71%	$110,026.50	72%
Expendable Supplies	5,238.78	5%	7,640.73	5%
Food	5,762.66	5½%	6,112.59	4%
Transportation	6,810.41	6½%	8,404.81	5½%
Rental of Equipment	9,429.80	9%	19,101.83	12½%
Repair of Equipment	3,143.27	3%	1,528.15	1%
	$104,775.57	100%	$152,814.69	100%

On the large fires the daily turnover of fire crews was costly in transportation and in lost labor on actual suppression, since the men were paid from the time they left their towns. If fire fighters could be housed in a camp near the fire this loss would be nearly eliminated and smaller experienced crews working on shifts would shorten the time for control and mop-up. More state equipment would cut down some of the rental charges. One and one-half inch hose, pumps and four-wheel drive vehicles are especially needed. Aluminum pipe could be substituted for 2½" fire hose borrowed from fire companies which was used on these fires to bring the water to the base of the mountain.

Following the lifting of the woods ban on July 13th, the fire season continued normal with an increase of lightning fires on July 20th. After a period of showers the danger again built up to end on August 4th with state-wide heavy rains. During the period July 13th to September 4th, 160 fires were reported; few

large or persistent fires occurred. A high wind on July 31st fanned a fire starting in the Tuftonboro dump that burned 100 acres of old flowage and woodlands. Twelve acres burned in Francestown and 10 acres in Hill from lightning strikes. A fire started by careless smokers burned 50 acres on Kidder Mt. in Temple, and 25 acres of slash burned in Allenstown. Above Pinkham Notch a fire started by hikers burned an area of fir on the Glen Boulder Trail.

Fire danger mounted again in October when 33 fires were reported in the first four days. Ten acres of slash burned in Barnstead and a fire starting over the Massachusetts line burned 60 acres in New Ipswich. A careless smoker started a fire that burned 160 acres on the east side of Mt. Monadnock which was controlled only after a long expensive fight. Special deputies manned the headquarters and otherwise worked with the district chiefs on the fires.

Woodlands in the three southern counties were closed from October 23rd to 26th. Another dry period occurred in November with high danger readings in Grafton and Coos Counties. Many of the lookouts closed October 31st and the remainder closed dur-

Air Force Crew Cutting Fire Line on West Side of Grantham Mt., July 1953

ing the next six days. Milan Hill Lookout closed on November 9th. The ground had no appreciable snow cover at the end of December and fires occurred up to the end of the year.

While the total rainfall was 11.33 inches above normal, the rain was poorly distributed in summer storms. It was very dry in the spruce, fir and slash areas. The ground was bare for nearly ten months instead of the usual 7½ to 8 months. Three of the 66 lightning fires accounted for 62% of the burned area.

The busiest fire season since 1947 gave us a record of 749 fires but only 5,470 acres burned, with estimated damage to forest lands of $59,550. This acreage could easily have been doubled or tripled but for prompt action on the many fires to keep them small, as well as persistent and hard work to hold the large fires. The total cost to the state and towns in fire bills has already been mentioned; to this must be added substantial contributions by the Red Cross, Civil Air Patrol and other public and private agencies and individuals in food and services; also, over 1,200 Army, Navy and Air Force personnel. Without this aid the fires would have cost the state and towns half a million dollars or more.

The 1954 Spring Fire Season

January and February were comparatively mild with only a light accumulation of snow so that fields were bare in late February. Grass fires were reported on February 25th and Federal and Jeremy Hill Lookouts were opened on March 2nd. On March 7th and 8th, 24 grass fires occurred across the southern part of the state. Blue Job and Oak Hill Lookouts were occupied on March 23rd and most of the others by April 1st. Thirty-one grass fires were reported on March 27th and 28th. Fire danger mounted and continued high through April. Some of the larger forest fires occurring during this period were:

Date	Town	Acres	Cause
April 2	Londonderry	25	Brush burning
April 10	Pembroke	20	Campfire
April 21	Brookline	6	Flower pickers
April 22	North Hampton	21	Rubbish burning
April 22	Hudson	10	Rubbish burning
April 22	Madbury-Lee	50	Grass burning
April 24	Franklin	10	Smoking
April 26	Merrimack	7	Brush burning
April 29	Pelham	7	Smokers
May 1	Newington	8	Burning brush
May 1	Merrimack-Nashua	23	Burning brush
May 1	Strafford	5	Burning debris

The worst days were April 9th and 10th with 46 fires, mostly grass; April 20-22 with 34 fires and April 29th to May 1st with 30 fires. Frequent rains during May and June prevented all but a few fires.

Table 2

FIRE RECORD BY COUNTIES FOR FISCAL YEARS 1953 AND 1954

(Exclusive of Railroad Fires)

County	Year	No. of Fires	Area Burned (Acres) Total	Area Burned (Acres) Av. per Fire	Damage Total	Damage Av. per Fire	Cost of Fire Fighting Total	Cost of Fire Fighting Av. per Fire
Belknap	1953	40	81	2.00	$280.00	$7.00	$3,380.87	$84.52
	1954	45	23	.51	75.00	1.66	1,861.12	41.35
Carroll	1953	33	1,820	55.15	20,536.00	622.30	112,409.52	3,406.35
	1954	33	125	3.78	50.00	1.51	7,474.66	226.50
Cheshire	1953	68	77	1.13	65.00	.95	4,224.52	62.12
	1954	64	191	2.98	440.00	6.87	23,891.20	373.30
Coos	1953	20	38	1.90	1,940.00	97.00	77,621.46	3,881.07
	1954	15	10	.66	165.00	11.00	1,526.47	101.76
Grafton	1953	23	20	.87	30.00	1.30	3,577.98	155.56
	1954	51	28	.54	160.00	3.13	1,987.86	38.97
Hillsborough	1953	136	281	2.06	1,363.00	10.02	7,964.71	58.56
	1954	149	190	1.27	1,737.00	11.66	10,848.71	72.81
Merrimack	1953	89	340	3.82	1,975.00	22.19	7,053.29	79.25
	1954	95	100	1.05	437.00	4.60	6,065.25	63.84
Rockingham	1953	93	353	3.79	772.00	8.30	11,667.26	125.45
	1954	79	101	1.27	920.00	11.64	5,728.64	72.51
Strafford	1953	26	427	16.42	100.00	3.84	9,047.48	347.98
	1954	46	145	3.15	290.00	6.30	3,376.03	73.39
Sullivan	1953	28	1,606	57.35	15,286.00	545.92	150,811.99	5,386.14
	1954	28	11	.39	90.00	3.21	1,514.98	54.10
State Total	1953	556	5,043	9.07	$42,347.00	$76.16	$387,759.08	$697.40
	1954	605	924	1.52	$4,364.00	$7.21	$64,274.92	$106.23

Fire Prevention

Two programs helped very materially in the prevention of forest fires in the last two years. One of these was the educational appeal through the Smokey-the-Bear program and the second was checking up on all smokes observed by the lookouts.

Smokey-the-Bear prevention program is nation-wide and has a wide appeal helped by the use of colorful posters, television, radio, movies, blotters, bookmarks, songs, and various commercial articles designed primarily to appeal to children. The Commission provided a life-size talking "Smokey" complete with remote control sound, that has been exhibited at all the county fairs and at various schools and gatherings where fire prevention was promoted. Since the operator can talk to his audience through "Smokey" its appeal is limited only by the versatility of the man with the microphone. This program is capable of expansion in the schools depending on the amount of time the staff can devote to it.

Checking on all smokes resulted in cutting down the number of persons burning without a permit. Since the cost of a check-up by the warden was charged against the offender there were few repeaters and the publicity received acted as a deterrent to others thinking of doing the same. However, with an increasing number of people building out into rural wooded areas, this program constantly picked up new offenders. Many times a warning of the danger was sufficient. The populated Merrimack Valley had the greatest number of these fires.

Large roadside signs constantly alerted the public to the changes in fire danger; additional metal roadside signs warned of the dangers of not using the ashtray or putting out campfires. The roadside fire danger signs were painted to restore their freshness and appeal. Thousands of special posters were distributed to trouble spots by the wardens. Two forest fire warden associations sponsored fire prevention poster contests which reached practically all schools in their counties. The Federation of Forest Fire Warden Associations purchased for resale to members and others 2,000 metal car signs with the "Keep New Hampshire Green" label. The metal roadside signs were installed at their suggestion. This voluntary effort by our volunteer fire fighting force was augmented by individual effort in law enforcement, and advertising in the local newspapers local fire regulations and fire dangers.

Table 3

TOTAL NUMBER OF FOREST FIRES, AREA AND DAMAGE BY CAUSES

For Fiscal Years 1953 and 1954

Causes	Percent Total No. of Fires	Percent Total Forest Area Burned	Percent Total Damage
Railroads	6.5	3.1	1.5
Smokers	28.0	12.1	7.1
Debris Burning	23.9	9.9	5.1
Miscellaneous	16.9	7.7	3.1
Lumbering	2.0	3.7	2.2
Incendiary	5.0	1.1	1.4
Lightning	7.1	59.7	78.8
Campfire	3.5	.9	.1
Unknown	7.1	1.8	.7
Totals	100.0	100.0	100.0

One phase of prevention work that is now routine but consumed much of the district chiefs' time and effort was the enforcement of the slash and sawmill clean-up laws. Many miles of roadside cuttings were inspected repeatedly until the required clean-up was completed. On complaint of abutting land owners, miles of boundary line slash were disposed of. Occasionally it was necessary to resort to legal action to secure compliance. There was no doubt that this work paid off in saving the towns and state thousands of dollars in fire fighting costs.

The effectiveness of restriction on the use of fire and woodland closures during times of high hazard was proved again during the biennium. A total of 53 days of restrictions on use of fire and 22 days of wood closure helped in fire prevention when every effort was being made to control fires. Statements through the news agencies and broadcasts on the radio during high hazard times also were important in warning the public of the danger. Fire prevention education paid dividends on the expenses for printed matter, films, signs, and costs of attending meetings.

One fire prevention effort that was most successful was an attack on the problem of the town dump. As a result of the statewide survey conducted by the district chiefs in 1952 the hazard of the town dump as a cause of forest fires has been practically eliminated. The recommendations resulting from the survey were published as an illustrated booklet in 1953 entitled "The Community Dump." This booklet, the first of its kind in the country on this subject, has had a wide demand from those interested in this municipal problem.

Rates of Pay for Fire Fighting — Approved 1954

The Commission approved the following rates of pay as the maximum in each category that would be shared equally with the towns:

Wardens	$1.50 per hour
Deputy Wardens	1.25 per hour
Special Deputy Wardens	1.50 per hour
Firemen (Town and City Fire Dept.)	1.10 per hour
Special Equipment Operators	1.10 per hour
Timekeepers	1.10 per hour
Experienced Fire Fighters	1.10 per hour
Laborers	.90 per hour
Transportation Rates:	
Passenger car and driver	.06 per mile
Passenger car, driver and one passenger	.07 per mile
Passenger car, driver and 2 or more passengers	.08 per mile
Trucks	.10 per mile
Equipment Rental:	
Chain Saw and operator	2.50 per hour
High pressure pumps	3.00 per hour
Low pressure pumps	2.50 per hour
Radio cars	1.00 per hour
Jeeps (with operator) (contract)	3.00 per hour
Power Wagons (with operator) (contract)	4.00 per hour
Tank Trucks, 500-1,000 gal.	5.00 per hour
Fire Department Pumpers per pumping hour	5.00 per hour

Table 4

NUMBER OF FIRES BY MONTHS

(Exclusive of Railroad Fires)

Fiscal Year Ending June 30th

Month	1952-53	1953-54
July	73	125
August	32	70
September	4	43
October	53	71
November	20	12
December	2	7
January	0	0
February	12	7
March	71	80
April	99	132
May	41	41
June	149	17
Totals	556	605

Table 5

RAILROAD FIRE RECORD FOR FISCAL YEARS 1953 AND 1954

Year	Number of Fires	Area Burned (Acres)		Damage	
		Total	Av. per Fire	Total	Av. per Fire
1953	44	175	3.97	$663.00	$15.07
1954	35	17	0.48	42.00	1.20

Northeastern Forest Fire Protection Commission

The Commission sponsored two winter and one summer training schools for fire control men from the seven member states. These were held in Manchester, N. H., and Princeton, Maine, in 1953 and in Concord, N. H. in 1954. Most of our district chiefs were able to attend the winter meetings and four attended the summer meeting. If future meetings are held outside the state, more travel funds will be needed for district chief attendance. The lesson plans and training material have been printed and distributed to the special deputies.

During the 1953 fire season New Hampshire called on the Northeastern Forest Fire Protection Commission for assistance in fire equipment. Prompt aid was obtained, New Hampshire receiving from Maine 35,000 feet of hose and 15 portable pumps for the Mt. Shaw fire and 5 portable pumps and 11,000 feet of hose from Massachusetts for the Grantham Mountain fire. The loan of this equipment, valued at about $24,000, cost the state $4,379 in replacement for 4,000 feet of hose and accessories lost and for repair of pumps. Without the use of this hose, however, the fires would have burned for a longer time and over a larger area resulting in a much greater labor cost.

Training of Wardens and Deputies

Within the limits of available funds the district chiefs conducted training schools for their wardens and deputy wardens. Subjects covered were fire bills, fire reports, town and district fire organization and fire plans, suppression of fires, mop-up, patrol, the use of tools and fire equipment. Special stress was laid on the warden and deputy warden job when acting as fire boss, crew boss and fire fighter. Special problems were discussed and emphasis laid on the necessity for control in issuing permits and in prevention education. Present funds allow for one day's training for each warden and deputy. Present training is inadequate and should be supplemented with field problems and exercises.

Table 6

COMBINED FOREST FIRE RECORD FOR FISCAL YEARS 1953-54

	1953			1954			Total 1953-54		
	Number of Fires	Area Burned Acres	Damage	Number of Fires	Area Burned Acres	Damage	Number of Fires	Area Burned Acres	Damage
Railroad Caused	44	175	$663.00	35	17	$42.00	79	192	$705.00
Other Causes	556	5,043	42,364.00	605	924	4,364.00	1,161	5,967	46,728.00
White Mountain National Forest	9	16	10.00	9	49	200.00	18	65	210.00

Training of Special Deputies

Our special deputies proved of immense value during the large fires. They manned headquarters and provided experienced men for the line, putting in long hours at considerable personal sacrifice. These fires showed that this program should be expanded both in number of men and hours of training. The present appropriation allows for training 100 men or 10 per district at $15.00 each. Many of these men, however, met monthly giving their time in the interest of the work and as a public service. They received training in the duties of individual jobs in the large fire organization according to their special abilities.

Lookout Watchmen Training

A two-day training school for lookout watchmen was held at Bear Brook State Park in March, 1953, and one-day meetings were held in Concord and Lancaster in 1954. Ten new men were given instructions.

Fire Training Films

The U. S. Forest Service Region 7 completed another training film entitled "Water on the Fire" and is preparing another on general forest fire prevention. Training films now available include: "It's No Picnic," "Just a Bunch of Tools," "Common Errors in Forest Fire Fighting," "Management of Men," "Fire in the Forest," "Building the Line," "The One Lick Method" and "Water on the Fire." These films have wide circulation among volunteer fire departments, schools and other organized groups.

Lookout Maintenance

Under the new policy painting and minor repairs were done by the lookout watchmen. These included painting cabins both interior and exterior, painting garages, replacing stair treads in towers and painting the inside of tower cabs. Road, telephone and trail clearing and maintenance was also done. Some work was done by contract. Towers were painted at Stratham Hill, Signal Mt. and Rock Rimmon Hill on contract. The new road up Federal Hill was gravelled and tarred and water bars built. The road up Warner Hill was tarred. A new concrete well curb was built at Belknap Mt.

The regular maintenance crews did the following work:

Magalloway Mt. — Repaired guy cables, built inside closet and shingled shed.

Cannon Mt. — Built a toilet at the tower and woodshed for the cabin, and made a new tower map.

Table 7

LOOKOUT STATION STATISTICS

	Number of Smokes Discovered		Number of Fires Reported		Number of Visitors Registered	
	1953	1954	1953	1954	1953	1954
Bear Hill	102	159	48	104	769	827
Belknap Mt.	273	246	164	213	1,896	1,777
Blue Job Mt.	465	486	197	243	1,823	1,171
Cannon Mt.	19	120	13	25	2,828	5,716
Cardigan Mt.	31	31	29	28	3,405	3,075
Craney Hill	80	85	59	59	250	220
Crotched Mt.	14	49	11	43	69	420
Croydon Mt.	78	60	69	51	45	88
Deer Mt.	5	3	0	1	61	63
Federal Hill	155	113	148	98	716	792
Great Hill	19	10	2	6	525	329
Green Mt.	33	50	27	42	1,551	1,088
Hyland Hill	25	51	25	19	92	164
Jeremy Hill	105	129	67	78	842	729
Kearsarge Mt.	170	115	127	54	8,335	5,272
Magalloway Mt.	6	7	6	3	10	6
Milan Hill	18	5	18	5	569	844
Mill Mt.	11	2	10	2	49	19
Miller Park	66	48	42	31	4,604	6,496
Oak Hill	428	404	268	236	291	290
Pawtuckaway Mt.	419	422	87	112	1,353	1,117
Pitcher Mt.	12	32	9	11	544	457
Prospect Mt.	54	26	23	10	4,666	3,979
Red Hill	37	29	25	16	1,524	1,015
Rock Rimmon Hill	109	116	45	46	1,093	1,505
Signal Mt.	15	3	15	2	37	55
Stratham Hill	67	42	32	24	1,491	1,035
Sugar Loaf Mt.	8	4	5	3	4	9
Uncanoonuc Mt.	227	181	157	98	1,537	1,350
Warner Hill	172	143	89	93	475	488
Totals	3,223	3,171	1,817	1,756	41,454	40,396

Rock Rimmon Hill — Put culverts in road, finished off inside of cabin.

Crotched Mt. — Made extensive repairs to cabin, porch, woodshed, tower cab, and steps, including new windows, screens, and doors. A new tower map was made and installed. The cabin was completely refurnished. These buildings were badly damaged by vandalism during the years the tower was not used.

Jeremy Hill — Painted tower cab, repaired tower roof.

Uncanoonuc Mt. — Deepened the well, replaced tower stair treads and platform planks.

Federal Hill — Painted tower cab and repaired tower roof. An outside cinder block chimney was built on the cabin.

Craney Hill — Wired cabin, garage and tower.

Pawtuckaway Mt. — Replaced telephone wire and repainted cabin interior.

Oak Hill — Moved generator and house from Blue Job Mt.

Pitcher Mt. — Built inside clothes closet and made screens.

Kearsarge Mt. — Built a larger cab on the tower. It was given the same inside pine finish as that at Cannon Mt. Extra carpentry help was hired for this job which was completed in 1953. The old cab on Kearsarge Mt. was crowded with two radios and had dry rot in many places. The new cab has improved location for the radio and more room for the many visitors. A new map and map holder were installed.

Mt. Prospect — The watchman repaired the cottage porch and painted the cottage and tower interior.

Sugar Loaf Mt. — Strengthened and improved the base camp.

Milan Hill — A pump house was built to house a new pump supplied by the Recreation Division. The cottage floor was relaid. Painting and other repairs including plumbing were made.

Moose Falls — Insulated and painted the cottage, and repaired the garage.

Great Hill — Painted the buildings and removed the old sheds and part of the porch.

Jeremy Hill — Repainted inside of the cabin.

Bear Hill — Repainted inside of the cabin.

Blue Job Mt. — Installed electricity and built larger cabin porch.

Forest fires took much of the maintenance crews time and delayed some lookout station repair work. Also, much time was consumed moving equipment from the Weare storehouse to the new warehouse.

Since many of the lookout buildings have been in place 35-40 years, extensive repairs and replacements are necessary. Rot develops where moisture seeps in to closed buildings under tar paper. Rearrangement of inside facilities and enlargement of cramped quarters to allow adequate room for a man and wife are often required. This calls for enlarged screened porches, cinder block chimneys to replace rusty stove pipes that drip creosote, and insulation to make the cabins warmer in spring and fall and cooler in summer. It is planned to rebuild the cabin on Kearsarge Mt., insulate Green Mountain cabin, enlarge and screen the porches and build chimneys at Oak Hill, Pitcher Mt., Rock Rimmon Hill and others and paint the steel work on a number of towers.

Major supplies included new stoves at Rock Rimmon Hill, Moose Falls, Kearsarge Mt. and Crotched Mt. The inventory taken in the fall of 1953 showed all installations very well equipped and replacements needed only for normal wear in use.

State Equipment

The maintenance crews spent much of their time during the fire seasons supplying, operating and servicing fire equipment. The hose, tools, and equipment turned in after the fires had to be cleaned, repaired, sorted and returned. Over 70,000 feet of hose passed through the washers. The replacement of damaged and lost hose and tools to bring up inventories in trucks and caches is still in process.

Motor vehicles purchased in 1953 included two sedans for District 3 and Fire Control Assistant II and two ranch wagons for District 4 and Fire Control Assistant I. The following sedans were received from the dissolved state motor pool: 1-1948, 1-1950, 2-1951's, 2-1952's and 1-1953. These were distributed to Districts 1A, 5, 6 and 7, and two were retained for standby use in case of call according to agreement. The best of the pickups turned in from the districts were kept for maintenance and Moose Falls patrol and the rest sold. A station wagon was turned over to the Fox State Forest and a sedan to the forest management section. A bench saw, bench grinder, ½" electric drill, power grindstone, a spark plug tester and many new small tools were purchased for the new shop.

Ten reconditioned mobile radios were purchased for state cars and for conversion to AC for tower installations. Two battery-operated pack radio sets were purchased for use at Magalloway and Sugar Loaf Mts., and two more are on order for other stations. Other communication equipment purchased included eight field telephones, five miles of light field telephone wire and extra wire reels. Binoculars were purchased for Crotched Mt., Deer Mt., and Miller Park.

During the 1953 fires a device for feeding "wet water" (a detergent) into a hose line, 13 canvas water relay tanks, many repair and replacement parts for portable pumps and other fire equipment were purchased. After the 1953 fires an accounting was made of equipment lost and rendered unfit for further service. A portion of the federal reimbursement for fire suppression costs amounting to $6,600.00 was made available to replace these losses. Purchases from this fund were as follows:

5,000 ft. 1½" linen hose
24 hose bags
1 Pacific Marine type Y portable pump
14 Field telephones, reels and wire
12 Drinking water cans (5 gal.)
12 Gasoline cans (5 gal.)
6-5 gal. gas cans for portable pumps
25 Canteens (1 gal.)
25 Shovels LHRP size 0
20 Pulaski tools
36 Fire rakes
24 Back pack pumps, brass

120 Headlights
12 Flashlights

5 Gasoline lanterns
18 Lanterns

24 Hazel hoes
54 Axes
24 Pack boards
12 Knapsacks

144 Burnout torches

Various repair parts and supplies

These purchases brought the standby equipment up to the level prior to the fires on all except cotton rubber-lined hose. One thousand feet of this hose was purchased to be returned to the towns that lost hose on the major fires. Three hundred feet of 2½" fire hose was also replaced to cooperators. The Maine Forest Service was reimbursed for 4,000 feet of hose and miscellaneous pump accessories lost or destroyed on the fires.

Fire Tools for Resale to Towns

This program started in 1941 under Chapter 233, Section 9 of the Revised Laws, authorizing the state to purchase fire tools and equipment for resale to the towns. It has been instrumental in building up a useful assortment of standard fire control tools and equipment in the towns. The program is at present cramped between the rising cost of equipment and funds available and the demand by the towns. For a number of years certain items of equipment have had to be limited in the number sold to any one town in a year. The funds for this purpose should be substantially increased in order to maintain the same service. A tool-marking directive was sent the town wardens to provide positive identification of equipment when sorting it out after large fires.

FIRE TOOLS SOLD TO TOWNS DURING TWO YEAR PERIOD 1953-54

Knapsack	173	Pulaski	99
Shovels	297	Axes	143
Fire rakes	105	Headlights	242
Brooms	60	Lanterns	60
Canteens	31	Pails	246
Hazel hoes	81	Cross cut saws	7

Total spent for town tools 1953-54 — $11,378.59

Radio Communications

The plans for complete coverage of the state with radio communications during the fire season was nearly realized during the

biennium. All ten district chiefs cars, eight state fire vehicles and three other department vehicles are equipped with 2-way radio. Twenty lookout base stations also have state radio equipment, an increase of 10 during the biennium. These are lookout stations at Jeremy Hill, Craney Hill, Magalloway Mt., Sugar Loaf Mt., Oak Hill and Belknap Mt., cooperative stations at West Stewartstown, and Groveton and the Concord Warehouse. Electricity was available at Jeremy Hill but had to be brought into Blue Job Mt., and Craney Hill. Electricity became available at Belknap Mt., when the new TV station on top was installed by private interests. Sugar Loaf and Magalloway Mts., have battery-operated pack sets. Oak Hill is powered with a generator moved from Blue Job Mt. The stations at Groveton and West Stewartstown give additional tie-ins through the cooperation of the St. Regis Paper Company and the Groveton Papers Company. Pack sets used by the Timberland Owners Association patrolmen tie in with northern lookout stations. Tests with small battery-operated sets from the remaining lookouts show that these can be used for cross-checking communications between towers thus saving many toll calls.

Radio keeps all of the personnel informed immediately of the progress of all fires. During the difficult fire period in the summer of 1953 radio was used night and day for weeks not only on the fires but in directing recruitment of fire fighters and procurement of supplies and equipment.

In addition to state-owned radio, 21 towns and 4 private individuals tied in with state forest fire work had licensed base stations on the forestry frequency. This was an addition of 16 during the biennium. These towns and individuals have 126 mobile radios in fire trucks and personal cars, the individuals being wardens, deputies and special deputies or chiefs of fire departments. These mobile radios are a great help in supplementing state radio to provide communication between the fire and district dispatcher.

Future purchases of state radio equipment will be for replacement of obsolete equipment and the addition of pack sets to supplement the present portable radio which has never been adequate during critical periods. Spare radios also take the urgency out of repair work as maintenance is critical during fire periods. Future needs also indicate the need of a relay station on Kearsarge Mt. to increase the use of the system through the winter.

The Commission was represented at the annual meeting of the Forestry Conservation Communications Association. Resolutions passed at that meeting were against the installation and maintenance of emergency public service radio systems by large communi-

cations companies where maintenance might be jeopardized by labor difficulties and where equipment choice would be lost.

Civil Defense

Civil Defense portable radios have been distributed about the state and are kept in readiness for any emergency. They were used in two instances to equip all lookout stations in a test of the possibility of rapid reporting of planes by radio direct to the Manchester Filter Center. Since all lookouts are trained ground observers, these tests proved that the forestry radio could keep the center informed in time of telephone failure. Adding the mobile radios and cooperators to the system would greatly increase the effectiveness. Many of the cooperators radios were purchased with Civil Defense matching funds.

Fire Weather Stations and Fire Weather Data

Fire weather stations that operated during the biennium were: Woods stations—Warner Hill, Federal Hill, Hyland Hill, Prospect Mt. and Milan Hill. Open stations—Gorham, Freedom, and Moose Falls. Federal stations reporting were Stinson Mt. and Littleton—both open stations. Due to locations and operator difficulties the Wentworth Location station was discontinued. Daily readings from all stations were received at Concord, coded and transmitted to the U. S. Weather Bureau Station at Logan Airport, East Boston, where they were used as a partial basis for the morning forecasts of fire weather. These were sent out by radio net to all parts of the state fire organization. In 1954 the accumulated fire index used previously was changed to a "build up" index which is a more accurate index of actual fire potential.

Special Problems

Forest fire service personnel were called in to handle or aid in problems in which their knowledge and training were valuable. One of these was the freight train derailment in Crawford Notch in August, 1952. A tank car of gas rolled into the rocky gorge and presented a threat to the whole area. Experts in the handling of this gas were flown in from Texas and the gas was pumped to an empty tank on the track. The railroad furnished a tank car of water and the forest fire service set up pumps and laid hose until the danger was past. District chiefs were also called to aid in searches for lost persons. Their knowledge of the country and the people in their district, and the use of maps and communication equipment enabled them to render valuable aid in this capacity.

WOOD PROCESSING MILL REGISTRATIONS

All sawmills and mills processing lumber and other wood products that produce inflammable waste material such as slabs, sawdust and shavings are required to be registered under the latest forest fire laws, no matter where located. Full-time commercial mills (Class I) pay a fee of $25 and seasonal and farm mills (Class II) $10.

Reductions are made for mills registered after October 1. Registrations are issued and renewed for the calendar year. Receipts in registrations declined $1,192 in 1954 compared to 1953, due to a reduction in the number of sawmills and planing mills registered.

Table 8

MILL REGISTRATIONS AND RECEIPTS

	1953 (Calendar Year)		1954 (Calendar Year)	
	Number	Receipts	Number	Receipts
Class I	451	$11,275	410	$10,100*
Class II	57	570	56	553**
Totals	508	$11,845	466	$10,653

*10 mills registered after October 1st for $10.00.
** 1 mill registered after October 1st for $3.00.

Portable sawmills continue to form the largest category of mills registered. However, two-thirds of them remained at one site during each year and this tendency is apparently increasing.

Table 9

NUMBER OF MILLS REGISTERED BY TYPE

Type of Mill	1953 (Calendar Year)	1954 (Calendar Year)
Sawmills	452	424
Planing mills	20	11
Shingle mills	2	2
Other	34	29
Totals	508	466

The trend toward modern power plants continued during these years. At one time the majority of mills were powered by steam. As other kinds of power increased, the possibility of burning refuse under the boilers decreased, and slabs and sawdust must now be disposed of in other ways. On the other hand modern types of power plants have a lower fire hazard than steam.

Table 10

NUMBER OF MILLS REGISTERED BY TYPE OF POWER

Power	1953 Number	1953 %	1954 Number	1954 %
Steam	18	3.5	15	3.2
Gasoline	215	42	187	40
Diesel	183	36	171	38
Electric	57	11.2	60	13
Water	10	2.4	8	.8
Combination	25	4.9	25	5
Totals	508	100	466	100

Table 11

MIGRATION OF PORTABLE MILLS

	Number of Mills												
	Remained at One Site		Moved to New Settings Number of Additional Settings										
Calendar Year	No.	%	1	2	3	4	5	6	7	8	9	10	Total
1953	329	64	89	39	21	8	9	9	3	0	0	1	508
1954	331	71	82	27	13	6	5	2	1	0	0	0	466

WHITE PINE BLISTER RUST CONTROL

White Pine Uses and Values

Among the forest species which go to make up the woodlands of New Hampshire, none is processed into so many useful products as white pine. From rough lumber it is manufactured into building materials such as log-siding, door and window frames, blinds and interior finish of great variety. With transparent finishes, or stains, interior uses of white pine take on a softness and beauty obtainable in no other material.

Reproductions of early American furniture; for example, bedroom sets, desks, tables and chairs, are made from eastern white

pine, for this wood is easily worked, beautiful in grain, yet both strong and lasting. In the field of wood containers, boxes, pails and tubs have long enjoyed the confidence of both shippers and food manufacturers. Light, but sturdy, white pine boxes adequately protect valuable merchandise, while for pails and tubs, in which certain foods are packed, it is the preferred wood, since it does not impart any odor to the contents of these containers. Toys and other novelties are manufactured from our native pine, and the wider, clearer, knot-free boards are much sought after by the pattern-making industry in producing wooden models for all sorts of machines and other products. More recently, a considerable amount of the poorer grades has been utilized in the production of wood pulp.

Photo by Eric M. Sanford, Manchester.

Franklin Pierce Homestead, Hillsboro. Built 1804
(Administered by Recreation Division)

One of the outstanding qualities of eastern white pine is its almost incredible durability. This is attested to by the homes and farm buildings built 200 or more years ago, many of which are still in an excellent state of preservation. Notable among these

early Colonial homes are the famous Portsmouth mansions, as well as other historic dwellings throughout the Granite State.

Owing to this versatility of use the yearly income in New Hampshire from stumpage sales, logging operations, transportation and manufacture, assumes an impressive figure. Based upon some recent investigations it has been determined that this income exceeds twenty million dollars annually.

A Ranking Producer

Another outstanding fact relating to white pine is that while it occupies only about 27 percent of the state's woodlands, it annually produces 70 percent, or more, of the lumber cut. This is due largely to the fact that white pine is a prolific seeder, and thrives on a variety of soils. It is the most rapid grower of all our forest species, often increasing 500-1,000 board feet per acre annually. Furthermore, it responds quickly to good forestry practices such as thinning, weeding out of inferior species, and improvement cuttings, as many a New Hampshire farmer-woodland owner has proved. Operations conducted upon these well-managed woodlots have supplied low-cost lumber for the repair of farm buildings, or the construction of additional ones. Apart from this, often substantial cash incomes have been realized through the sale of surplus logs, lumber and pulp and fuelwood.

Protection Needed

It should be obvious that such a valuable natural resource, and one continuously renewable, deserves adequate protection from fire, insects and disease. Protection from fire of private and publicly-owned forest lands in this state has attained a creditable degree of efficiency. Forest fire records for the northeastern states indicate that New Hampshire consistently ranks among the lowest in acreage burned yearly for all lands under protection. Human carelessness still remains the prevailing factor in losses resulting from fire.

Aside from such carelessness, white pine's greatest enemy is the blister rust disease. Its threat lies in a slow, unseen, but steady progress. When the effect is finally evident, it is too late to remedy the damage. White pines once infected by this fungus disease, seldom, if ever, recover.

Fortunately, the nature of this disease does not allow it to spread directly from infected to healthy white pines. It must first live for a time in the leaves of currant or gooseberry bushes, known botanically as **Ribes.** Through the agency of the wind, the spores which develop in these Ribes leaves spread to white pines, entering

the tree through the needles. The fungus works gradually downward into the bark, first killing the branch, and finally, after entering the trunk and girdling it, kills the tree. By destroying Ribes plants within and around white pines the cycle of this disease is broken, and protection to the pines is assured.

Cooperative Control of the Rust

In New Hampshire, control of this serious disease has been a cooperative project of the state, towns, cities and individual pine owners. From the inception of this program the federal government, through the agency of the U. S. Department of Agriculture, has given generous support by furnishing the technical and supervisory personnel necessary in such a state-wide undertaking. In addition, whenever Congressional appropriations permit, additional funds have been forthcoming to aid in the destruction of Ribes.

The state is divided into six control area districts with a leader in charge of each. While they are federally-paid employees, under requirements of the state blister rust law, these individuals are deputized agents of the State Forester. These men are responsible for all phases of the control program such as Ribes eradication, detailed mapping, control area examination, infection and damage studies, educational and service work among pine owners, and other related activities. At present, district leader headquarters are located at Concord, Keene, Laconia, Lebanon, North Conway and Rochester. In the following paragraphs the accomplishments in cooperative control are reported.

Cooperative Control in 1953

From returns to the State Forester by boards of selectmen it was found that 108 towns and cities appropriated $36,800. In addition, for the fourth consecutive year, the Blue Mountain Forest Association cooperated through cash and labor in the amount of $500. This privately-owned forest of some 20,000 acres is situated in the towns of Cornish, Croydon, Grantham, Newport and Plainfield, and contains considerable white pine in the eastern sections.

The following table summarizes all cooperative control work in Ribes eradication for the 1953 season:

BLISTER RUST CONTROL — 1953

First Workings		Second and Other Workings		All Workings	
Acres Covered	No. Ribes Destroyed	Acres Covered	No. Ribes Destroyed	Acres Covered	No. Ribes Destroyed
11,766	222,783	222,217	730,861	233,983	953,644

In addition to the above accomplishments, 63,174 acres, placed on maintenance some 8-10 years previous, were examined in order to determine whether any Ribes regrowth had taken place. On this large area it was found that a re-working was required on only 3,379 acres. This indicated that control had been maintained on 59,795, or 95 percent of the lands examined. During the year, scouting and area examination elsewhere through the districts was instrumental in reducing the state-wide control area by 56,732 acres.

Pine and Control Area Surveys

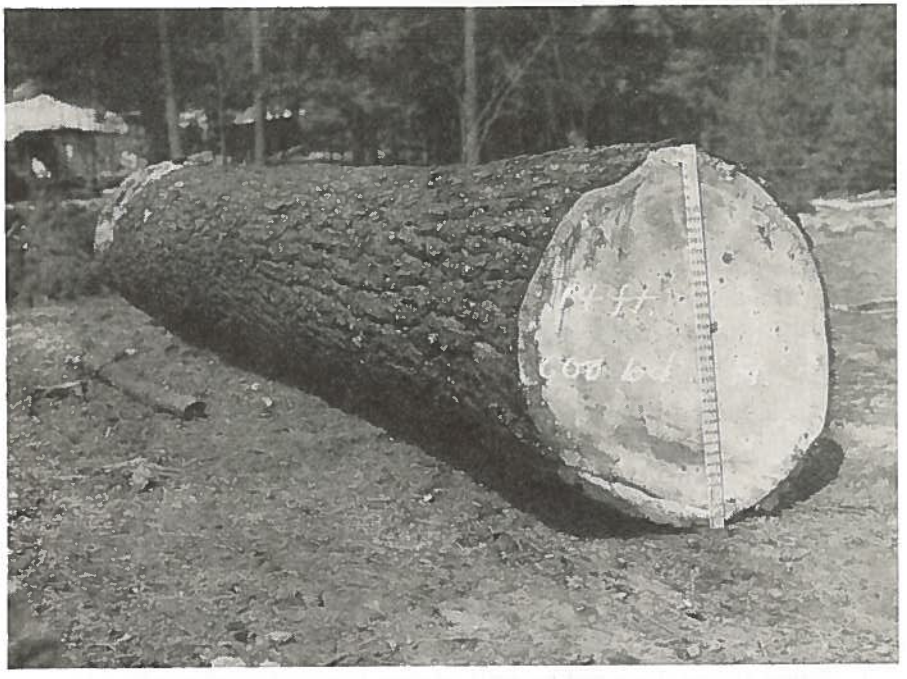
In order to determine changes in the white pine acreage which might have been brought about by logging or re-seeding, mapping of road-blocks scheduled for eradication work during the coming season was conducted. These surveys were carried on during the fall, winter and early spring months. For the 1952-53 period, initial mapping was performed on 82,042 acres, and re-mapping on 47,502 acres. Prior to the eradication season Ribes scouting was conducted and the location of these bushes was indicated upon these maps. In this manner the field work for a new season was definitely planned, and with the knowledge of where Ribes existed, the actual destruction of these bushes was effected more efficiently and economically. The average cost for both types of these maps was about six cents per acre. This low cost was made possible through the use of aerial photographs and improved mapping techniques.

Cooperative Control in 1954

At their annual town meetings 108 towns and cities voted $33,760.00 for blister rust control in cooperation with the state. Among them were several where control measures had been completed some years before, but funds were made available for rechecking white pine lands that were already on a maintenance basis. This action was prompted by the feeling that since appropriations had been made to bring about control of the rust, it was important to protect such an investment by occasional small expenditures to the end that control would be maintained. The Blue Mountain Forest Association again voted funds for continuing control measures upon its property.

Application of Section 9, Chapter 238: Revised Laws

Following recommendation by the State Forester and the Commissioner of Agriculture, the Governor and Council, on June 15,



For a Multitude of Uses White Pine is the Preferred Wood

1954, approved the application of this section of the state blister rust law in seven towns where control measures were shown to be necessary, and for which no appropriation had been made at town meeting.

In accordance with the 1949 amendment to Section 9, the boards of selectmen of these towns were given written notification two weeks or more in advance, stating the proposed date when control work would be undertaken, and the location of such work. As in the case of cooperating towns, a report of accomplishments and expenditures was submitted to these towns at the end of the field season.

The following table is a condensed statement of accomplishments in Ribes eradication for the season of 1954:

BLISTER RUST CONTROL — 1954

First Workings		Second and Other Workings		All Workings	
Acres Covered	No. Ribes Destroyed	Acres Covered	No. Ribes Destroyed	Acres Covered	No. Ribes Destroyed
10,568	164,616	110,606	533,472	121,174	697,788

During the eradication season, scouting on 61,337 acres was conducted in order to determine whether control measures were being maintained. It was found that Ribes had recurred on only 1,336 acres, and steps were taken to destroy these bushes. The balance of 60,000 acres should not require further attention for at least 10 years. Through other scouting, and in conjunction with mapping, it was possible to make a further reduction in the state-wide control area by 48,398 acres.

Pine and Control Area Surveys

For the period of October 1, 1953 to September 30, 1954, the total area initially mapped amounted to 87,100 acres. Re-checking of blocks mapped some years previous in order to bring them up-to-date, owing to forest changes, totalled 70,992 acres. As of September 30, 1954, the areas mapped throughout the state totalled 1,903,560 acres, or 73.8 percent of the state control area.

Summary of Control Measures

Since space does not permit giving the status of control in each town and city, and in order to simplify a state-wide summary, the situation "By Workings" seems to be the best method. Of the 225 towns and cities, FIRST workings have been completed in 216. SECOND workings have been finished in 99, while there remain 9 towns yet to complete the FIRST workings. At present, there are 76 towns and cities whose entire control area is on a maintenance basis, requiring only periodic examinations to maintain control. These towns represent 65.3 percent of the entire control area of the state.

The present blister rust control program is concerned with the infection which, here and there, has developed among the younger stands of pine. Ever since the 1938 hurricane the cutting of white pine has continued with but little abatement, the average annual production amounting to over 250 million board feet. Inspection of a large percentage of these logged-off areas has disclosed the following situation: (1) excellent natural re-seeding with the young trees free from blister rust, and (2) in others, due to soil disturbances brought about by logging, a regrowth of wild Ribes, resulting in starting new centers of infection. Therefore, one of the major phases of control work, at present, is to give as prompt and adequate protection as funds will permit to these young stands of white pine.

FOREST INSECTS AND DISEASES

The Forestry and Recreation Commission has no legal responsibility in the control of injurious insects and diseases (other than white pine blister rust). This responsibility rests with the Commissioner of Agriculture and is delegated by him to the State Entomologist, Durham, New Hampshire. The Forestry and Recreation Commission cooperates closely with the N. H. Department of Agriculture in surveys, disseminating information and advising forest owners on the control of tree pests as far as resources permit. Close relations are also maintained with the staff entomologist and pathologist of the Northeastern Forest Experiment Station.

The following brief summary of insect and disease conditions during 1953 and 1954 is based on information supplied by the State Entomologist and other cooperating agencies. For complete details see the Biennial Report of the Commissioner of Agriculture.

Gypsy Moth. Populations of this insect and area defoliated increased sharply in 1953 and caused great concern by summer home and resort owners. Rising from a low of 8 acres defoliated in 1949, the area embraced 170,000 to 200,000 acres in 1953 and was expected to reach 400,000 acres in 1954. The outlook is for a sharp drop in the infested area in 1955 due to parasitism, wilt disease and other natural control factors. Some territory was sprayed by airplane under cooperative arrangements by local land owners, the state and federal government, and good control was obtained.

Forest Tent Caterpillar. This insect, also occurring in cycles inflicted severe damage on maple sugar orchards in the Connecticut Valley towns. Parasitism was found to be high during the summer but it cannot be forecast with accuracy how severe this pest may become in 1955.

Other Defoliating Insects. Brown-tail moth infestations were successfully controlled where they appeared in restricted areas. Pine sawflies and other defoliators caused minor damage. Spruce budworm continued rare.

Balsam Woolly Aphid. This scale insect is causing serious damage in the White Mountains and Lake Sunapee region. No control under forest conditions is known other than salvage of the infested trees. Reports from Canada indicate that this insect has caused greater loss of pulpwood over the years than the spruce budworm.

White Pine Weevil. Populations, as indicated by checks on permanent survey plots, continued low but it was disturbing to note

that even with only 10% of the trees weevilled each year, new trees never before weevilled are attacked so that eventually almost every tree in a stand suffers damage. An accelerated program of research is now attacking this problem.

Beech Scale-Nectria. Beech scale has been observed well distributed over the southern part of the state. The accompanying nectria fungus that actually causes injury and death of trees has not been found to any extent south of the White Mountains but may be expected to follow the scale insect from three to five years. Heavy mortality of older beech continues on the White Mountain National Forest.

Birch Dieback. Continued deterioration of birch on the permanent study plots in northern New Hampshire was noted in 1953. Recent studies in Quebec link the dieback condition with increased temperature and dryness during the past two decades.

Dutch Elm Disease. Scouting for infected trees was carried on by the State Entomologist during both summer seasons. The disease now occurs in 92 towns, of which 27 represent new discoveries in 1954. A total of 446 trees were confirmed to have the disease compared to 580 trees found during the previous four years. The disease is most common in the southern part of the state where tree removal presents a formidable problem.

Pine Leaf Aphid. During the past three seasons attention has been called to a reddening of white pine needles in early spring. This is due to attack by the pine leaf aphid on the new growth during the previous season, which becomes most apparent the following spring. Branches heavily attacked usually die. The insect passes part of its life history on red spruce where it causes small galls. This injury was chiefly in northern New Hampshire.

Pine Needle Blight. In July, 1954, the outer one-third of white pine needles of the current season turned reddish-brown on isolated individual trees scattered among trees with normal foliage. This condition has been noted many times in the past and is apparently related to drought conditions during the preceding growing season. No pathogenic fungus seems to be involved.

During July, 1954, a conference was called of all parties concerned with forest insects and diseases.

HURRICANE DAMAGE — 1954

Hurricane "Carol" hit New Hampshire August 31, 1954. The center of the storm passed through Rockingham and Strafford Counties where the greatest damage to standing timber was

centered. Following the storm County Foresters Sloan and Leighton surveyed the damage from the air, supplemented with a ground reconnaissance. They estimated that there was a total of 17 million board feet of timber blown down in the two counties—11 million in Rockingham and 6 million in Strafford. Based on this estimate the hurricane damage represented 27% of a normal year's lumber cut in the two counties. Much of the damage was to single trees and groups of five to ten trees. Where there was considerable blowdown the average per lot was 25 thousand board feet. Some lots had 50 thousand feet and a few had 100-200 thousand or more down. There was considerable breakage to merchantable trees by the wind snapping or twisting the trees off several feet from the ground. In some sections such as in the towns of Lee and Barrington there was considerable damage to immature stands of timber.

Following an inventory of the hurricane damage, woodland owners and mill operators in the region were invited by the county foresters to meet at the University on September 10th to consider a program for salvaging the down timber. After hearing the extent of the damage to timber by the hurricane, reports on the market situation, opinions of individual land owners and mill operators as to ways of handling the salvage job, the group arrived at the following conclusions:

(1) Estimated 17 million board feet of timber down in Rockingham-Strafford Counties, mostly in small patches.
(2) Commercial operators in the area are interested in buying down timber.
(3) County and consulting foresters are available to help the timberland owners with their salvage problems.
(4) It seems that the situation can be handled locally.

The situation is being handled locally. By the end of the year 1954 much of the timber blown down by hurricane "Carol" will have been salvaged. The owners generally have been getting good prices for their stumpage.

Hurricane "Edna" followed "Carol" eleven days later but caused little wind damage to timber. "Edna" was especially wet leaving nearly eight inches of rain in 12 hours along the New Hampshire seacoast. Hurricane "Hazel" in October was not severe in New Hampshire.

STATE FORESTS AND RESERVATIONS

The Forestry and Recreation Commission during the previous biennium adopted the policy of reducing the number of tracts administered by the Commission. The state has title to 140 tracts of

land located in 105 towns. In order to bring about more efficient and economical operation of state areas it seemed desirable to reduce the number of state forests to about 40 management and recreational areas distributed throughout the state. The Commission also believed that state lands better-suited for commercial, industrial or residential areas near cities or villages should be sold to the highest bidder. The funds acquired from these sales should be used to expand these areas. By this process the Commission hoped to provide not only recreational facilities but forest areas to demonstrate to the public the advantages and rewards of sound forest management practices.

During the past two years, 2,405 acres in 12 towns were purchased at a cost of $17,014.00, an average cost of $7.07 per acre. In addition there were acquired by gift 160 acres in 3 towns making a total of 2,565 acres. During the same period 3½ acres of house lots at the Ponemah State Forest in Amherst were sold for a total of $1,405. There remain six one-acre lots to be sold. Thus, net addition was 2,547½ acres, which, added to the 58,021 acres given in our last report, resulted in a total of 60,568½ acres as of June 30, 1954. The following table shows the acquisitions, gifts and sales during the two fiscal years:

Table 12

STATE FOREST LANDS

ACQUISITIONS 1953-1954

Purchases

Tract	Town	Acres	Cost
Bear Brook	Allenstown	160	$2,500.00
"	"	60	500.00
Blue Job	Farmington	75	600.00
Cardigan	Orange	20	70.00
"	"	372	1,488.00
"	"	100	500.00
"	"	50	200.00
"	"	554	1,500.00
Cathedral & White Horse Ledges	Bartlett	40	250.00
Clough	Weare	19	600.00
"	"	131	600.00
Everett	Dunbarton	9	50.00
Fox	Hillsboro	52	2,000.00
Litchfield	Litchfield	109	381.50
"	"	60	350.00
Mascoma	Canaan	20	175.00
Mt. Sunapee	Newbury	10	250.00
Sentinel Mt.	Piermont	100	500.00
Vincent	Weare	265	2,500.00
"	Deering, Weare	199	2,000.00
Total		2,405	$17,014.50

Gifts

Tract	Town	Acres		
Ballard	Derry	85		
Echo Lake	Conway	15		
Wade	Hill	60		
Total		160		
Total Acquisitions			2,565 acres	$17,014.50

Changes in Area Due to New Survey

Tract	Town	Acres
Cardigan	Orange	– 5
Kearsarge	Warner	– 3
Pillsbury	Washington	– 6
Total Decrease		–14

State Lands Sold

Tract	Town	Acres	Receipts
Ponemah	Amherst	3½	$1,405.00

Summary

	Acres	Cost	Receipts
Total Acquisitions	2,565	$17,014.50	
Total Sales and Reductions	17½		$1,405.00
Net Acquisitions	2,547½		
Previously Reported	58,021		
Total Area, June 30, 1954	60,568½		

Area Breakdown: Forests—13,656½ acres. Recreational—981 acres.
Joint Areas—45,898 acres. Miscellaneous—33 acres.

PURCHASES

Bear Brook. Two tracts of land were purchased adjacent to the Bear Brook State Park in the town of Allenstown: 160 acres from Harvey Taillefer for $2,500.00; this area being potentially useful to both Recreation and Forestry the cost was shared equally between the two divisions; and 60 acres from Samuel J. Riel for $500.00 adjacent to the southern boundary of the forest. This brings the total of Bear Brook State Park to 7,233 acres.

Blue Job. A tract of 75 acres was purchased from Mrs. Theodocia Shepherd for $600.00. This purchase includes the summit of Blue Job Mt., and a small home on which Mrs. Shepherd has retained a lifetime lease.

Cardigan. Five purchases were made on Cardigan Mt. totalling 1,096 acres for $3,758.00 consisting of the following: Harry A. Smith, 20 acres for $70.00; Paul E. and Marguerite L. Paro, 372 acres for $1,488.00; Louis Dupont, 100 acres for $500.00; Walter L. Dimond, 50 acres for $200.00; and Mrs. Isabel High Boyd, 554 acres for $1,500.00. This brings the total of Cardigan Reservation to 5,294 acres.

Cathedral and White Horse Ledges. A tract of 40 acres was purchased from Charles Henry Davis and Elizabeth R. Davis of Bartlett for $250. This purchase protects forever the timbered area at the summit of Cathedral Ledge.

Clough. Two purchases were made amounting to 150 acres for $1,200.00: Philip H. Burnham, 19 acres for $600.00, and William A. Heino, 131 acres for $600.00. The 19-acre lot was purchased as a connecting link between the Clough and Everett State Forests. It is also a desirable roadside area with some valuable white pine.

Everett. The town of Dunbarton on March 11, 1952, authorized the sale of 9 acres of tax delinquent land to the state for $50.

Fox. A purchase of 52 acres was made from Mrs. Gladys M. Robinson and Mrs. Bernice J. Gee for $2,000. This area represents a definite asset to the experimental work being carried on at the Fox Forest.

Litchfield. Two tracts of land were purchased in Litchfield bringing the present area to 291 acres. These were purchased from Henry Plouf, Jr., 109 acres for $381.50, and 60 acres from the Daniel M. McQuesten heirs for $350. These areas are for the most part covered with white pine reproduction.

Mascoma. Mrs. Daisy E. Morgan sold to the state three pieces of land in Canaan totalling 20 acres for $175. This includes a 5-acre meadow, 14 acres of white pine and ½ acre or more on the Mascoma River. This purchase brings the state land to a black top road and thus allows woods operations to be carried on without crossing the land of private owners.

Mt. Sunapee. A 10-acre tract of land necessary for development of the park was purchased from John L. Paul for $250.

Sentinel Mt. Mr. H. Arthur Ashley sold to the state a tract of 100 acres for $500.00 adjacent to the Sentinel Mt. Tract in Piermont.

Vincent. Two tracts of land were purchased: one from Mrs. Dana B. Gove of 265 acres for $2,500.00, and 199 acres from Mrs. Frances Keene Valentino and Mrs. Harriet G. Keene for $2,000. These included 362 acres in Weare and 102 acres in Deering. This increased area adds much to the value of this forest originally given by Dr. C. A. Vincent for research purposes in 1936.

GIFTS

Ballard. Mr. Ernest K. Ballard of Derry deeded as a gift a tract of 85 acres including a house, up-and-down sawmill and upper and lower dam. Mr. Ballard has retained a life lease on the house and mill, both of which are in excellent condition and of great historical value. The up-and-down mill is in the best operating condition possible and should provide many New Hampshire residents with an insight into our past methods of sawmilling.

Courtesy U. of N. H.

Sawing Peeled Pulpwood at a Yard

Echo Lake. This tract is a gift from Miss Marion Howard of Conway. It consists of 15 acres and is to be held and managed as a forest reservation and game sanctuary and a portion of the trees are to be allowed to grow to full maturity and be preserved as an example of mature New Hampshire forest trees.

Wade. A tract of 60 acres in the town of Hill was transferred from the Department of Public Welfare.

SALES

Ponemah. The following pieces of land totalling 3½ acres were sold: Carlton L. Carter, 1 acre for $405.00; Mrs. Juliette B. Fortescue, 1 acre for $450.00; J. Frank Hall, ½ acre for $150.00; and Frank Hall, 1 acre for $400. The net receipts from these sales amounted to $1,405.

MANAGEMENT OF STATE FORESTS

The state forest management program followed the general plan established in 1950, of re-marking boundaries, type-mapping, and initiating improvement operations. Harvesting of mature and overmature timber continued according to plan.

The following operations were carried out on 25 state areas during the past two years:

Bear Brook: Two hundred acres were worked over, mainly in white pine—pitch pine types. Removal of the pitch pine will increase the growth considerably on the residual white pine.

Beech Hill: The entire lot was subjected to a harvest cutting, removing stagnated hemlock and undesirable hardwoods. A vigorous young stand was left.

Blair: A roadside demonstration area was established.

Clough: A marked stumpage sale was made during 1954. A heavy cutting was made since the greater portion of the standing timber was mature.

Connecticut Lakes: Widening of the state highway resulted in the salvage of some spruce and fir pulpwood.

Contoocook: Thinning and weeding of red and white pine plantations has put this area in good growing condition.

Crawford Notch: Salvage of white birch continued in the Dry River area. Most of the birch in the Notch is decadent.

Davisville: Poorly-formed Scotch pine was clear-cut and white pine was thinned.

Duncan Lake: Twenty acres of poorly-formed Scotch pine were clear-cut. This stand produced 26.5 cords of pulpwood per acre.

Fay: The harvesting of overmature timber on 100 acres was completed in 1954. Much cull was found, especially in hardwoods, since the timber was overmature. Hemlock was found to be 200 to 250 years of age.

Fox: Release and improvement cuttings were made on 125 acres. Sawlogs, pulpwood and cordwood were produced and sold at roadside. Charcoal operations were continued.

Franklin Pierce: Both a thinning and partial shelterwood harvest cut were made on this tract. A growth plot was established in line with the policy of establishing a permanent growth study system.

Hemenway: Approximately 100 acres of mature timber were marked and sold on bid. As on the Fay lot, a great deal of the timber was well beyond its natural rotation age. A sawmill was allowed on the lot thereby increasing the sale value.

Hodgman: Red pine plantations were thinned, the trees being cut into 7 foot fence posts. The new market for fence posts increases the possibility of profitable thinnings in young plantations. Pulpwood was also removed in thinnings in white pine stands.

Litchfield: Another roadside demonstration area was established. Pulpwood and posts were removed. Slash was piled and burned.

Livermore Falls: A stumpage sale of white pine and hemlock was made. The hemlock had considerable cull rot, due probably to poor soil conditions.

Mast Yard: An extensive thinning of several hundred acres of red and white pine was initiated. Undesirable pitch and Scotch pine were also removed. This tract is just beginning to come into its own since the plantations have had much competition from underbrush.

Monadnock: Salvage of spruce was necessary as a result of severe windthrow on the side of the mountain. The timber was sawn into lumber for the Recreation Division.

Nottingham: The roadside area was brushed out and thinned and another roadside demonstration area established.

Salmon Falls: A poor Scotch pine plantation was removed. It is planned in about three years to plant to a more desirable species. Thinning of red pine resulted in production of many red pine posts.

Scribner Fellows: The roadside demonstration area was brushed out to make it more pleasing to the eye.

Soucook River: An integrated operation was completed on this tract, with pulpwood and good and poor grade logs being produced. Lumber was sawn for the Recreation Division.

State Forest Nursery: Winter operations on the nursery lands produced pulpwood and logs. This work was done by the permanent nursery crew during the off season.

Taylor: Thinning of a white pine plantation and harvesting of mature trees completed the work on this tract for the next ten years. Some planting may be necessary.

White Lake: Removal of an overstory of pitch pine to release a planted red pine understory was completed. Fairly heavy damage occurred in the red pine although the stocking is better than 50%. This pine would have been completely stagnated if not released.

Current Operations:

The following operations were in progress in the fall of 1954:

Bear Brook: Salvage of 150,000 board feet of hurricane timber.

Clough: A marked stumpage sale of about 400,000 board feet.

Davisville: Thinning of white and red pine plantations.

Duncan Lake: Thinning of plantations for posts and pulpwood.

Everett: Thinning of red pine for fence posts.

Fox: Plantation release and improvement cutting in pine.

Hemenway: Marked stumpage sale of about 1,000,000 board feet.

Lead Mine: Marked sale of birch for bolts and pulpwood.

Mast Yard: Large-scale thinning of white and red pine plantations.

Nottingham: Salvage of hurricane timber.

Rye Harbor: Stumpage sale of all merchantable white pine.

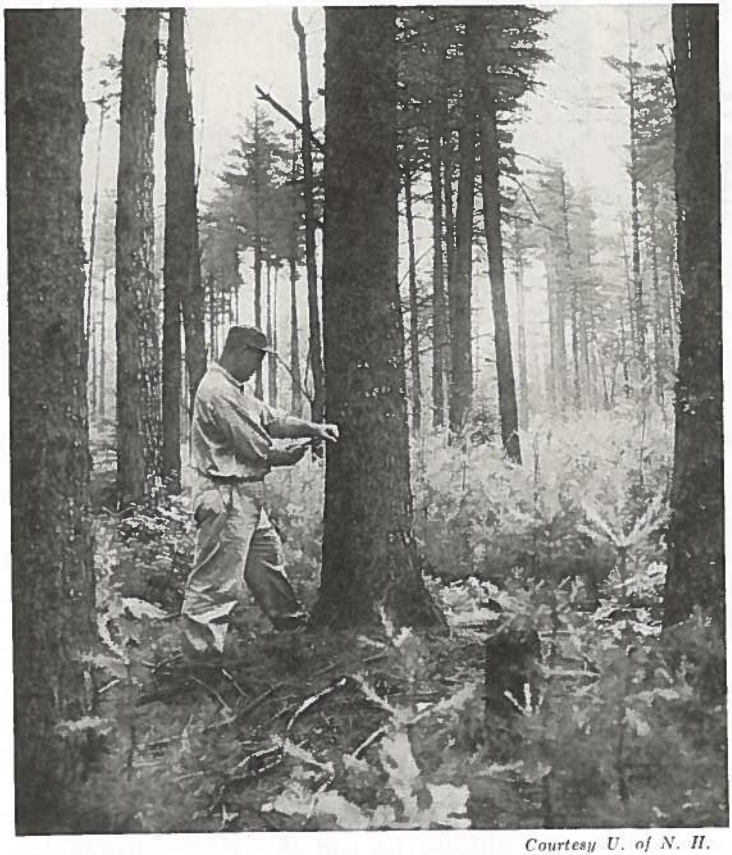
Stevens' Pines: Salvage of hurricane timber.

Pawtuckaway: Thinning of red and white pine plantations for posts and pulpwood.

White Lake: Cutting of pitch pine to release red pine.

Other Accomplishments:

During 1953-54, blazing and painting of boundaries was completed on 13,110 acres. Type-mapping of 1,583 acres was done and working plans completed. Sixty acres of newly-acquired land were surveyed. Two-man weeks were devoted to conservation education at the Spruce Pond and Lost River Conservation Camps. A fine collection of colored slides of forest operations was taken for use in public education. Management personnel spent several weeks in manning radios on the fires at Mt. Shaw and Grantham Mt. during 1953. Management work on state forest lands has been concentrated on cultural work in growing stands. Most of the work has been done on contract since the timber in many cases was marginal and not adaptable to bid sales. Marked stumpage sales are forthcoming on several tracts, Kearsarge Mt. producing the main volume for sale. Several hundred acres are being marked. Cruising of new areas and blazing and painting of boundaries will be continued.



Courtesy U. of N. H.

Shelterwood Cutting in White Pine

Table 13

PRODUCTS HARVESTED FROM STATE LANDS DURING BIENNIAL PERIOD 1953-1954

Forest	Area Operated (Acres)	Type of Cutting	Sawlogs (Bd. Ft.)	Spruce & Fir	Pulpwood (Cords) Pine	Hardwood	Birch Bolts (Cords)	Fence Posts (Pieces)	Fuelwood (Cords)
Bear Brook	200	Harvest, salvage and thinning	227,259	.....	765.58	28.43	.....	.....	8.00
Beech Hill	20	Harvest	44,957	.....	55.51	.....	.....	.....	.....
Blair	20	Thinning	4,465	.....	11.56	10.77	.....	.....	13.64
Clough	100	Harvest	.....	.....	4.50	3.00	.....	.....	.....
Connecticut Lakes	5	"	6,140	32.30	.....	.....	.....	.....	.....
Contoocook	10	Thinning	.....	.....	5.50	.....	.....	.....	.....
Craney Hill	1	"	.....	.....	2.50	1.5	.....	.....	.....
Crawford Notch	5	Salvage	.....	.....	.....	12.89	.....	.....	.....
Davisville	20	Thinning	.....	.....	63.24	.....	.....	.....	.....
Duncan Lake	25	Harvest	.....	.....	431.79	.....	.....	.....	.....
Fay	100	"	622,894	.....	.....	.....	.....	.....	.....
Forest Lake	2	"	36,367	.....	.....	.....	.....	.....	.....
Fox	126	Improvement	29,674	.....	70.53	202.16	.....	1,252	179.80
Franklin Pierce	10	Thinning	23,000	.....	13.00	8.00	.....	.....	.....
Hemenway	100	Harvest	213,666	.....	.....	.....	111.36	.....	.....
Hodgman	10	Thinning	.....	.....	24.00	.....	.....	705	.....
Litchfield	10	"	.....	.....	11.78	.....	.....	200	.....
Livermore Falls	60	Harvest	326,785	.....	.....	.....	.....	.....	.....
Mast Yard	5	"	.....	.....	48.00	.....	.....	250	.....
Monadnock	10	Salvage	16,645	.....	.....	.....	.....	.....	.....
Nottingham	5	Thinning	.....	.....	15.00	.....	.....	.....	.....
Nursery	30	"	5,900	.....	175.88	35.60	.....	.....	.....
Salmon Falls	30	Harvest	.....	.....	84.68	.....	.....	1,283	.....
Soucook River	40	Thinning	125,743	.....	14.87	.....	.....	.....	.....
Taylor	20	Thinning, Harvest	80,003	.....	28.50	27.07	.....	.....	.....
White Lake	10	Improvement	.....	.....	40.24	.....	.....	.....	.....
Totals	974		1,763,498	32.30	1,866.66	329.42	111.36	3,690	201.44

Table 14

COST AND INCOME FROM WOODS OPERATIONS

Fiscal Years 1953 and 1954

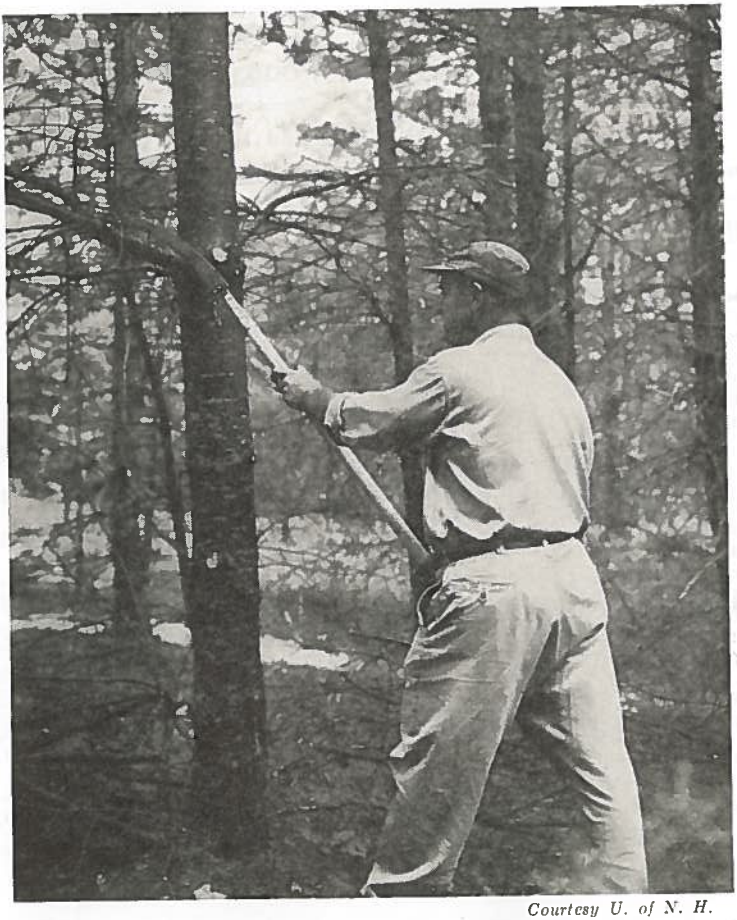
Forest	Operating Cost	Gross Income	Net Income
Bear Brook	$16,469.41	$21,490.70	$5,021.29
Beech Hill	1,813.14	2,952.75	1,139.61
Blair	455.40	620.25	164.85
Clough	941.35	5,124.50	4,183.15
Connecticut Lakes	448.87	738.10	289.23
Contoocook	278.50	53.25	—225.25
Craney Hill	31.50	32.00	.50
Crawford Notch	.....*	154.64	154.64
Davisville	813.50	916.99	103.49
Duncan Lake	6,411.49	7,344.31	932.82
Fay	.....*	6,460.83	6,460.83
Forest Lake	.....*	545.50	545.50
Fox	8,980.23	10,934.93	1,954.70
Franklin Pierce	1,235.93	1,873.50	637.57
Hemenway	.....*	5,022.24	5,022.24
Hodgman	105.75	141.00	35.25
Litchfield	1,071.07	268.47	—802.60
Livermore Falls	27.50	6,535.70	6,508.20
Mast Yard	223.36	931.50	708.14
Monadnock	311.02	848.90	537.88
Nottingham	23.10	.....	—23.10
Salmon Falls	1,414.20	1,548.85	134.65
Soucook River	5,006.18	5,702.67	696.49
Nursery	209.45	3,375.24	3,165.79
Taylor	3,581.84	5,681.13	2,099.29
White Lake	753.46	811.91	58.45
Totals	$50,606.25	$90,109.86	$39,503.61

*Stumpage sales only.

STATE FOREST NURSERY AND REFORESTATION

Notable changes and additions at the State Forest Nursery during the past two years were the improvement of the water supply system and purchase of new mechanical equipment. In order to provide a reliable water supply of better quality a centrifugal water pump driven by a gasoline engine was purchased and installed, and 4,900 feet of galvanized pipe were purchased. This will supply greater amounts of cleaner water and increase the sprinkler system.

An Allis-Chalmers tractor of the Model W. D. heavy-wheel type with hydraulic equipment was purchased together with new harrows and plow. This can handle all the usual land-working equipment hydraulically. It has adjustable wheels that enable it to operate over seedbeds. A Wagner Tractor Loader was also



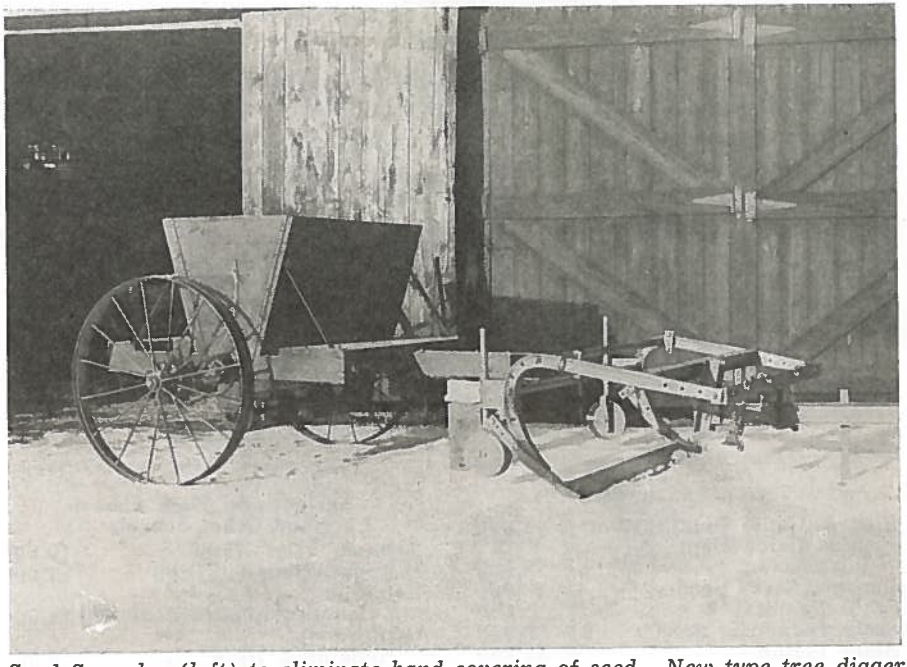
Courtesy U. of N. H.

Pruning White Pine Crop Trees

purchased for use with the new tractor. It is equipped with a material bucket for loading trucks with sand or other loose material and has a seven-foot adjustable blade for plowing snow that operates hydraulically from the front end of the tractor. This will save a considerable amount of hand work.

A sand-spreader was built from agricultural implement parts. This is tractor-drawn and will spread sand evenly over the seedbeds after the seed is sown, taking the place of the hand-sifting method that is both laborious and time-consuming. A hydraulically-operated tree digger was developed that can be controlled by the tractor operator without assistance, to replace the old-type digger that needed four men in addition to the tractor driver.

It should also be noted that the 34° cold storage room for carrying fall-dug seedlings through the winter for early spring



Sand Spreader (left) to eliminate hand covering of seed. New type tree digger (right) handled hydraulically by tractor driver.

planting has been in operation for two years. It is now believed that packing and storing most species of trees used in forest planting is well enough understood not only to make this practice feasible but also safe and desirable to use on a large scale. This method makes planting stock available for planting in the southern part of the state in the early spring before frost is out of the nursery beds. It is also useful for holding seedlings in a dormant and plantable condition in late spring after they would naturally have started to sprout under ordinary storage, and thus become unfit for field planting.

Two test plantings were made in the spring of 1954 when two typical field planting areas were planted with alternate rows of fresh-dug stock and fall-dug stock that had been in cold storage five and one-half months. White pine, white spruce and balsam fir were the species of seedlings tested. The final count at the end of the summer showed 95 percent of the cold storage trees living and 92 percent of the fresh-dug trees living. This was an unexpected result. While 92 percent is a satisfactory survival for field planting, it is believed that a few of the fresh-dug trees were improperly handled and that the count does not give a true picture of the fresh-dug trees. However, the important result of the ex-

periment is that cold storage stock is satisfactory for forest planting.

The same policies of growing and distributing seedlings have been continued as in previous years and the same services rendered to other agencies. The following tables show the distribution of forest planting stock to different agencies; the value of the stock distributed to each agency, the nursery output by age, species and years, and the planting on state forest areas by species and amounts.

Table 15

FREE DISTRIBUTION OF PLANTING STOCK

Fiscal Years 1952-53 and 1953-54

(Number of Trees)

State Agencies	
Fish & Game Dept., Alton	1,000
Fish & Game Dept., New Durham	2,000
Laconia State School	16,000
State Hospital	500
State Industrial School	2,000
State Prison	33,850
Water Resources Board (Connecticut Lakes)	20,000
Total	75,350
Cities and Towns	
Dummer	4,000
Franklin	500
Greenfield	5,000
Hanover	15,000
Henniker	3,500
Manchester	25,000
Newport	3,000
North Walpole	900
Pittsfield	1,000
Unity-Sullivan County Farm	5,000
Weare	1,000
Westmoreland Depot-Cheshire County Farm	7,000
Winchester	1,000
Total—13 Towns & Cities	71,900
4-H Clubs	
Belknap County	2,000
Carroll County	26,600
Cheshire County	13,550
Merrimack County	17,675
Rockingham County	25,550
Strafford County	2,500
Sullivan County	11,450
Total 352 members	99,325
Agricultural High Schools and Other Schools	
Alstead, Vilas High	10,000
Belmont, Belmont High	1,000
Colebrook, Colebrook Academy	11,000
Contoocook, Hopkinton High	8,500
Derry, Pinkerton Academy	4,000
Dover, Dover High	2,000
Durham, University of N. H.	3,000
Hudson, Alvirne High	3,500
Keene, Keene Junior High	2,500
Laconia, Laconia High	4,000
Nashua, Quincy Street School	2,000
New Boston, New Boston High	1,750
Northwood, Coe-Brown Academy	6,600
Orford, Orford High	6,000
Raymond, Raymond High	5,000
Rochester, Spaulding High	3,100
Tilton, Tilton-Northfield High	4,800
Walpole, Walpole High	2,000
Warner, Simonds Free High	1,700
Weare, Weare High	6,000
West Lebanon, West Lebanon High	2,300
Total — 21 schools	90,750
Arbor Day	
43 Schools, Clubs, Boy Scout Troops and High Schools	23,075
Grand Total	360,400

Table 16

NURSERY OUTPUT

Age of Stock	White Pine	Red Pine	White Spruce	Balsam Fir	White Ash	Total
		Number of Trees				
Fall, 1952 — Spring, 1953						
4-year seedlings	.....	1,000	122,750	51,000	.....	174,750
3-year seedlings	472,300	38,150	249,050	7,500	.....	767,000
2-year seedlings	.....	.....	.....	.....	6,275	6,275
Total	472,300	39,150	371,800	58,500	6,275	948,025
Fall, 1953 — Spring, 1954						
4-year seedlings	.....	.....	.....	53,050	.....	53,050
3-year seedlings	237,825	379,760	218,300	.....	.....	835,885
Total	237,825	379,760	218,300	53,050	.....	888,935

Table 17

VALUE OF NURSERY STOCK PRODUCED

Fiscal Years Ending June 30, 1953 and June 30, 1954

	1953	1954
Trees sold to private planters	$4,425.74	$3,371.48
Trees given to 4-H and other juvenile clubs	428.60	652.85
Trees given to towns and cities	84.60	289.45
Trees used on state lands	255.50	470.18
	$5,194.44	$4,783.96

Nursery men spend one-third of the time (four winter months) working in the woods, getting out pulpwood, logs, and doing forest improvement work.

Table 18

REFORESTATION ON STATE LANDS

1952-53 and 1953-54

Forest	Area Planted (Acres)	White Pine	Red Pine	White Spruce	White Ash	Total
Bear Brook State Park	36	2,425	33,550	.....	.....	35,975
Fox State Forest	8	3,500	1,500	3,000	.....	8,000
Franconia Notch Reservation	1	.....	1,000	.....	.....	1,000
Monadnock Reservation	1	.....	500	.....	.....	500
Mt. Sunapee State Park	2	1,000	1,000	.....	.....	2,000
Pillsbury Reservation	15	.....	2,000	7,975	325	10,300
White Lake State Park	1	.....	1,000	.....	.....	1,000
Total	64	6,925	40,550	10,975	325	58,775

TOWN FORESTS

Very little information was available concerning the activities of town forests during this biennium. Towns are not required to file reports of operations with the State Forester; therefore, the only information received comes from personal contacts with selectmen or from the complete survey that is conducted once every ten years. Lands for town forests purchased by the towns are to be managed under the direction of the State Forester.

In 1953 the Selectmen of Lebanon requested the State Forester to make a preliminary survey of the town forest at the Lebanon Airport. The 310-acre area was cruised and type-mapped and specific recommendations made for each stand and type. An even distribution of age classes and an abundance of white pine make the area a very desirable forest management unit. In addition to the cruising and mapping the foresters marked approximately 12 acres of white pine to be thinned for pulpwood. This further aided the town by providing jobs for people on town relief. The total cost to the town for cruising, mapping and marking was approximately $120.00.

The Commission regards this cooperation as highly important. It is hoped that in the future more towns will avail themselves of this service. There is a great opportunity for towns to increase revenue by putting their forests on sustained yield with maximum production.

THE WHITE MOUNTAIN NATIONAL FOREST

Timber sale activity in the past two years has been about normal except that towards the end of fiscal year 1954 business dropped off slightly. For the two-year period thirty-four million board feet of timber was cut. The value of this plus the money received from rents and special uses brought the total receipts for the forest for the two-year period to $275,359.36. Twenty-five percent of these receipts were returned to the States of Maine and New Hampshire for distribution to the towns containing national forest land. New Hampshire's share of this fund was $64,162.13.

The summer of 1953 was very dry and lightning storms and other causes started 13 fires on the national forest which is the largest number of fires in its history. The 1954 season on the other hand was one of the wettest on record and only three very small fires occurred.

Recreationists from all over the United States continued to visit the national forest every summer. Campers and hikers par-

ticularly are increasing in number each year and are severely taxing recreational facilities. A major addition to these will be the Kancamagus Highway. This proposed highway will eventually be thirty-five miles long running from Conway to Lincoln. The road was completed with a gravel surface from the town of Lincoln east to the top of the range, a distance of twelve miles, and from Conway west up the Swift River Valley, eighteen miles. It is hoped that at least three miles will be completed in 1955 leaving less than two miles to be finished later.

Mr. Clifford L. Graham, who had been Supervisor of the White Mountain National Forest since 1936 passed away on September 26, 1954. He was replaced December 1st by Gerald S. Wheeler, formerly Supervisor of the Green Mountain National Forest in Vermont.

COUNTY FORESTRY PROGRAM

The financial support of one-fourth of the Granite State's gainfully employed persons depend upon a forest economy. Woodlands occupy 84 percent of the total land area. Eight county foresters and a forester assigned to the Baboosic Watershed project are working with as many of the 35,000 woodland owners as possible in an attempt to help them grow timber crops suitable to meet present and future needs.

The intensive education of woodland owners by county foresters so that the former will become aware of the economic opportunities in forest management and thereby be interested in taking advantage of these opportunities requires on-the-ground help and assistance with individual owners. This must be supplemented by forestry information directed at all people through the written word, radio, television and meetings.

There is general agreement that the job of getting woodland owners to recognize and exploit their opportunities in forest management is primarily a public responsibility, assuming of course, the importance and desirability of the active participation by private interests in such a program. With only eight county foresters there is need for two additional so that there may be one for each county.

There are two general courses of action to fill the increasing demands for technical assistance by forest owners. New Hampshire can add more and more foresters with the objective of giving complete public services to woodland owners, or it can adopt a public forestry program that will assist owners to assume responsibility themselves in the management of their forest lands. The

forest owner who becomes convinced that it is to his advantage to practice forest management will employ the services of a consulting forester if such an expenditure of money adds eventually to his net income. The public forester will find his work among forest owners who handle their own woods operations and need occa-

Courtesy U. of N. H.

County forester marking a thinning in white pine

sional advice, and with owners whose holdings are so badly depleted of suitable growing stock that returns from partial and improvement cuttings are largely in the future. Also, the public forester will have his work among those forest owners who are not convinced that forest management is a profitable enterprise. If New Hampshire continues the policy of encouraging forest owners to take direct responsibility in the management of their lands, it should be possible to go along for many years with one

public management forester to a county. The present policy of county, state, university and federal support of the County Forestry Program encourages local interest in the program and shares the cost.

Opportunities in forest management are best demonstrated by the county foresters in advising and helping owners to carry out profitable woods operations in merchantable stands from the stump to the marketing place, keeping in mind the two important objectives of partial cuttings. These are the preservation of the rapidly-growing trees, which can be cut more profitably after a future growing period, and provision for a source of seed for the natural regeneration of desirable species. There is also the job of persuading forest owners to recognize the advantages of making improvement cuttings in immature stands.

The kind of assistance given a woodland owner is illustrated by two examples:

"Mrs. A received an offer of $2,500 for all her standing timber. With the advice and guidance of the county forester, Mrs. A received nearly $3,000.00 for the marked trees. She has standing on her lot nearly 50 percent of the original volume of timber for a future cut when the trees have increased in value and have seeded in the area to a new crop."

"Mr. B owned a 100-acre woodlot purchased a quarter of a century ago. The lot was 80% stocked with white pine in need of thinning. With the guidance of the county forester the owner employed a consulting forester to make an improvement cutting on 40 acres of white pine badly in need of treatment. The trees that needed to be eliminated had no merchantable value. They were killed by inserting sodium arsenite tabs under the bark. Valuable experience and information on chemical thinning was obtained and an excellent demonstration resulted. Under the provisions of the Agricultural Conservation Program the government shared the cost of the improvement with the owner."

County Foresters have their headquarters at County Extension Offices as follows:

County	County Forester	Town	Telephone
Belknap & Strafford	Leighton, Roger S.	Laconia	1341
Hillsborough	Breck, Robert W.	Milford	45
Carroll	Breon, Theodore F.	Conway	168-R2
Cheshire & Sullivan	Richards, Tudor	Keene	930
Coos	Phipps, Robert H. K.	Lancaster	8-4961
Grafton	Sargent, Leslie	Woodsville	7-2061
Rockingham	Sloan, Roger P.	Exeter	2741
Merrimack	Thompson, Wilbur E.	Concord	5-5505
Baboosic Watershed Protection Program:			
Hillsborough	Thorne, Thaddeus	Milford	45

DISTRICT FOREST ADVISORY BOARDS

Members of these boards are appointed for three-year terms by the Forestry and Recreation Commission. They are selected from citizens residing in each district who are interested in forest conservation. In addition to their duties of studying forest conditions in their districts and acting as advisors to the Commission, they act as boards of appeal in matters pertaining to abatements of yield taxes for good forestry practice, standards for which have been established by the boards. County foresters act as secretaries for the boards in their respective districts.

DISTRICT FOREST ADVISORY BOARDS

	Term expires January 1
Belknap-Strafford:	
Richard J. Pitman, Laconia	1956
Harold E. Flower, Barrington	1957
Richard C. Varney, Gilmanton	1957
Horace U. Ransom, Meredith	1955
Myron I. Jenness, Dover	1955
Carroll:	
Richard W. Read, Tamworth	1956
Roger Williams, Center Tuftonboro	1956
Arthur P. Gale, Jackson	1957
Jesse L. Ambrose, North Sandwich	1955
Howard C. Avery, Wolfeboro	1955
Cheshire-Sullivan:	
George L. Porter, Alstead	1956
George H. Duncan, East Jaffrey	1957
Clifford Stearns, Hinsdale	1957
Arthur A. Davis, Claremont	1955
William P. House, Chesham	1956
Coos:	
Howard T. Woodward, Berlin	1956
Clarence S. Herr, Berlin	1956
George D. Keysar, North Stratford	1957
Lawrence E. Philbrook, Shelburne	1957
Clarence Marshall, Northumberland	1955

Grafton:

Henry C. Waldo, Lincoln	1956
Earle Philbrook, Littleton	1956
Samuel G. Hall, Beebe River	1957
Forrest Cole, Lebanon	1957
Lyle Frazer, Monroe	1955

Hillsborough:

Francis J. Lorden, Milford	1956
Aldis J. Christie, Manchester	1957
Winthrop L. Carter, Hollis	1955
Stanley Tenney, Francestown	1955
James Colby, Hudson	1957

Merrimack:

Victor E. Phelps, Andover	1956
Charles A. Bartlett, Concord	1956
Chester B. Bailey, Suncook	1957
Frank T. Garland, Pittsfield	1957
C. Leland Slayton, Warner	1955

Rockingham:

Lewis C. Swain, Exeter	1956
Joseph F. Culick, Fremont	1956
Arthur W. McDaniel, Nottingham	1957
John E. Ray, Londonderry	1957
Howard M. Platts, Hampton Falls	1955

REGISTERED ARBORISTS

All persons engaged in the practice of tree surgery, pruning, spraying or dusting, including airplane spraying, or conducting similar types of work in the care of forest, shade and fruit trees are required to be registered under state law. Residents of New Hampshire may carry on such work within the town in which they reside without registration. Examinations leading to registration are conducted by an examining board consisting of the Commissioner of Agriculture, the State Entomologist and the State Forester. Arborists may be certified for one or all of five subjects: Pruning and care of orchard trees; pruning and care of shade or ornamental trees; spraying of orchard trees; spraying of shade or ornamental trees; and treatment of cavities. A list showing for which subjects each individual is certified may be obtained on application to the State Forester or State Entomologist. There were 58 arborists registered in 1954. Names of individuals and

firms are listed alphabetically. Where the name of the firm and the individual representing that firm are the same, only one listing is given.

Registered Arborists 1954

(Address New Hampshire except as otherwise noted)

Abbott Brothers Tree Service (William P. Abbott), Wells, Maine.
Abbott, George R., Upland Road, Andover, Mass.
Aldrich, Leon F. (See Allard Corp.).
Allard Corp. (Leon F. Aldrich), 1600 Providence Highway, P. O. Box 234, Norwood, Mass.
Amalia Tree Surgeons, Inc. (Karl F. Amalia), 5 Elm St., Manchester, Mass.
Bailey, John M., 420 Elk St., Gladwin, Michigan.
Barber Tree Service (Eugene L. Barber), Peterborough.
Bartlett Tree Expert Co., F. A. (Wilfred Wheeler, Jr.), 795 Memorial Drive, Cambridge, Mass.
Batchelder, Roscoe H., 29 Russell St., Plymouth.
Billings, R. E. (See Lucas Tree Expert Co.).
Bouchard, J. Armand, 972 Mammoth Road, Manchester.
Bradford Tree Expert Co., (John W. Wholley), Birch Rd., Exeter.
Caldwell, C. T. (See Franklin Tree Expert Co.).
Chase, Ernest J., 686 Court St., Keene.
Clancy, John O., 2440 Washington St., Boston, Mass.
Clancy, John O. Jr., 17 Spalding St., Jamaica Plain, Mass.
Clark, Leon H. Jr., Box 506, Meredith.
Conley Tree Surgeons, Maple St., Middleton, Mass.
Cook, William M., Route 10, Boscawen.
Davey Tree Expert Company, Kent, Ohio.
Dodge Associates, The (Albert W. Dodge), Main St., Wenham, Mass.
Eaton, Robert H., R. F. D. 1, Alton.
Flint, Edward O., Pleasant St., Saxton's River, Vermont.
Flint, George W. Jr., 21 Park St., Keene.
Franke, William A., 30 Cameron St., Brookline, Mass.
Franklin Tree Expert Co. (C. T. Caldwell), 318 Main St., Greenfield, Mass.
Frost & Higgins Company, H. L. (R. D. Keene and E. W. Higgins), 20 Mill St., Arlington, Mass.
Gendron, Remi L., 156 Elm St., Claremont.
Henderson & Herndon Tree Co., Inc. (William P. Henderson), 9 Story Ave., Beverly, Mass.
Higgins, E. W. (See Frost & Higgins Co.).

Hook, John E. (See Locale Tree Co.).
Keene, R. D. (See Frost & Higgins Co.).
Kezar Tree & Landscape Co. (Thomas F. Kezar), 156 Billings St., North Quincy, Mass.
Kezar, Thomas F. Jr., 60 Storer St., Kennebunk, Maine.
Kirby, Byron L. (See Ralston Tree Service, Inc.).
Knox, Ralph T. Jr., 3 State St., Windsor, Vermont.
Kolb, Warren (See Rockingham Tree Service).
Lakes Region Spray Service (Harold S. Sheffield), New Hampton.
Laviolette, Laurence A. (See Monadnock Tree Service).
Lawrence, B. F., 132 Davis St., Greenfield, Mass.
Locale Tree Co. (John E. Hook), P. O. Box 342, Beverly, Mass.
Lucas Tree Expert Co., John, (R. E. Billings), P. O. Box 965, Portland, Maine.
Madden, James E., 78 West Merrimack St., Manchester.
Mayberry, Elmer F., Lancaster.
Meader, Robert W., Greenland.
Melendy, Harry F., Milford.
Monadnock Tree Service (Laurence A. Laviolette), Peterborough.
Myers, Willard N. (See Rockingham Tree Service).
Nehring, William H., Ridge Farm Nursery, New Durham.
Peeke, Leslie A., 67 Monroe St., Amesbury, Mass.
Ralston Tree Service, Fred & Co. (J. Cooke White and Frederick R. Ralston), 22 Linden Street, Allston, 34, Mass.
Ralston Tree Service, Inc., (Byron L. Kirby), 43 Cornwall St., Portsmouth.
Robbins, Lester W., 5 Ash St., Milford.
Rockingham Tree Service (Warren Kolb and Willard N. Myers), Atkinson.
Rossignol, Joseph L., 191 Main St., Claremont.
Rule, Paul F. Jr., R. F. D. 2, Richmond.
Sheffield, Harold S. (See Lakes Region Spray Service).
Smith, Alfred A., 156 Calef Road, Manchester.
Stalbird, Russell N., 422 South Nelson Road, Columbus 9, Ohio.
Stevens Tree Co. (John H. Stevens), Alfred, Maine.
Tasker, F. Bruce, North Rochester.
Tierney, John, 16 Liberty St., Manchester.
Tufts, Robert L., 20 Lincoln St., Stoneham, Mass.
Tuttle, W. F., Wolfeboro.
Walker Tree Expert (James R. Walker), 31 Grant St., Concord.
Walter, Stillman E., Wolfeboro.
Watson, David B., R. F. D., Portsmouth (Newington).
Welchans, William H., R. F. D. 1, Warner.
Wheeler, Wilfred Jr., (See Bartlett Tree Expert Co.).

White, J. Cooke (See Ralston & Company Tree Service, Fred).
Wholley, John W. (See Bradford Tree Expert Co.).

THE FOREST CONSERVATION AND TAXATION ACT

The operation of the new method of taxing timber under the 1949 law was summarized in the last report of this Commission including the tax year 1952. The Act was amended in 1953 in many minor details and provision made for an Interim Committee to study the operation of the law and report recommendations to the Legislative Council. After one year's work this committee submitted its report in October, 1954.

The operation of the law during the tax year ending September 30, 1953 is summarized as follows. Details are included in the separate report of the Tax Commission.

	No Abatement	%	Abatement for Good Cutting Practices	%	Total
Number of Operations	2,731	66	1,406	34	4,137
Volume Assessed					
Sawtimber M. bd. ft.	195,358	64.9	105,712	35.1	301,070
Pulpwood & Misc. (Cds.)	76,330	41.7	106,718	58.3	183,048
Total Equivalent in M. bd. ft.	233,594	59.5	159,000	40.5	392,594
Total Taxes Assessed	$227,998	59.5	$155,192	40.5	$383,190

During this period the total state liability for reimbursement to towns was $466,073 and the amount due towns $159,850.

FOREST RESEARCH

A number of research projects were under way but few were actively pursued because of lack of personnel and constant administrative activities. The following summarizes the field covered and the status of each project.

Silviculture

Source of Seed. Field trials of Scotch pine, Norway spruce, European larch, Douglas fir and white pine in cooperation with the International Union of Forest Research Organizations. Started 1924. Plantations range in age from 2 to 20 years. Measurements are made periodically. Duration indefinite.

Hybrid Poplars. Field trial of 10 clones of poplar hybrids 20 years old in 1954; in cooperation with N. E. Forest Experiment Station. Duration indefinite.

Hybrid Chestnuts. Field trials of Asiatic and hybrid chestnut seedlings in cooperation with Agricultural Research Service, U. S. Department of Agriculture. Started 1946. New plot to be established spring, 1955. Duration indefinite.

Cold Storage of Nursery Stock. Nursery and field tests comparing fresh stock with that stored under different conditions and periods. Started 1936. Inactive.

Plantation Survey. Examination of sample plantations to determine survival, growth and injuries. In cooperation with Society for the Protection of New Hampshire Forests.

Spacing in Red Pine Plantations. A series of plots established in 1934 to compare growth at different densities. One-half of each plot was thinned in 1947 and 1954. Duration indefinite.

Christmas Tree Regeneration. Trees were harvested, cutting high stumps, leaving living branches that turn up and produce new trees. Started 1946. To be continued.

Weeding. Several permanent sample plots have been established to study results of release of conifers from competing hardwoods and brush, the oldest dating from 1933. Periodic measurements have been made. Duration indefinite.

Poisoning and Girdling. Release of conifers by girdling and use of ammate, sodium arsenite and 2-4-5-T on overtopping hardwoods. Several older plots have been discontinued. To be completed in 1955.

Pruning. Determination of methods, costs and results of pruning crop trees of white pine. Started 1935. Duration indefinite.

Thinning. Several permanent sample plots have been established in a variety of forest types for comparing growth and yield with and without periodic thinning. The oldest plots now maintained date from 1933. Remeasurements are made at 5-year intervals and thinning repeated when needed. Duration indefinite.

Chemical Weed Control. Basal bark spray, spray of cut stumps, and use of poison tabs to kill unwanted trees and sprouts that require removal to release more valuable trees. Exploratory trials have been in progress since 1948, using different formulations and concentrations of 2-4-D and 2-4-5-T. Duration indefinite.

Silvics

Period of Height Growth in European Larch. Weekly observations were made in 1954 on 55 trees. These showed that growth started one month after appearance of new foliage and continued for about 115 days. Report to be completed in 1955.

Soils. Experiments are being conducted with organic fertilizer for nursery soil and mulching with sawdust and wood chips.

Insect and Disease Control

White Pine Weevil. Survey plots are maintained in cooperation with N. E. Forest Experiment Station and remeasured annually to determine extent of new weevil attack. Duration indefinite.

Spruce Budworm Survey. Plots in balsam fir are examined annually to determine budworm population. In cooperation with N. E. Forest Experiment Station. Duration indefinite.

Gypsy Moth Damage. Permanent sample plots are maintained in cooperation with Office of Gypsy Moth Control, U. S. Department of Agriculture and re-examined annually to determine damage and rate of tree recovery. Duration indefinite.

Pine Needle Blight. About 150 affected trees were numbered and examined in central New Hampshire during 1954. These will be studied in 1955 to determine recovery or recurrence of needle browning. Paper published in Plant Disease Reporter October 15, 1954. Duration about five years.

Porcupine Control. Experiments with repellants to prevent porcupines from girdling trees. In cooperation with U. S. Fish and Wildlife Service. Started 1954. To continue one to two years.

Forest Management

Management of Fox State Forest. Cutting and improvement operations are carried on continuously and inventories made and working plan revised at 10-year intervals. Records of costs, income received and areas treated are maintained. Started 1927. Duration indefinite.

Growth Study Plots for Forest Management. Establishment of 1/5 acre circular plots on management areas to determine results of cutting practices. Started 1953. Additional plots to be established in 1955. Duration indefinite.

Utilization

Integrated Logging. Cutting and marketing several different forest products on the same operation. Records are kept of costs and volume removed per acre. Started 1933. Duration indefinite.

Charcoal Production. Costs and yields of charcoal production in steel drums and cement kiln have been kept since 1938. New methods of loading kilns and screening charcoal were developed. Duration indefinite.

Chemical Debarking. Experiments in 1949 and 1952 showed that sodium arsenite was the only effective chemical among those tried. Present plans are to treat about 100 acres annually on the Fox State Forest where softwood needs release and selected hardwoods should be removed from competition. Duration indefinite.

Forest Economics

Forest Resources of New Hampshire. An office compilation project, keeping statistics on area, volume, growth, ownership, depletion, losses and other data on New Hampshire forests. Duration indefinite.

Annual Survey of Cut of Forest Products. Annual collection of reports of cut of lumber, pulpwood and miscellaneous products by all mills and operators in New Hampshire. Duration indefinite.

Stumpage Prices. Compilation of stumpage prices in New Hampshire. Duration indefinite.

Woodland Owner's Account Book. Preparation of an account book for use of tree farmers and woodlot owners.

Appraisals of Forest Land. Study of methods for classifying forest land for purposes of taxation based on accessibility, surface character and productivity.

Fox Trust Fund for Forest Research. All forest investigations carried on by the Commission are supported by income from the Fox Fund established in 1926 by the late Miss Caroline A. Fox. Detailed annual reports are submitted to the Trustees by the State Treasurer and the State Forester. No appropriations for forest investigations have been made by the state. Forest operations are self-supporting and investigative work, maintenance of buildings and administration are paid from the Fox Trust Fund. Thus no taxpayers funds are spent at the Fox State Forest in Hillsboro. During the two years covered by this report one student assistant was employed for three months each summer. The permanent staff consists of the Research Forester and one maintenance man. The Fox State Forest now embraces 1,107 acres and forms the cen-

ter for state-wide forest investigations by the Commission. A small laboratory, library, museum, experimental nursery, and other facilities are located there.

Permanent Sample Plots

Growth study plots have been established on 11 state forests and 2 private forests to observe the development of trees and stands under different conditions and treatments. Most of these are concentrated on the Fox and Vincent Forests. Several have been remeasured at 5-year intervals for 20 years or more and provide valuable data, not only on comparative rates of growth with and without treatment, but also on mortality and influence of insects and diseases. The specific purposes under study are:

Purpose	No. of Plots
Release by weeding, girdling, etc.	11
Thinning	43
Planting	14
Source of seed	22
Insect survey and damage	9
Natural re-seeding and miscellaneous	55
Total	104

During the biennium all plots to be maintained have been remeasured, boundaries and tree numbers renewed and needed treatments carried out. A considerable number of plots that had served their purpose or had been damaged by storm, road relocation or logging were discontinued.

A beginning has been made in establishing circular growth study plots primarily for management purposes. These have been laid out following cutting in sale areas and will provide information on growth and mortality as a measure of the effectiveness of the cutting operation.

FOREST PRODUCTS CUT IN 1952 AND 1953

Since 1925 the Commission has been required by law to make an annual survey to determine the amount of timber and wood cut in New Hampshire. It is highly desirable that a complete and accurate record of the depletion of forests caused by cutting be maintained. Only by such records can any estimate of the total volume of standing wood and timber be kept up-to-date between recurrent surveys of the stand. Moreover, such records indicate the relation of growth to drain, that furnishes the only basis for resource planning and determination of state policies. New indus-

tries need to consider such factors as well as the existing estimates of standing timber.

The 1925 law was based on the assumption that reports of cut could be obtained from land owners, and provided that every person cutting wood or timber report the quantity cut during the calendar year to the Commission. In practice it was found impossible to enforce this since the Commission could not anticipate who was going to cut, in order that blanks for reporting could be sent out, nor was any special appropriation ever made that would enable the Commission to place men in the field to enforce the law. Accordingly, since about 1942, all sawmills have been canvassed instead. In 1947, the law was amended to include all other wood-using industries. Response from these wood-processing plants has been nearly 100 percent. It is recognized that a minor part of the annual cut is shipped out of the state to be sawn into lumber or used for pulp and other products by out-of-state plants. Therefore, plants receiving wood or logs from New Hampshire are canvassed also.

There are certain products such as posts, poles, piling and cordwood that are used directly by the consumer or shipped out-of-state to consumers. The reported cut of these products is still only a rough estimate.

When the Forest Conservation and Taxation Act was passed in 1949 a new source of statistics of the annual cut became available through the tax reports submitted to the towns and consolidated by the Tax Commission. Unfortunately, these reports were not made on a calendar year basis, nor were they at the start broken down by species or classes of products in sufficient detail to provide a satisfactory substitute for statistics collected by this Commission for 25 years. Furthermore, the 1925 law is still in force, making it obligatory to continue the canvass on a calendar year basis. The possibility of revision of the tax law to alter the period or method of reporting makes it inadvisable to abandon the present survey.

It should also be pointed out that on several occasions this Commission has cooperated with the Bureau of the Census and that these reports have served as more or less official figures of the cut in New Hampshire in years when no federal census was conducted. The reports of all the mills are also believed to represent a more reliable figure for the cut than a sampling of only a few mills. All reports are required by law to be kept confidential and not made public or shown to other agencies as far as reports of individual mills are concerned.

Courtesy U. of N. H.

Bulldozing a logging road, Pittsburg, N. H.

It would be highly desirable if the cut could be reported separately by towns and counties. Attempts have occasionally been made to separate the cut by counties. However, when reports are received from mills that draw logs from several towns and frequently different counties, it is found that some mills do not keep records on a basis to make this separation possible. Furthermore, most of the smaller mills move several times during the year, often to different counties. Lots operated from one setting may lie in two or more towns or even counties.

This deficiency the tax reports overcome by requiring reports of cut separately by towns and by accounting also for such products as fuelwood. It is hoped that eventually these reports can be adjusted so that the need for a survey by this Commission may prove unnecessary.

Pulpwood reports represent a special problem. In depending on reports from the consuming mills it has been found practical to rely on receipts at mills during the calendar year, since such statistics are kept by the mills. The end of the year comes at a time when woods operations are in full swing, and since much pulpwood is purchased from small producers, it is impossible to ascertain the

amount cut everywhere right up to December 31st. It is believed that pulpwood receipt reports, over a period of years, compensate for any irregularities that may exist due to the lag between time of cutting and receipt at mill. Here, also, the tax reports furnish a more exact measure of the cut for the period covered.

The cut of forest products for the two years covered by this report is less than the previous two years, in general due to market conditions, but there is good reason to believe that the growing scarcity of large blocks of timber, especially pine, that can be bought and cut, has had its influence. Fewer mills were in operation than during the previous biennium. Probably an average of 50 mills were idle during 1953.

The pulpwood cut continued to show a large proportion of hardwood utilized, the total cut being slightly less than 1951.

The existing wood-using industries are equipped to utilize special types of trees, species or selected parts of the tree, all usually of high quality. There are almost no commercial uses for wood of cordwood quality. New industries capable of using small-sized and defective hardwood are necessary to balance utilization of the forest resource.

Table 19

LUMBER CUT BY NEW HAMPSHIRE MILLS

(Thousands of Board Feet)

	Calendar Year 1952	Calendar Year 1953
Softwood:		
Balsam Fir	745	911
Cedar	150	8
Hemlock	38,002	36,848
Larch (Tamarack)	46	12
Pine, Pitch	2,181	2,319
Pine, Red	2,316	1,462
Pine, White	221,790	209,002
Spruce	10,746	10,946
Other softwood	509	599
Total Softwood	276,485	262,127
Hardwood:		
Ash	1,263	643
Aspen (Popple)	5	7
Basswood	230	257
Beech	3,482	1,827
Birch	11,520	11,249
Elm	108	132
Maple	5,176	4,945
Oak	5,745	4,929
Other hardwoods	2,978	1,442
Total Hardwood	30,507	25,431
Totals, All Species	306,992	287,558
Number of Mills Reporting Cut	506	477
Number of Idle Mills	43	34

Table 20

PULPWOOD CUT IN NEW HAMPSHIRE

(Cords. Rough Wood Basis*)

Kind	Total Cut 1952	Total Cut 1953	Exports 1952	Exports 1953	Imports 1952	Imports 1953**
Spruce and Fir	135,343	120,603	36,539	35,638	NOT RECEIVED	51,312
Hemlock & Tamarack	6,610	5,792	401	90		1,036
Pine	4,960	7,531	316	1,386		28
Miscellaneous	594	.....	.....	.....		.....
Total Softwood	147,507	133,926	37,256	37,114		52,376
Birch, Beech, Maple	82,884	113,190	3,431	13,061		15,867
Aspen	1,418	4,332	200	574		1,079
Miscellaneous	.....	936	.....	.....		.....
Total Hardwood	84,302	118,458	3,631	13,635		16,946
Totals	231,809	252,384	40,887	50,749		69,322

*Peeled wood converted to rough by adding 15 percent.
**Incomplete returns.

1952 — 13 Mills Reporting
1953 — 16 Mills Reporting

Air seasoning of white pine lumber

Table 21

SAWLOGS EXPORTED FROM N. H. AND SAWN BY OUT-OF-STATE MILLS

(Thousands of Board Feet)

	Calendar Year 1952		Calendar Year 1953	
Hemlock	1,586		1,228	
Red Pine	18		18	
White Pine	3,483		1,646	
Spruce and Fir	1,449		181	
		6,536		3,073
Ash and Elm	94		180	
Beech	136		11	
Birch	1,864		1,372	
Maple	672		458	
Oak	158		280	
Miscellaneous	293		9	
		3,217		2,320
Total All Species		9,753		5,393

Table 22

WOOD CONSUMED BY N. H. WOOD-USING INDUSTRIES

(Exclusive of Lumber and Pulpwood)

Equivalent in Thousand Board Feet

	Calendar Year 1952	Calendar Year 1953
Cooperage logs	9,696	4,535
Excelsior bolts	492	401
Turnery bolts	1,524	3,432
Veneer logs	15,327	10,288
Miscellaneous (ladder rungs, trawl rollers, shoe shanks, handle stock, etc.)	774	1,249
Totals	27,813	19,905

Table 23

SUMMARY OF TOTAL COMMODITY DRAIN

	1952		1953	
	M. Bd. Ft.	Cords	M. Bd. Ft.	Cords
Sawlogs used locally	306,992	.....	287,558	.....
Sawlogs exported	9,753	.....	5,393	.....
Pulpwood	.....	231,809	.....	252,384
Misc. Products—N. H. Mills	27,813	.....	16,072	7,666
Misc. Products—Exported	14,307	5,347	13,949	850
Fuelwood (Estimated)	.....	100,000	.....	100,000
Totals	358,865	337,156	322,972	360,900
Total equivalent in cords	1,054,886		1,006,844	

The following is a financial statement of General Fund appropriations and expenditures of the Forestry Division from July 1, 1952 to June 30, 1954:

Table 24

FORESTRY AND RECREATION COMMISSION
FORESTRY DIVISION

July 1, 1952 to June 30, 1953

	Appropriation	Expenditure	Reserve for Bills Payable	Balance Available
Administration	$36,085.00	$35,389.93	$800.00	
Transfer	+110.42			
Nursery	14,145.12	24,593.25	1,488.30	$5,441.12
Federal Grant— C. M. 4	17,377.55			
Reforestation	3,765.88	3,609.77	156.11	
White Pine Blister Rust	12,390.00	11,850.75	539.25	
District Fire Supervision	29,778.78	87,388.66	3,308.11	1.51
Transfer	+90.00			
Federal Grant— C. M. 2	60,829.50			
Lookout Stations	39,408.01	47,315.45		
Transfer	+7,943.13			
Warden Training Conferences	5,000.00	3,316.68	1,683.32	
Prevention of Fires	12,977.50	11,087.13	1,871.93	
Forest Fire Bills to Towns	2,000.00	81,468.52	721.14	77,860.97
Governor and Council Emergency Fund	158,050.63			
Northeastern Forest Fire Protection Commission	692.00	638.94		
Crotched Mt. Lookout Tower	1,300.00	1,294.69		
Fire Equipment Warehouse	35,000.00	35,000.00		
Federal Norris-Doxey Coop. Program	14,500.00	14,500.00		
Old Year Reserve	10,716.24	7,495.40		
	$462,159.76	$364,949.17	$10,568.16	$83,303.60

FORESTRY AND RECREATION COMMISSION

FORESTRY DIVISION — Continued

July 1, 1953 to June 30, 1954

	Appropriation	Expenditure	Reserve for Bills Payable	Balance Available
Administration	$38,937.63	$38,924.83		
Nursery	22,947.60	34,459.15	$4,005.00	$616.75
Federal Grant— C. M. 4	16,557.87			
Reforestation	3,787.42	3,684.29		
White Pine Blister Rust	17,145.00	16,616.19	273.40	
District Fire Supervision	39,011.02	100,146.85	4,561.30	
Federal Grant— C. M. 2	56,894.32			
Civil Defense	10,464.26			
Lookout Stations	58,132.67	50,265.95		
Warden Training Conferences	4,000.00	3,734.45	193.00	
Prevention of Fires	11,167.50	10,846.97	1,238.89	
Civil Defense	989.41			
Forest Fire Bills to Towns	10,000.00	295,790.10		
Governor and Council Emergency Fund	197,860.97			
Civil Defense	87,935.00			
Northeastern Forest Fire Protection Commission	692.50	627.87		
Crotched Mt. Lookout Tower	1,600.00	1,388.00		
Federal Norris-Doxey Coop. Program	16,286.00	16,286.00		
Old Year Reserve	10,568.16	9,395.78		
	$604,977.33	$582,166.43	$10,271.59	$616.75

FOREST LAWS OF NEW HAMPSHIRE

A compilation of forest laws was published by the Commission in April, 1942. This booklet has long been out of print. In January, 1954, a revised booklet was published by the Society for the Protection of New Hampshire Forests. This booklet of 108 pages was compiled by P. A. Rinden and E. J. Cooper and covers laws in effect July 3, 1953. It is sold by the Society for 50¢ per copy.

REPORTS OF THE FORESTRY & RECREATION COMMISSION

Librarians and others who wish to maintain complete files of these reports may be interested in a record of what reports have been issued. As far as known, the present document is the 35th report published. The first report of the Forestry Commission was published in 1885 and bore the sub-title "June Session 1885." The Act of July 29, 1881 provided for a commission to make a report "sixty days before the session of June, 1883." An act approved September 15, 1883 extended the commission two years specifying that a report be prepared sixty days before the Session of June, 1885. The "First Annual Report" for 1893, published in 1894 bore the sub-title: "Vol. I, Part I." The next report was entitled "Second Annual Report, Vol. I, Part II" and was published in 1894. The "Third Report" ("first Biennial") "Vol. I, Part III" covering the biennial period 1895-96 was published in 1897. The "Second Biennial Report" for 1897-98 was published in 1899. The "Fourth Report" (Third Biennial) for 1899-1900 was published in 1901. Since then reports have been issued for each two-year period, the first year being the odd-numbered year and the second the even-numbered year. The present report is therefore the 30th Biennial Report in the series.

Beginning with the 1935-36 issue the name was changed from "Forestry Commission" to "Forestry and Recreation Commission."

Copies of earlier reports will be furnished free to libraries only, as long as the supply lasts.

Biennial Report

Recreation Division

Forestry and Recreation Department

1953 - 1954

RECREATION DIVISION STAFF

Director
Russell B. Tobey

Assistant Director
Allan V. Evans

Superintendent of State Parks
Robert Sullivan

Merchandiser	Operations Supervisor	Publicity
James Moulton	Howard Berry	G. Henry Crawford

Accountant	State Park Technician	Supply Manager
Raymond LaChance	Malcolm Thomas	Ralph Webb

DIRECTOR'S INTRODUCTION

During the calendar years 1953 and 1954* the efforts of our staff have been largely diverted from park planning, improvement of facilities, extension of public services, and refinement of park operations. It has been necessary instead to devote much of our effort to such matters as reclassification of positions, payroll procedures, realignment of duties; personnel records; accounting procedures; adjustments to legal interpretations, etc.

We hope that these conditions — an aftermath of state governmental reorganization — are temporary, and that soon we can give most of our attention to park administration, operation, services, maintenance, and planning. We are seriously concerned that otherwise the park facilities may become run down, visitors' interest may wane, and the park system as a tourist attraction may decline and this significant factor in the New Hampshire tourist industry may be of less value.

The past two years have pointedly demonstrated the effect of weather conditions upon state park patronage, income, and expenses. Lack of snow during the two winter seasons caused the average income at those times to decline 11% from that of the previous winter. The summer income declined in the second year some 7% because of cold and rain, with two hurricanes toward the end. This set-back reversed a trend which had been consistently upward over the past ten years.

Such adverse conditions bring about difficulties in the operation of state parks, wayside areas, and historic sites on a "pay as you go" basis. Since these facilities are a large, favorable factor in the private tourist industry, we feel that our season of operation should coincide with the usual season of private business. Experience has established a pattern indicating when patronage at each area will pick up and taper off. We attempt to operate according to this experience. On a "pay as you go" basis, however, the lack of income from one lean season may curtail operations during the next, when better weather and more public use may call for accelerating operations. We find ourselves at this writing (fall of 1954) with such a possibility.

Having experienced a poor winter and a poor summer in sequence, the lack of cash on hand may require a delay of park openings and services next spring. This situation makes it necessary to request from the legislature an appropriation in addition to our income, in order to carry out adequate administration, operations,

* This text refers to calendar years; other portions of the report are on a fiscal year basis.

and maintenance by providing a "cushion" to offset temporary losses of income on account of the weather.

Our needs to expend more money during this biennium are likely to continue, due largely to:

Increased maintenance costs on account of aging and obsolescent plant and equipment.

Added expenses due to increased public use of facilities.

Increased bond debt services.

New operations added to the system.

Legislative salary increase allowed (roughly $30,000 for the biennium).

Additional work and routine required of us by other state agencies.

We are state custodians of scenic state property of untold value. In addition to this we estimate plant, equipment and facilities are worth upward of $10,000,000. Most of the buildings and equipment are 10 years old, and much of them 20 years. All have been subject to increased use over the years.

It is a source of satisfaction to us and a profit to the state that these facilities have become steadily more popular. In 1953 their use by visitors increased 16% over the previous year, and in 1954 the increase was 9% over the first year of the biennium.

Although it may seem contradictory that this increase in patronage was accompanied by a decrease of income, the explanation lies in differences of service charges, such as picnicking at 25 cents and tramway rides at $1.25. Weather conditions notably diminished revenue from the tramway, while greater public use of other areas increased costs of the general service and maintenance.

At the same time, a study conducted at Franconia Notch by the Tuck School of Business Administration during one summer showed that our state park attractions influence tourists' spending in the immediate localities and within the state in far greater amounts than were received in park income. Analysis of many questionnaires answered by visitors to the Flume area indicated annual expenditures by such persons of some $20,000,000 to private business.

Many improvements and some additions to the state park system have been brought about through legislative approval of revenue bond issues. We have indicated our belief that the added income to be derived from them would offset added expenses and be sufficient to defray the indebtedness. This experience has been borne out in the past, but recent new factors have affected our expenses. These are: Increasing costs of operation due to rising prices; salary increases, approved by the legislature but unfore-

seeable; bad weather; the time of bond payments due to date of issuance (over which we have no control); and a misinterpretation of our support of a "pay as you go" policy.

We have over the years pointed with satisfaction to the increasing income over and above the operating and maintenance costs. We have attested that the expenses could be balanced on a "pay as you go" basis. In addition to this, however, we now are expected to absorb the costs of legislative salary increases and administrative functions which were unexpected, and which, in our opinion, are an unfair burden in the self-support system of park operations.

New operations added by legislative approval were the extension of skiing facilities of Cannon Mountain and Mt. Sunapee, and the new Silver Lake state park. The expenses for these operations were not added as an appropriation, but rather we were expected to absorb them from potential new income. Had weather conditions been favorable, this might have worked out; but as they were not, these costs created a weighty burden.

The general state salary increases allowed by the legislature translated to some $30,000 of additional expense to us during the biennium. We were expected to absorb this with the anticipation that the upward trend of park patronage and income would continue. Since this trend changed, this increase in salary was a serious drain on our finances.

While there has been a favorable trend in the purchasing of souvenirs at our state park stands, we have sensed a preference for merchandise made in New Hampshire. We have included these at many of the shops, and established a store in Crawford Notch devoted entirely to this line. This store has been successful beyond expectations, and now we are purchasing from some 40 New Hampshire sources. This policy is, however, difficult to justify on a "pay as you go" basis. Since the mark-up on this type of merchandise cannot be as great as on that from "'foreign" sources, it is estimated that we are sacrificing a net of some $10,000 annually to order these New Hampshire made products. However, to promote them squares with our policy and our hope that state park values are greater to the community than the direct return of income received through charges and sales.

Due largely to a realignment and re-statement of governmental duties and responsibilities, we have been expected by other state agencies to perform added administrative functions. We are required by law to conform to accounting practices and procedures indicated to us by the director of accounts; to maintain an equip-

ment inventory system as prescribed by the director of purchase and property; to adhere to employment, salary, and recording procedures set forth by the director of personnel.

Our procedures have been examined by the legislative budget assistant, who indicated that some of our practices were not accepted standard procedure, and that we had not been completely instructed by some other agencies as to what these practices should be. We engaged assistance from a private concern to adjust ourselves to the prescribed methods, and a manual of accepted procedures is being prepared for our guidance. When these procedures are put into full effect they will translate to a work load upon our administrative staff which will necessitate additional personnel and equipment.

Changes have been made in our organization for greater efficiency and greater coverage of our responsibilities. Matters of state park operation, maintenance, and planning are now the responsibility of the superintendent of state parks, who has an assistant in operations and annual maintenance, and one in planning and heavy maintenance. There has been added to our staff a publicity director to handle requests for information, which have greatly increased, and to improve channels through which publicity and promotional efforts bring about a better understanding and a wider use of our recreational facilities.

The favorable effect that our park system has upon state-wide business is becoming more widely recognized and acknowledged. The Tuck School's scientific analysis of the influence shown by Franconia Notch upon tourist business is, we feel, significant. It seems desirable that further explorations of this type be carried out to obtain evidence which will be valuable in determining the worth of our state recreation system to private business, and will form a basis for judgment to our commission and the legislature in future planning, operations, and services.

HIGHLIGHTS FOR THE BIENNIUM

Improvements: Through legislative authorization of revenue bonds some $800,000 was expended to provide a new state park in Hollis and new T-bars and extended trails at Mt. Sunapee and Cannon Mountain. The added facilities at Mt. Sunapee were designated as Hawes Hallet slopes, and those at Cannon Mountain the Roger Peabody Memorial slopes.

Operations: Were extended by new developments and by greater park patronage each year. This required more seasonal personnel and added to our expenses.

Fiscal: Park administration, operation and maintenance was required by the legislature to pay its own way through the use of park income only. This policy is unique among the states. Adverse weather badly affected income at some areas usually most remunerative.

Promotion: A new section devoted to promotion, publicity and advertising obtained very favorable public press and doubtless influenced increased park use.

Merchandising: The volume of business in the sale of foods and souvenirs increased and a greater net was achieved through a close co-ordination of policies and procedures between the merchandise office and the sales outlets.

Special Reports: Several special studies and reports were made by various members of the staff on our own initiative and in co-ordination with other groups. Chief among these was a study of the economic importance to private business of Franconia Notch as a tourist attraction. This study was made by the Tuck School of Business Administration at Dartmouth College with the Recreation Division co-operating. Copies of this report are available at the division office.

The director of the division was requested by the governor to chairman an advisory committee concerned with Mt. Washington and its environs in order to achieve the greatest public benefit of the recreational, scientific, and national resource potential of this area.

In connection with contemplated federal and state investments in public facilities in the Hampton Beach area, a study of the economic importance of this area upon the state's economy was undertaken by the division through staff members at the University.

A firm of management consultants was engaged to make a study of various management problems at the Tramway, the Flume and in Merchandising sections and Mt. Sunapee State Park. As a result many changes in operational procedures and a clarification of policy brought about a more efficient operation. Continued study by the staff will result in even greater co-ordination and efficiency in the future.

Division Audit: The office of the legislative budget assistant made a 4-months detailed study of our accounting methods and procedures. Instances of laxity and lack of control were pointed out. In order to conform to legal requirements, private management consultants were engaged to prepare a manual of procedures to cover the requirements made of us by the personnel division, the director of accounts, and others.

ADVERTISING, PUBLICITY, AND INFORMATION

An advertising, publicity and information section was established in March, 1953, with a publicity director and clerical assistant, to consolidate the multiple tasks created by requests for special information and to carry out a planned information program. Its principal functions are to promote greater and more varied use of the state parks by using all methods of disseminating information; and to create better public understanding of the department's operations through public relations for its own personnel, other state agencies and the public.

In establishing a planned publicity program, all recognized media were studied and many tested to find the most suitable and least expensive means of reaching potential patrons. The emphasis from the outset was placed on obtaining free publicity and supplementing it with a modest outlay for paid white space and radio advertising. A sustained, paid campaign, except for special events, was considered too costly for a state department.

To obtain free publicity in magazines, newspapers, and over radio and television, a system was established for distributing news releases and lists of editors of specialty publications were prepared. Previously established files of black and white and Kodachrome photographs were streamlined and many prints from both have been published in magazines and other publications.

Most of the department's general advertising—the distribution of information rather than "paid advertising"—has been in the form of free publicity obtained through magazine articles, news releases, television shorts, motion pictures, photographs, direct mail literature, posters, folders, display cards, travel shows exhibits, stickers and circulars. This has been augmented by buying a limited amount of advertising space in selected publications to call attention to such special events as concerts, horse shows or snow conditions in the winter. Some advertising was coordinated with organized groups directly concerned; viz, innkeepers near ski areas.

Individual parks have been promoted by direct mail campaigns to Boy Scout Groups, children's camps and schools, music, historical and garden clubs, and by means of news releases and photographs, feature articles and photo stories prepared by the publicity director or from information supplied by him. Part of the increase of 28 percent in gross income in 1954 over 1953 at Monadnock State Park can be attributed to a mimeographed letter sent to all 49 Boy Scout Councils in New England which called attention to the adaptability of the park to Boy Scout activities.

Most of the aforementioned was originated by the department. A great deal of specialized information is also distributed in response to requests from free-lance writers, columnists, map-makers, chambers of commerce, other state departments, etc.

To develop interest and increase patronage at Mt. Sunapee State Park, a paid advertising campaign was conducted through a New Hampshire agency in the summer of 1953. This was substantially reduced in 1954 for budgetary reasons to cover a smaller, carefully-selected radius. In an effort to increase attendance at all parks, a more general paid campaign was conducted with New Hampshire radio stations and newspapers in the summer of 1953 to attract residents. This was abandoned in 1954 as an unwarranted expense in a poor season.

In August, 1953, an extensive publicity campaign was planned to promote the new ski facilities then under construction at Cannon Mountain and Mt. Sunapee. This included the preparation of several articles for ski publications—all accompanied by photographs—a "Ski Editors Brochure" with graphs, descriptive information and photographs, and the printing of special announcement folders, new winter folders and ski trail guides. The guides have proved one of the most popular pieces of winter literature issued by the department.

The campaign also included the placement of paid advertisements in ski journals, special articles for newspaper travel supplements, enlarged photographs for displays, exhibits and conventions, periodic news releases, snow reporting, newsletters to all clubs in the U. S. Eastern Amateur Ski Association, and paid advertisements in travel sections of newspapers and over metropolitan radio stations.

Innkeepers near both ski areas were kept abreast of developments when the publicity director, accompanied by the respective supervisors, distributed literature and posters for their use and discussed mutual problems. Posters were made available to ski clubs, travel agencies, sporting goods stores and others in a post card campaign.

Besides regular visits to the areas operating in winter to gather information and discuss methods of promotion, the publicity director attended ski races, assisted ski columnists and sports reporters in gathering information, and arranged for photographs to be sent to their newspapers. To insure wide coverage of two races, he personally served as a reporter, writing and dispatching to the Associated Press in Boston full reports of the events. These were published by many New England and other Eastern newspapers. For one race, he helped make arrangements for the As-

sociated Press to install its portable Wirephoto machine at Cannon Mountain for national distribution of photographs. This was the first time such an arrangement had been made.

To boost fall foliage business in 1953, posters were widely distributed with simple, return-address post cards enclosed for the recipient to check whether he liked the poster and desired winter posters. Fifty-two percent of the cards—a remarkably high percentage in a mail campaign (six percent is considered good) were returned. They not only indicated general approval of the posters but furnished the nucleus for a winter poster distribution list.

An outstanding example of planned advertising by a "gimmick" was the nationwide publicity received from the publication of a composite photograph of a young woman depicting her dual services as a life guard and ski patrol member. Distributed by the Associated Press, the photograph reached an estimated 3,000,000 newspaper readers. A photograph of pre-season skiing in October was widely published in the East, mid-West and far-West. Moose Brook State Park received national publicity from a six-page article, accompanied by eight black and white and three color photographs, in the July, 1954, issue of the American magazine. The only cost to the department was the furnishing of free tent sites at the park, telephone calls and the publicity director's time in making arrangements for a group of writers and photographers from an oil company to spend a week in the park. To purchase a similar amount of advertising space in this magazine with a circulation of more than 2,500,000 would have cost approximately $46,000.

In another planned campaign, three articles describing Mt. Sunapee were prepared for and published in Archery magazine, official publication of the National Field Archery Association, before the National Field Archery Tournament at the park in July, 1954. In cooperation with the New Hampshire Bowmen, news releases on the tournament were distributed to selected newspapers across the nation.

Archery's blue-ribbon event attracted 607 field archers, a new record for attendance, to the park from all sections of the nation. By previous arrangement, the event was attended by radio, magazine and newspaper men who spread the name of Mt. Sunapee far and wide. The publicity director worked with local archery groups from the first meeting and attended the entire tournament, working with the press in gathering information and locating archers for photographs. He spent two entire days guiding television cameramen to vantage points for their film footage.

Inquiries for state park information resulting from the distribution of previously mentioned material totaled close to 2,000 during 10 months of 1953 (no records were kept in January and February), compared to 4,046, in the full year of 1954. Requests from April through September, 1954, increased 73 percent over the same period of 1953. From October through December, 1954, they rose 107 percent over the comparable period of 1953.

In the field of public relations, the section works closely with the several region associations, innkeepers near state parks, the State Fish and Game Department, the State Planning and Development Commission, This is New Hampshire, Inc., transportation companies, travel agencies and special groups in the general promotion of New Hampshire recreation. It has cooperated in the design and transportation of exhibits for travel shows with the region associations, the State Motor Vehicle Department and the State Planning and Development Commission. For two years, it has handled all publicity for an aquatic school sponsored cooperatively by the department, the American National Red Cross and the State Board of Education.

The publicity director makes periodic field trips for information and advises park supervisors on their relationship with the press and public. By such cooperation the efforts of each are extended toward more valuable results in the promotion of New Hampshire.

MERCHANDISING

During its first three years of operation, this division concentrated on building volume until the end of the 1952-53 period when it was felt the comparative saturation point had been reached. Since then, the objective has been to return the highest net profit possible for each dollar of cash income.

Gross income during the first four fiscal years of operation was as follows:

1950-51	$345,673.42
1951-52	$407,309.97
1952-53	$456,325.72
1953-54	$462,375.01

The increase of $116,701.59 over a four-year period was realized with only two more retail units, both of relatively minor importance, in 1953-54 than in the previous biennium. And, despite an increase in the administrative work load, only two employees were added to the staff—one each in the office and stockroom.

Administrative and operational functions of this unit were verified by a legislative audit and an almost simultaneous review by a consultant in the spring of 1954. Records were found in order and efficiently administered. Recommendations were made to adopt various staff proposals for future procedural changes in purchasing, pricing and inventory controls, as well as in various phases of personnel policy, accounting procedures and staff supervision.

More selective buying of souvenir items for resale was initiated in 1954, and will continue for another year to reduce the 6,000-odd items carried in stock by about half. This policy was adopted to eliminate articles competitive with each other and to reduce overhead and administrative costs; and because of a shortage of stockroom space and knowledge of tourists' buying habits based on analysis of sales.

Service to the public, generally recognized as a sound business practice, in some instances reaches the ultimate in the state-operated retailing program. Merchandise often is offered for sale with the needs of the tourist, rather than a normal or even a satisfactory net profit, the principal consideration. Moreover, we operate retail units in areas which are not intended to be self-sufficient. These practices are part of the department's policy of serving the public even though a profit is not shown.

Careful and continual attention is devoted to the quality and uniformity of souvenirs, food and beverages to safeguard the public and to maintain the department's reputation for service.

Our souvenir business has been built on the concept that our customers are in New Hampshire to enjoy its scenery and recreational advantages. By offering for sale high quality merchandise which "sells" a view rather than a product, this section plays its part in promoting the state's recreation business. Constant effort is being made to reproduce graphically the state's attractions on merchandise since every item, if it has the proper appeal, has potential advertising value. The colorful booklet, "The Land of Scenic Splendor," is an example of a product which "sells" the park system to a "captive audience."

An outstanding achievement in helping to "Sell New Hampshire" during the biennium was the substantial increase in cash payments made directly to business enterprises engaged in manufacturing, wholesaling, and distributing re-sale merchandise within the borders of the state.

Payments were made as follows to 172 individual business concerns:

Transportation of re-sale merchandise	9 concerns	$ 4,125.85
Purchases of food	65 concerns	$107,104.27
All other purchases	98 concerns	$ 84,402.72
Totals	172 concerns	$195,632.84

The following comparisons show the percentage of our total expenditures directly returned to New Hampshire concerns in the last two fiscal years:

	Cash Income From Sales	Total Expenditures	Expenditures In N. H.	
1952-53	$456,325.72	$252,032.88	$ 92,812.90	36.82%
1953-54	$462,375.01	$263,680.71	$102,819.94	38.99%
Totals	$918,700.73	$515,713.59	$195,632.84	37.93%

The two-year average of **37.93%** can be considered a good start. However, this phase of the section's operations is still in the initial stages and a great deal remains to be accomplished.

SUMMARY OF FUNDS AVAILABLE AND EXPENDITURES

	1952-53 (Fiscal 1953)		1953-54 (Fiscal 1954)		
Balance Brought Forward from Old Year	$78,622.04		$58,404.26		
Other Funds	.....		.....		
Revenue from Operations	697,234.95		722,095.81		
Transfers In	1,783.70		.....		
Legislative Appropriation	54,000.00		.....		
TOTAL AVAILABLE		$831,640.69			$780,500.07
Expenditures:					
Personal Services	$443,344.26		$508,608.52		
Current Expenses	185,152.74		181,126.34		
Travel	7,413.76		7,286.59		
Equipment	33,500.67		18,658.70		
Other	103,825.00		44,760.00		
TOTAL EXPENDITURES		$773,236.43		$760,440.15	
Transfer to Salary Adjustment Fund				550.00	760,990.15
AMOUNT CARRIED TO NEW YEAR		$58,404.26			$19,509.92

NEW HAMPSHIRE FORESTRY AND RECREATION DEPARTMENT
RECREATION DIVISION
Statement of Operations for the Fiscal Years 1953 and 1954

	1952-53 (Fiscal 1953)			1953-54 (Fiscal 1954)		
	Expenses	Income	Operating Profit or Loss	Expenses	Income	Operating Profit or Loss
Overhead Expenses:						
Administrative Office	$44,580.95	.....	.....	$12,802.66	.....	.....
Adv. Promotion and Inf.	29,567.32	.....	.....	28,200.63	.....	.....
Area Operation	15,346.24	.....	.....	6,795.57	.....	.....
Design, Dev. and Maint.	11,678.41	.....	.....	18,662.21	.....	.....
Merchandising	32,467.70	.....	.....	43,746.88	.....	.....
Supply Depot	9,341.72	.....	.....	14,038.39	.....	.....
Prison Program	8,989.18	.....	.....	8,477.74	.....	.....
Employees' Retirement	6,650.13	.....	.....	7,300.96	.....	.....
Purchase of Land (Cathedral Ledge)	.....	.....	.....	250.00	.....	.....
TOTAL OVERHEAD EXPENSES	$158,621.65	.....	.....	$170,275.04	.....	.....
Operation of Areas:						
Annett Wayside	$979.88	$788.75	*–$191.13*	$1,210.36	$1,867.85	$657.49
Bear Brook	40,183.84	27,014.93	*–13,168.91*	37,259.84	27,049.74	*–10,210.10*
Cardigan	302.40	.....	*–302.40*	300.50	.....	*–300.50*
Chesterfield	773.88	455.85	*–318.03*	1,012.27	569.00	*–443.27*
Clough	601.98	.....	*–601.98*	510.59	.....	*–510.59*
Crawford Notch	25,283.28	32,846.01	7,562.73	33,128.44	33,905.38	776.94
Dixville Notch	205.74	.....	*–205.74*	301.28	.....	*–301.28*
Duston, Hannah	.....	.....	.....	953.73	.....	*–953.73*
Echo Lake	2,360.19	2,580.20	220.01	2,842.69	2,788.40	*–54.29*
Forest Lake	2,190.54	2,079.10	*–111.44*	2,084.67	3,176.55	1,091.88
Franconia Notch and Aerial Tramway	240,309.03	450,422.52	203,463.36	284,548.43	449,493.67	164,945.24
Hampton Beach	21,214.55	31,068.93	9,854.38	19,142.59	32,517.41	13,374.82
Hilton	3,377.66	1,381.25	*–1,996.41*	3,099.33	2,121.70	*–977.63*
Honey Brook	235.47	.....	*–235.47*	469.85	.....	*–469.85*

Kingston	9,485.67	19,292.97	9,807.30	9,571.00	21,469.34	11,898.34
Merrimack Wayside	.....	.....	.....	.....	.....	.....
Milan Hill	1,275.72	322.40	*–953.32*	898.08	389.90	*–508.18*
Miller	668.74	1,318.90	650.16	1,396.06	2,141.95	745.89
Monadnock	6,708.44	5,375.07	*–1,333.37*	7,452.80	5,932.28	*–1,520.52*
Moose Brook	2,889.63	2,907.19	17.56	4,495.36	3,283.36	*–1,212.00*
Pierce, Franklin (Homestead)	3,423.36	389.30	*–3,034.06*	3,570.02	1,251.25	*–2,318.77*
Pillsbury	1,099.02	169.00	*–930.02*	2,749.77	309.15	*–2,440.62*
Prospect, Mt.	1,559.93	1,153.87	*–406.06*	1,581.12	975.41	*–605.71*
Rents and Leases	451.21	666.55	215.34	10.98	479.15	468.17
Rhododendron	1,557.31	467.25	*–1,090.06*	1,062.91	878.55	*–184.36*
Rye Harbor	1,929.41	2,094.40	164.99	1,944.28	2,511.08	566.80
Shore Beach	2,409.19	.....	*–2,409.19*	1,142.89	.....	*–1,142.89*
Silver Lake	.....	.....	.....	191.58	318.25	126.67
Sunapee, Mt.	101,887.90	75,308.46	*–26,579.44*	81,965.58	86,091.75	4,126.17
Toll Gate	2,273.91	1,361.35	*–912.56*	2,320.75	1,412.70	*–908.05*
Wadleigh	3,249.10	2,588.61	*–660.49*	3,994.15	2,634.70	*–1,359.45*
Wallis Sands	1,019.34	135.50	*–883.84*	1,264.09	114.50	*–1,149.59*
Webster, Daniel (Memorial)	2,038.03	1,178.59	*–859.44*	2,098.04	1,151.49	*–946.55*
Wellington	5,965.78	11,693.99	5,728.21	7,983.28	12,334.12	4,350.84
Wentworth	3,197.03	2,869.67	*–327.36*	4,199.47	3,122.66	*–1,076.81*
White Lake	17,717.88	17,999.44	281.56	16,472.37	20,429.92	3,957.55
Winslow Site	1,964.74	1,304.90	*–659.84*	2,175.96	1,374.60	*–801.36*
TOTAL OPERATIONS	$510,789.78	$697,234.95	$179,795.04	$545,405.11	$722,095.81	$176,690.70
TOTAL OPERATIONS AND OVERHEAD	$669,411.43	.....	$27,823.52	$715,680.15	.....	$6,415.66
Other Commitments:						
Recreation Bonds and Interest (Laws of 1947)	$50,000.00	.....	.....	$16,360.00	.....	.....
Mt. Sunapee Bonds and Interest (Laws of 1941)	28,825.00	.....	.....	28,400.00	.....	.....
Timber Tax	25,000.00	.....	.....	.....	.....	.....
TOTAL OTHER COMMITMENTS	$103,825.00	.....	.....	$44,760.00	.....	.....
GRAND TOTAL	$773,236.43	.....	*–$76,001.48*	$760,440.15	.....	*–$38,344.34*

PARK OPERATIONS

ANNETT WAYSIDE

In 1953, the 25 cents parking charge was changed to 10 cents per adult, netting additional revenue. In response to public demand (a majority of patrons continue to come from the nearby "Cathedral of the Pines"), the supervisor was permitted to sell soft drinks, candy and cigarettes from his private car. This is an emergency measure until funds are available to construct a building.

BEAR BROOK STATE PARK

Camping

A camping area with 18 tent sites bordering Shingle (Beaver) Pond opened in the summer of 1952 and proved so popular that five sites were added in 1953 and six in 1954. Use increased from 2,330 camper days in 1952 to 19,449 in 1954. The entire area is being expanded to include more tent sites.

Sales

Refreshments were sold in 1954 from the so-called "Nature Lore" building in the group area on weekends only to relieve congestion at the refreshment stand in peak periods.

Concerts

A series of eight evening band concerts was held in the 1954 summer season as an experiment. They were not well attended due to unusually cool weather and apparent lack of interest by residents of Concord, Manchester and nearby communities. Their possible continuance is being reviewed.

Group Use

More than 6,000 persons annually use the CCC area, Spruce Pond, the Island and shelter building during the day. Overnight groups average 12,000 camper days annually in the CCC area, Bear Hill and Spruce Pond Camps.

Horseback Riding

A program to encourage riding has been abandoned because a lessee must carry public liability insurance and the cost would far exceed revenue. The department presently cannot afford to hire personnel to supervise such a program.

Winter Program

Mild weather hampered plans for both skiing and skating. Since there was less than one week of skiing in two years, it has been discontinued. Skating, particularly by groups, has become increasingly popular and yields considerable income.

CHESTERFIELD GORGE WAYSIDE

A parking charge of 25 cents per car was changed in 1953 to 10 cents per adult. Development plans await the relocation of Route 9. Upon completion of that project, the area is under consideration as a central point to furnish information for all state parks, since the number of tourists entering the state on that road has increased in recent years.

CRAWFORD NOTCH STATE PARK

Income

From 1950, when this park was transferred to this division, to June 30, 1954, gross income increased 105 percent.

New Hampshire Products

A "New Hampshire Store" devoted to the exclusive sale of products manufactured in this state was set up in an existing building after the supervisor gave it a rustic atmosphere by renovation. Cash sales in the summer of 1954 totaled $22,000 or 29 percent of total sales at the park. Although the margin of profit is about ten percent less than that of other souvenir items, this division plans to continue this store to encourage New Hampshire's small industries and businesses.

FOREST LAKE

Under capital improvements (see design, development and maintenance report), the beach was greatly enlarged and the grounds landscaped in 1953. Public reaction was immediate, resulting in increased usage of 46 percent in the first summer. To accommodate the public, a section of the beachhouse was set aside in the spring of 1954 to dispense light lunches and a small assortment of souvenirs. The store grossed about $1,500 in its first year and will help to make the park self-sustaining.

HAMPTON BEACH

Several operational changes have been made to satisfy growing needs and to furnish additional service.

Playground

Slides, teeter boards, swings and merry-go-rounds were installed late in 1953 and the area surrounded by a fence. An attendant was provided to watch over children unaccompanied by parents.

Square Dances

Introduced experimentally in the summer of 1951, weekly square dances were slow in catching the public fancy until this division solicited the cooperation of several large square dance groups in the state. By improving facilities in the beachhouse, paid attendance has increased from about 800 in the first year to 2,000 in 1954.

Refreshments

Increased attendance, particularly on weekends, required entirely new food dispensing. By rearranging and rebuilding counters and installing a cafeteria system, much of the congestion has been relieved, and efficiency and income have increased. Further development is being considered.

Parking

The charge at the central parking area was increased in 1954 from 25 to 50 cents per car to conform to charges made by the Town of Hampton. Certain sections of both parking areas have been rented to cabin and hotel owners to aid them in relieving parking problems.

HILTON

Because of its accessibility in Great Bay, a dock and floating stage constructed in the fall of 1953 attracted numerous boat and yacht clubs and private boatmen, and encouraged boating activity there in 1954. Plans for greater use depend upon the acquisition of more experience in its operation. Other plans for the park await completion of an addition to Route 16.

MONADNOCK

The sale of soda, candy and cigarettes at the summit of Mt. Monadnock—started experimentally in the fall of 1952—increased so rapidly that the summit caretaker-watchman has sold these

items seven days a week for two years. Sales during 1954 totaled $1,600, or 77 percent of total income from stores at the park.

An increase in camping business, particularly by Boy Scout groups, required the construction of additional tent sites.

PILLSBURY

Two years after it was turned over to this division in the spring of 1952, this area was operated with the then existing facilities. Campers and day visitors used the same area at Mill Pond. A new campground, including tent sites, was built in the May Pond area in the fall of 1953 and included water and toilets. Camping use increased tremendously in 1954. The area is advertised for "wilderness camping" for those desiring primitive-type accommodations.

SILVER LAKE

Development of this area as a state park started in the fall of 1953 and was completed in the summer of 1954, under a capital improvement program (see design, development and maintenance report). Since the public insisted on using the park before its development was complete, it began operating June 26, 1954, with temporary facilities which complicated operations. Tents were used as bathhouses and a portable water system was installed. Operations were smoother after completion of the permanent buildings in August.

Governor Hugh Gregg dedicated the park on August 23, at a public ceremony attended by members of the Governor's Council, the Forestry and Recreation Commission, representative state, county and local officials, and Russell B. Tobey, director of this division, and his staff. The ceremony was followed by a chicken barbecue and entertainment.

It seems reasonable to expect this park will be self-supporting, since it drew heavily in its first season from the Manchester-Nashua, Boston-Lowell areas.

WENTWORTH

Congestion was relieved by the addition of several new picnic sites in the fall of 1952 and enlargement of the parking area in the spring of 1954.

Special Events

An annual Water Fun Day is staged by the supervisor with the cooperation of local communities and the Lakes Region Association to encourage children between the ages of three and 18 to participate in aquatic programs in or near their communities. Started as swimming competition, the event has been expanded to include beauty contests, a band concert, a bean-hole bean supper and square dance. Several hundred children and their parents participated in the program in August, 1954, when it was renamed Community Day. All park facilities are available without charge and ribbons are given to winners of events.

NEW HAMPSHIRE RECREATION DIVISION

Fiscal Four-Year Comparison — Camper Days

Area	1951	1952	1953	1954
Bear Brook	.....	.....	2,330	5,479
Crawford—Dry River	1,326	1,159	904	1,187
Franconia—Lafayette	6,150	8,115	7,629	10,613
Milan	588	436	257	384
Monadnock	4,939	5,357	3,216	4,142
Moose Brook	4,650	5,580	3,798	5,003
Pillsbury	.....	.....	143	193
Mt. Sunapee	.....	2,378	2,298	1,495
White Lake	17,777	25,074	31,780	40,466
Total Camper Days	35,430	48,099	52,355	68,962

STATE PARK OPERATION

The following list includes by classifications those areas and their facilities and attractions under the supervision of the Recreation Division.

PARK CLASSIFICATION BY ACTIVITIES AND ATTRACTIONS

State Park or Reservation	Picnicking	Bathing	Camping	Boating	Fishing	Hiking	Lunches	Souvenirs	Scenic Views	Skiing	Other
Bear Brook–Allenstown	*	*	*	*	*	*	*		*		
Cardigan–Orange	*					*			*		
Clough–Weare	*										
Crawford–Harts Location	*		*			*	*	*	*		Native Wildlife
Echo & Cath. Ledge–N. Conway	*	*							*		exhibit
Forest Lake–Dalton	*	*		*	*		*		*		
Franconia Notch–Franconia	*	*	*	*	*	*	*	*	*	*	Aerial Tramway
Hampton Beach–Hampton	*	*					*	*			
Hilton–Durham	*										Public Dock
Kingston Lake–Kingston	*	*		*			*				
Milan Hill–Milan	*		*						*		
Miller–Peterborough	*								*		
Monadnock–Jaffrey	*		*			*	*		*		
Moose Brook–Gorham	*	*	*		*				*		
Mt. Kearsarge–Warner	*					*			*		
Mt. Prospect–Lancaster	*								*		Scenic-Historic
Mt. Sunapee–Newbury	*	*	*			*	*	*	*	*	Chairlift
Pillsbury–Washington	*		*	*	*	*			*		
Rhododendron–Fitzwilliam	*								*		Rhodo. Bloom
Rye Harbor–Rye	*			*	*						
Silver Lake–Hollis	*	*					*				
Wadleigh–Sutton	*	*		*	*		*		*		
Wellington–Bristol	*	*		*			*		*		
Wentworth–Wolfeboro	*	*		*					*		
White Lake–Tamworth	*	*	*	*	*		*		*		
Winslow–Wilmot	*					*			*		
Waysides											
Annett–Rindge	*										
Chesterfield Gorge–Chesterfield	*										
Honey Brook–Lempster	*										
Fay–Lincoln	*										
Dixville Notch–Errol	*								*		
Wallis Sands				*							
Historic Sites											
Daniel Webster Birthplace–Franklin	*							*			Historic
Franklin Pierce Homestead–Hillsboro											Historic
Hannah Duston Monument–Penacook											Historic
Horace Greeley Marker–Bedford											Historic

NEW HAMPSHIRE RECREATION DIVISION

Comparable Statistics

Items	Fiscal 1951	Fiscal 1952	Fiscal 1953	Fiscal 1954
Attendance	1,311,237	1,505,474	1,752,187	1,915,935
Income	$506,648.40	$618,576.00	$697,234.95	$722,095.81
Operating Expenses	$576,219.83	$556,494.47	$669,411.43	$715,680.15
Other Expenses	(1) 55,861.14	(2) 143,960.51	(3) 103,825.00	(4) 44,760.00

(1)	Recreation Bond of '47	$50,000.00			
	Old Year Reserve	5,861.14	55,861.14		
(2)	Recreation Bond of '47	$50,000.00			
	Mt. Sunapee Bond and Interest	29,250.00			
	Timber Tax	25,000.00			
	Old Year Reserve	39,710.51	143,960.51		
(3)	Recreation Bond of '47	$50,000.00			
	Mt. Sunapee Bond and Interest	28,825.00			
	Timber Tax	25,000.00	103,825.00		
(4)	Recreation Bond and of '47	$16,360.00			
	Mt. Sunapee Bond and Interest	28,400.00	44,760.00		

NEW HAMPSHIRE RECREATION DIVISION

Fiscal Attendance — Four-Year Comparison

State Park	1951	1952	1953	1954
Bear Brook	87,506	104,122	133,734	136,654
Cardigan	1,196	1,500	1,500	1,500
Clough	4,000	4,000	4,000	4,000
Crawford	123,659	156,389	244,207	250,837
Echo	5,339	9,321	17,435	18,807
Endicott	31,059	18,981	....	....
Forest Lake	5,469	6,386	11,894	17,415
Franconia	594,036	661,708	672,733	699,522
Hampton Beach	107,268	138,445	164,824	181,085
Hilton	....	1,806	9,319	14,198
Kingston	57,398	72,526	95,268	106,540
Milan	2,594	1,683	1,777	1,871
Miller	5,822	6,679	8,907	14,476
Monadnock	18,198	19,832	23,997	25,869
Moose	10,986	11,368	12,900	13,279
Mt. Kearsarge	6,399	4,380	9,191	9,448
Mt. Prospect	4,812	4,093	7,799	6,589
Pillsbury	....	....	265	788
Rhododendron	5,218	2,489	3,149	5,934
Rye Harbor	5,213	8,237	9,799	12,921
Silver Lake	....	....	....	2,150
Mt. Sunapee	102,675	121,408	103,843	132,675
Wadleigh	5,689	6,802	12,306	12,692
Wellington	37,547	41,264	58,686	63,025
Wentworth	9,022	11,762	17,551	19,079
White Lake	31,954	43,618	60,211	67,991
Winslow	7,115	4,831	8,743	9,223
Totals	1,270,174	1,463,630	1,694,038	1,828,568
Historic Sites				
Daniel Webster Birthplace	5,563	4,072	4,055	4,771
Franklin Pierce Homestead	500	500	2,568	10,927
Hannah Duston Monument	2,000	2,000	2,000	2,000
	8,063	6,572	8,623	17,698
Wayside Areas				
Annett	4,000	6,076	13,325	31,556
Chesterfield Gorge	1,000	1,196	7,701	9,613
Fay Wayside	5,000	5,000	5,000	5,000
Honey Brook	2,000	2,000	2,000	2,000
Dixville Notch	1,000	1,000	1,500	1,500
Wallis Sands	20,000	20,000	20,000	20,000
	33,000	35,272	49,526	69,669
Grand Totals	1,311,237	1,505,474	1,752,187	1,915,935

DESIGN, DEVELOPMENT AND MAINTENANCE

During the 1953-1954 biennium, emphasis was given to capital expansion projects as provided by Chapter 240 of the Laws of 1951 and by Chapter 254 of the Laws of 1953.

The amounts of these appropriations and their expenditures are as follows:

1951 CAPITAL APPROPRIATION	$100,000.00
Bear Brook:	
Extension of Shingle Pond Camping Area*	6,520.16
Extension of Picnic Area	1,078.39
Forest Lake:	
Construction of 300' beach, filling of swamp to provide lawn area, grading and terracing of walks and slopes, construction of 12 new picnic sites, regrading of parking area, installation of new sills under beachhouse, reshingling of beachhouse roof and painting and staining entire structure	8,137.15
Franconia Notch:	
Alterations to Tramway Valley Station*	1,156.96
Repair of Lonesome Lake A.M.C. hut*	2,159.70
Hampton Beach:	
Repair of beachhouse*	1,292.13
Kingston:	
Extension of parking area*	2,789.93
Moose Brook:	
Extension of camping area	2,434.10
Mount Prospect:	
Repair and painting of main building and installation of playground equipment	3,786.11
Mount Sunapee:	
Extension of ski trails	13,269.73
Addition of 12 chairs to chairlift	2,159.76
Construction of new rope tow	4,034.77
Wadleigh:	
Relocation of town road, construction of parking area, extension of picnic area, construction of entrance gate and construction of walks	6,241.00
Wentworth:	
Extension of parking area	952.90
White Lake:	
Extension of camping area*	16,290.81
Other Expenditures:	
Construction of 12 new diving floats	2,438.24
Land acquisition	2,100.00
Miscellaneous studies, surveys, and engineering charges by Public Works and Highways	24,427.89

1953 CAPITAL APPROPRIATION	$722,000.00
Bear Brook:	
New toilet building and water system for picnic area	10,000.00

* Indicates projects begun in the preceding biennium.

Franconia Notch:		
Electric Power Cable		$27,654.19
Tramway Sewerage System*		50,000.00
Extension of ski trails and facilities		305,000.00
Design and furnishing of two T-bars	$102,592.25	
Erection of two T-bars	62,338.43	
Construction of first section of base building	16,976.00	
Construction of parking areas and sewage disposal system	28,214.83	
Construction of temporary base building	12,596.41	
	12,596.41	
Cutting and clearing trails and slopes	34,324.79	
Bulldozing, grading, fertilizing, and seeding of 50 acres of trails, slopes, and lift lines	27,868.37	
Store equipment	7,516.13	
Surveying, engineering charges, and overhead	12,572.79	
Franklin Pierce Homestead:		
Repair of building and landscaping*		10,000.00
Kingston:		
Construction of toilet and dressing building*		10,000.00
Mount Sunapee:		
Extension of ski trails and facilities		150,000.00
Design and furnishing of one T-bar	$61,632.00	
Erection of one T-bar	38,222.95	
Construction of parking area	7,998.74	
Construction and equipping of T-bar building	13,803.36	
Surveying, engineering charges, and overhead	7,977.71	
Bulldozing, grading, fertilizing and seeding of 30 acres of trails, slopes, and lift lines	20,365.24	
Silver Lake:		
General development project		150,000.00
See Director's Report		
White Lake:		
Extension of beach and picnic area and construction of vending stand*		12,000.00

* Indicates projects not completed.

WORK PERFORMED WITH OPERATIONAL FUNDS

Bear Brook State Park — A 40-car parking area was constructed at the Archery Pond area.

Chesterfield Gorge Wayside Area — Foot trails and bridges were reconditioned and four new picnic sites were constructed.

Crawford Notch State Park — A new cold weather water system was constructed to serve the supervisor's cabin. Alterations were carried out within the main store. The interior of the unique "New Hampshire Products" store was completely renovated.

The wildlife exhibit area was improved and several new cages were constructed.

General landscape improvements were carried out at the central area.

Franconia Notch State Park — Extensive repairs were made to the Flume covered bridge. Foot trails and bridges at the Flume and Pool were improved.

The new and spectacular "Zoomer" ski trail was bulldozed and graded, in conjunction with the capital ski extension project. The lower T-bar unloading area was improved, a new ticket house erected, and the "Lower Cannon" trail was widened along its entire length.

Hampton Beach State Park — A playground apparatus area was constructed and enclosed by a chain link fence. The public dock on Hampton Harbor was repaired.

Hannah Duston Memorial — A portion of the eroding river bank was stabilized, the parking area was graded and enlarged, and general landscape improvements were carried out. The memorial itself was sandblasted to remove accumulated dust.

Hilton State Park — A new dock and floating stage were completed. Two dry toilet buildings and a collector's booth were constructed.

Kingston State Park — Work was started on improvement of the lawn area behind the beach.

Milan Hill State Park — A new water pump was purchased. Its installation and the construction of a new pump house were carried out by the Forestry Division.

Monadnock State Park — A study was carried out in cooperation with Public Works personnel to determine whether a new town reservoir site could be located so that the present reservoir might be used for swimming.

A major forest fire swept over 160 acres on the mountain and was extinguished at a cost of $22,000.

Mount Prospect State Park — The roof of the main reservoir tank was rebuilt.

Pillsbury State Park — Fourteen new campsites were added and general grading work carried out on walks, drives, and parking areas.

Rye Harbor State Park — Children's play apparatus was installed.

Wellington State Park — The beachhouse was reshingled, stained, and painted and the shelter was rebuilt.

Wentworth State Park — The beachhouse was painted and playground equipment installed.

White Lake State Park — The supervisor's cabin and the campground toilet buildings were painted.

LEGISLATION 1953

Revision of laws affecting forestry and recreation resulting from the 1953 Session of the Legislature is briefed below. Complete details may be found in Public Acts and Joint Resolutions of the Legislature of 1953 published by the Secretary of State.

CHAPTER 45

An Act Relating to Permits for Kindling Fires

Amends law covering permits for slash and rubbish burning to include requiring permit from the town fire warden for burning town and city dumps, and permitting the district chief to grant permits for commercial burning of blueberry lands and mill waste.

CHAPTER 47

An Act Relating to the Building of Camp Fires

Amends law requiring permits for camp and cooking fires, to allow such fires without permit on public and private camp grounds where suitable fireplaces approved by the forest fire warden are provided, and requires verbal permission of fire warden as well as permission of land owner.

CHAPTER 52

An Act Relating to the Crossing of Public Lands and Waters by Utilities

Amends law to require petition to the Public Utilities Commission by utilities crossing public lands and waters with pipe lines, transmission lines, etc.

CHAPTER 137

An Act Relative to Weather Modification

Authorizes any state agency to experiment with weather modification and cooperate with others.

CHAPTER 152

An Act Relative to Forest Conservation and Taxation

Appointment of Interim Committee to study the operation of the present law and report to Legislative Council. Forestry and Recreation Commission directed to cooperate with Committee.

CHAPTER 161

An Act Providing for Additional Duties for Highway Agents

Authorizes towns to vote to require a highway agent to care for and maintain public parks, beaches, public forests, shade and ornamental trees.

CHAPTER 164

An Act Relative to Class III Recreational Roads

Amends act directing the Department of Public Works and Highways to assume full control of reconstruction and maintenance of roads in state reservations, to include the road to the beach development in Mt. Sunapee State Park.

CHAPTER 170

An Act Relating to the Appropriation for Timber Tax Reimbursement Fund

Amends act for Forest Conservation and Taxation to authorize bonds, the interest on which is to be payable from general funds of the state and not from the Forest Improvement and Recreational Fund.

CHAPTER 187

An Act Relative to Payment of Forest Fire Expenses in Unorganized Places

Amends present law to provide that expenses of forest fire prevention and suppression in unorganized places be paid by the state; fires caused by negligence to be paid by person responsible, and fires of natural or unknown causes to be paid one-half by the state and one-half assessed as taxes, the share of unorganized places not to exceed 10% of the valuation.

CHAPTER 188

An Act Establishing an Interim Commission for the Study of Development of Lake Winnipesaukee

Provides for plans for public recreational developments.

CHAPTER 218

An Act Relative to the Construction of Sea Walls on State-Owned Land in the Town of Hampton

Authorizes Governor and Council to construct sea wall in cooperation with U. S. Corps of Engineers, such wall when completed to be maintained and operated by Recreation Division which may make charges for parking. Bond issue authorized to meet construction costs.

CHAPTER 242

An Act Relating to the Appropriation for Timber Tax Reimbursement Fund

Authorizes bond issue of $350,000 for reimbursement until October 1, 1955.

CHAPTER 248

An Act Making Appropriations for the Expenses of Certain Departments of the State for the Year Ending June 30, 1954.

Includes Forestry and Recreation Divisions.

CHAPTER 249

An Act Making Appropriations for the Expenses of Certain Departments of the State for the year Ending June 30, 1955

CHAPTER 254

An Act to Provide More Adequate Accommodations on Public Recreational Areas

Authorizes bond issue for permanent improvements on State Parks.

CHAPTER 256

An Act Relative to Forest Conservation and Taxation

Amends reports required and other details of administration. Provision for inventory of volume of growing wood and timber to be submitted by land owners.

CHAPTER 265

An Act Providing for Salaries of Unclassified State Officials and Establishing Certain Positions

Provides for Assistant Director of Recreation.

CHAPTER 266

An Act Relative to Compensation of Legislative Attaches and Others, Duties of Tax Commission, Connecticut River Flood Control, Legislative Budget Assistant, State Flag, Forestry Division, Reimbursement for Mileage, Weirs Beach, Classified State Employees

Authorizes, with Governor and Council approval, Forestry Division to expend any additional federal funds received in excess of those anticipated in the budget. Funds received from sale of Endicott Rock Park to be used by Recreation Division for improvement of Weirs Beach.

CHAPTER 272

Joint Resolution Providing for an Appropriation to Reimburse the Governor's Emergency Fund

Appropriates $81,000 to reimburse fund for moneys expended to pay town fire bills for Success fire.

CHAPTER 280

Joint Resolution Relative to Lookout Tower on Crotched Mountain

Directs Forestry Division to maintain forest fire lookout tower on Crotched Mountain during hazardous fire conditions. Special appropriations for repairs and maintenance.

CHAPTER 283

Joint Resolution in Favor of the County of Coos

County to be paid $4,192.79 from the timber tax reimbursement fund for loss of taxes on unincorporated places in 1950.

CHAPTER 291

Joint Resolution Relating to a Survey and Study of Utilizing Abandoned Roads

Forestry and Recreation Commission directed to appoint committee to study possible uses of abandoned roads.

CHAPTER 306

Joint Resolution Relative to a Study of Sports Activities in the Mount Washington, Pinkham and Crawford Notch Areas

Appropriates $2500 for expenses of Forestry and Recreation Commission in making study to expand summer and winter sports activities.