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timber estimating. In order to market the products of the thinnings, cooperation has already been arranged with leading lumber companies of the State.

New Hampshire clubs, with a membership of 40, last year planted 58,400 seedlings and improved 81 acres of woodland. The club formed last year in Warren County, N. J., required of each applicant for membership that he obtain the loan of at least 1 acre of abandoned or low-production farm land. Each member planted his acre with pine and spruce, the latter to serve as fillers for a few years and then to be removed for Christmas trees. In Tennessee the requirement for admission was to gather, dry, and store a peck of black locust seeds in preparation for this spring's planting. In Orleans County, Vt., a club of 10 girls whom E. L. Ingalls, the State club leader, has been instructing in woodcraft, have procured a piece of land and begun to reforest it.

Extension Forestry in Pennsylvania in 1926

Extension Foresters C. R. Anderson and Frank Murphey, of Pennsylvania, last year conducted 93 planting demonstrations. These plantings are designated by large signs naming the species and giving the dates of planting. Added to those of the preceding two years they make 240 "result demonstrations" of planting established by the extension service in Pennsylvania. In addition, 26 meetings were held during the year for the discussion of forest planting, with an attendance of 1,904.

Work with farm woods was conducted in 23 counties and established 50 permanent result demonstrations, which like the plantings are marked so that passers-by on the highway may understand what has been done. Some of the 72 farmers who were given assistance with their woodland improvement problems reported that as a result they were able to increase their returns \$20 to \$25 an acre or more.

Marketing and estimating were demonstrated 14 times. The 'cruising stick' distributed by the Federal Land Bank of Springfield, Mass., was shown to the 147 farmers attending, and sold to 40.

Harvard Saves a Block of Old White Pines

Twenty acres of old-growth white pine and hemlock on Mount Pisgah, in the town of Richmond, N. H., has been purchased by subscription for Harvard University and will be kept in its natural state. The bit of primeval forest of which this tract is a part is almost the last remaining in New England. Dr. John C. Phillips, of Boston, took the initiative in collecting the money necessary for the purchase, about \$1,000 an acre, and was assisted by Prof. Richard Fisher, of Harvard. The tract will be used for research by students not only from the Harvard Forest at Peter-

sham, Mass., but also from the Yale Demonstration and Research Forest at Keene, N. H. It will continue to be accessible by trail only.

A Forestry Missionary to Summer Camps

William Harlow, of the faculty of the New York State College of Forestry, will spend the summer visiting children's camps as a representative of the Society for the Protection of New Hampshire Forests. Mr. Harlow will go to both private and public camps. In each camp where room is found on the schedule for forestry work he will spend two or three days, presenting a plan of forestry teaching adapted to children of various ages and showing how it may be adjusted to the conditions of the individual camp. He will make use of colored lantern slides and photographs and will distribute printed matter.

Four-H Forestry Camp in California

A State camp for boys and girls of the Four-H clubs of California is being planned by club leaders with the help of Extension Forester Woodbridge Metcalf. The site is Whitaker's Forest, in Tulare County, between Grant Park and the Sequoia National Park. This forest includes in its 320 acres more than 200 large *Sequoia Washingtoniana* trees standing among young stands of yellow and sugar pine, sequoia, white fir, and incense cedar which have come in since logging. The camp buildings will be located in an old sawmill clearing of about 3 acres. As planned the camp will accommodate from 75 to 125 boys and girls at a time. Children will be sent to the camp as a reward for exceptional work in any branch of Four-H club activities, but only those who have satisfactorily completed forestry projects will be eligible to attend.

Farm Boys Demonstrate Forestry to Thousands

Two 15-year-old farm boys of Fremont County, Colo., Bill Howard and Bill Dunlap, last fall gave forestry demonstrations before audiences totaling thousands. After winning a forestry demonstration contest with other teams of Four-H club boys of their county, they were sent by the county to the State Fair at Pueblo and there in competition with two other county teams won the State championship. During the National Western Stock Show the boys were taken to Denver, through the cooperation of the Rocky Mountain Lumber Dealers' Association, the McPhee and McGinnity Lumber Co., the forestry committee of the Denver Chamber of Commerce, and the Denver & Rio Grande Western Railroad. While in Denver they appeared before the interstate meeting of the

A SAVED FOREST

To the Editor of The Herald:

I think that the public, and especially the readers of The Herald, will be interested to know that the small tract of virgin forest located on the summit of Mt. Pisgah near Ashuelot, N. H., has recently been purchased by a number of public spirited citizens and deeded to the Harvard forest at Petersham, Mass.

The tract will be used primarily as a "museum of forest antiquity," to which all persons interested in studying the characteristics of this primeval forest will be welcomed.

I think that Prof. Fisher should be highly congratulated for his prompt action in preventing the threatened destruction of New England's finest type of virgin forest and that The Herald is also to be commended for its great work in arousing the interest of the public toward this end.

SIDNEY GALLERT.

Brookline, July 8.

The Pisgah Wilderness

Story and Photography by Stephen T. Whitney

MENTAL images are a very personal part of word association. *Wilderness*, for example, brings to mind a vast, remote area that man has not been able to consign to his domain. It remains untamed and unmanaged.

Compare such an image with the concept of a new State Park in New Hampshire's Cheshire County. Roughly triangular in shape, the Park will stretch seven and one half miles from its apex on the outskirts of Spofford Village to its base anchored by the village of Ashuelot and the community of Hinsdale. Girdled by a network of State Highways that can be driven easily in less than an hour, it has been named the Pisgah Wilderness State Park.

Having driven its periphery on many occasions and in one instance, several years ago, attempted unsuccessfully to find a shortcut through its confines, *Wilderness* caught me somewhat by surprise; forgotten, maybe, or perhaps, the old New England idiom 'out wild-cat way'. At any rate, *wilderness* sounded much to severe.

On the other hand, one likes

to avoid misjudgements and so a higher authority was consulted. *Wilderness*, it was discovered, is "a tract or region uncultivated and uninhabited by human beings; a wild; waste; . . ." As much of what I knew of the region conformed to Mr. Webster's definition, a closer look was warranted to resolve the conflict between mental image and reality.

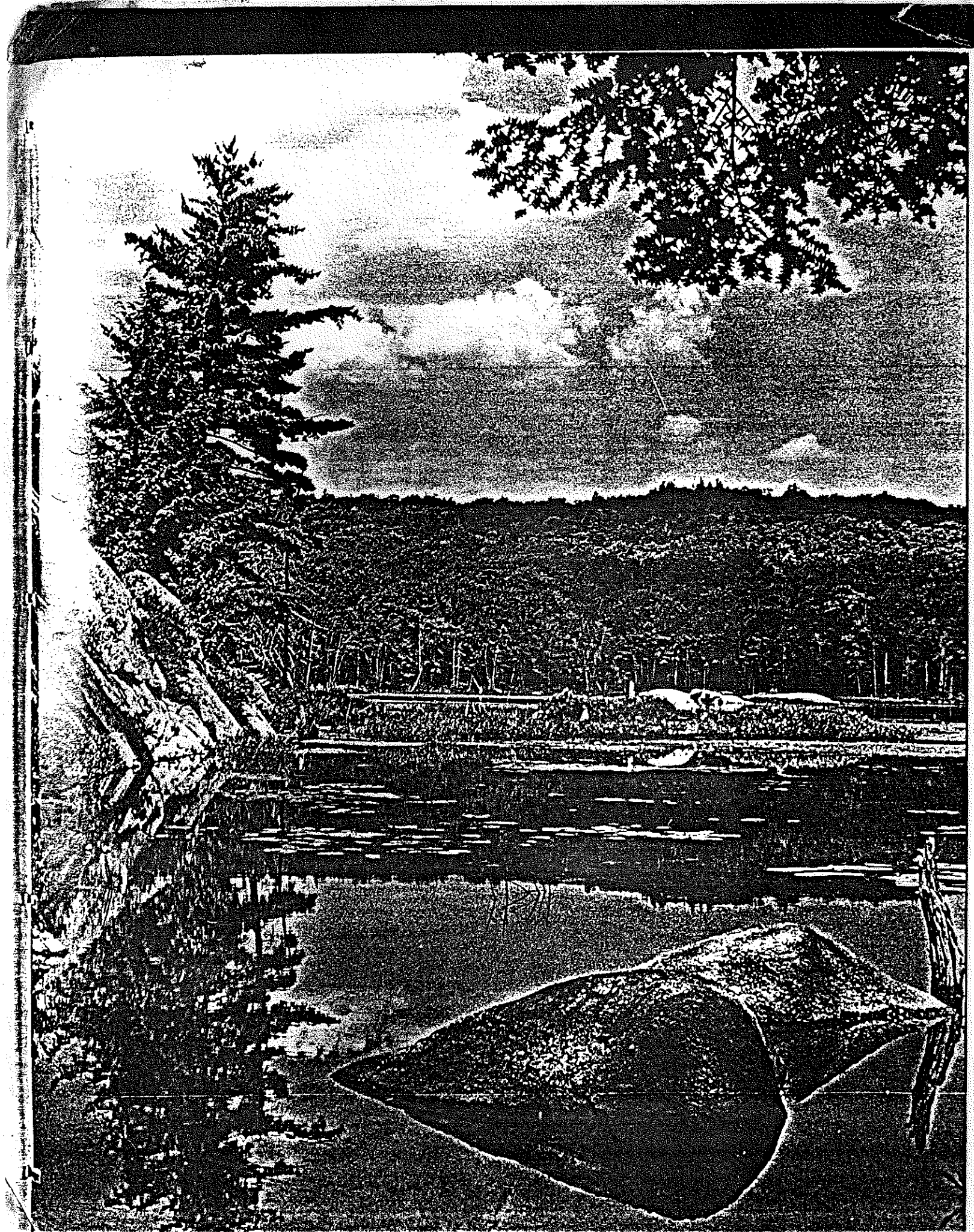
The region, both within and without the boundaries of the new State Park, lies principally in the towns of Chesterfield and Winchester. A small strip of its western flank is within the lines of Hinsdale and its northeastern extension, none of which is included in the Park, protrudes through Swanzey to terminate at West Hill within and overlooking the City of Keene. The natural divisions within the Park lie on northwest-southeast axes and generally speaking, divide the area into thirds. The lower division is the Pisgah Mountain Range while the upper is the old road connecting Winchester and Chesterfield.

When the towns were first laid out during the latter half of the 18th Century, little account was

given to topography for little was known. The Pisgah Region was not singled out as wilderness. All of the country was wilderness. There were men, seeking opportunity in the new land, who were willing to tame whatever fell to them by lot or could be purchased from others, usually sight unseen.

The upper third of the State Park, lying north of the old Winchester-Chesterfield road, is for the most part, the Chesterfield portion of the Park. Ringed by a continuous ridge of hills, it is an unrelieved region of badly fractured slopes rising from the swamps that are the headwaters of Fullam Pond and Broad Brook. On its east side, there remains ample evidence that its uninviting character was of little deterrence to its settlement. From Spofford Village, a veritable network of abandoned roads fans out into the Pisgah Wilderness. By one of the roads which ultimately joins the Winchester-Chesterfield road at Fullam Pond, one finds Latham Cemetery, so-named from the earliest stones. James Latham was 84 when he died July 8, 1792. Arthur Latham, quite possibly a grandson,

(opposite) Baker pond is one of the many remote bodies of water which dot the wilderness.





Black line indicates the boundary of the Pisgah Wilderness.

is buried nearby. He was 22 when he died May 1, 1790.

More formally known as East Chesterfield, the section was recognized at a very early date as *Hardscrabble*. The several histories of Chesterfield, written during the decade of the 1880s, are literally identical in their descriptive narratives of the neighborhood. Although little effort was made to settle the area prior to 1780, numerous families were established here during the next quarter century. "Despite its rockiness and ruggedness, the district has produced some of the best citizens of the town" the historians agreed. Before District No. 7 schoolhouse was built about 1810, school was kept in Gibson Willard's barn. By the Winter of 1816-17, it is recorded that more than 80 scholars

attended school in the little building.

Later on, Hardscrabble acquired a new name — Nash City. It honored the Nash family which proliferated in this corner of the Wilderness.

There was also a settlement at Fullam Pond. Little is left of its history beyond old cellar holes and damsites. The old road to Chesterfield can be followed easily from Winchester to the Pond. Beyond, it has been neglected for many years and is, at best, a Jeep ride. The road north by the Pond to Hardscrabble, or Nash City, can also be followed but the only sure way of travel is on foot.

The midriff of the Park is unbroken mountainous country. There are very few traces of attempted

settlements in this portion of Pisgah Wilderness. It is the remote section of the Park that has remained relatively untrammelled. Dogwood Swamp is a spruce bog in its higher elevations surrounded by forested slopes.

The lower third of the Park's lands is something of an historical paradox. In general, it lies in closer proximity to the original settlements than the two sections to the north. Those who roam the area knowledgeably, often follow the traces of an old road around Ladder Hill with its occasional cellar hole. But for the most part, its history is more recent, dating from the later decades of the 19th century and much of it still fresh in men's memories.

From the time of the first settlements adjoining the Wilderness, the appeal of the Wilderness was not its land but its timber. In its economic development that lasted well into the 20th Century, ownership of the Wilderness lands became concentrated in a few hands. One of the principal owners was the Dickinson Real Estate and Lumber Company, an enterprise established by Ansel Dickinson and carried on by his three sons. The Pisgah Reservoir was created by the Company to impound waters to power its mills in the Ashuelot Valley and much of the raw material consumed by the mills was cut from the mountainsides above the Reservoir.

There are those who remember Broad Brook Village. It grew up about the Broad Brook Steam Mill, part of the Dickinson operation that was in existence at least as recently as 1927. Broad Brook is the principal watershed of the Wilderness, coursing its full length from the wooded hillsides of Chesterfield through Fullam Pond and around the foot of the Pisgah Mountains.

Another Dickinson Mill, this one electric, was set up at the foot of the ridge below Pisgah Reservoir. It was the last of the Company's operations. In the summer of 1935, it was struck by lightning and the entire encampment was destroyed in the ensuing fire.

One final blow put an end to man's domination of the Wilderness, the hurricane of 1938. The last stands of virgin timber which



One of several long abandoned mill sites in the Wilderness, this one on the stream below Baker Pond.



(above) The headstone of James Latham in the Latham cemetery at Nash city. (below) Arthur Latham's headstone is the earliest one in the Latham cemetery.



had escaped two centuries of exploitation were destroyed in a brief span of time. One of the biggest tracts to be decimated by the storm was the twenty acre lot of the Harvard Forest on a spur beside Chestnut Hill in the Pisgah Range. Thirty odd years later, the fallen giants remain as the wind left them, slowly returning to the soil that mothered them. In their place, a new forest grows.

Despite the proximity of man and his efforts to bend the region to his needs, the Pisgah Wilderness remains wilderness. It will for years to come. Some 13,000 acres — twenty square miles — are being preserved as a State Park. Its development will not alter the character of the Wilderness. Its bounds have been chosen carefully, from summit to summit along the ridges so that developments in the world beyond will not intrude again into the Pisgah Wilderness.



(above) A crumbling stone wall, a few gravestones and a jumble of weeds now mark the Latham cemetery. (below) Weathered trees, this one at Pisgah reservoir, line the sides of many Pisgah Wilderness ponds.



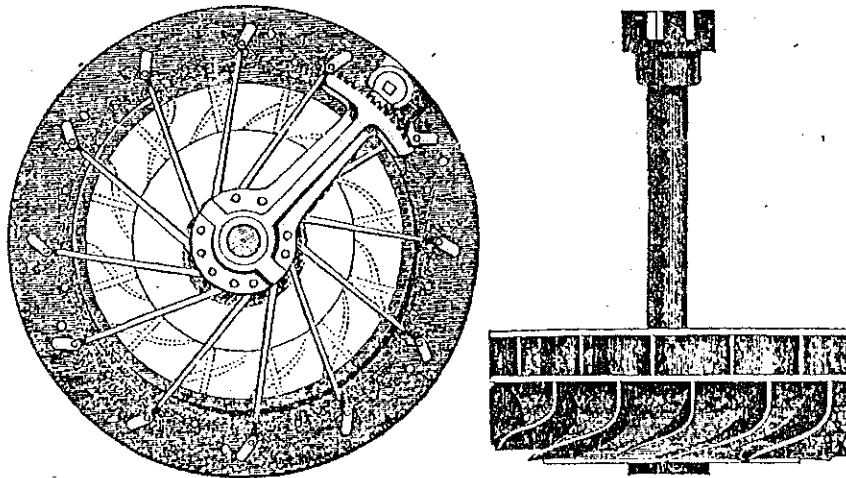
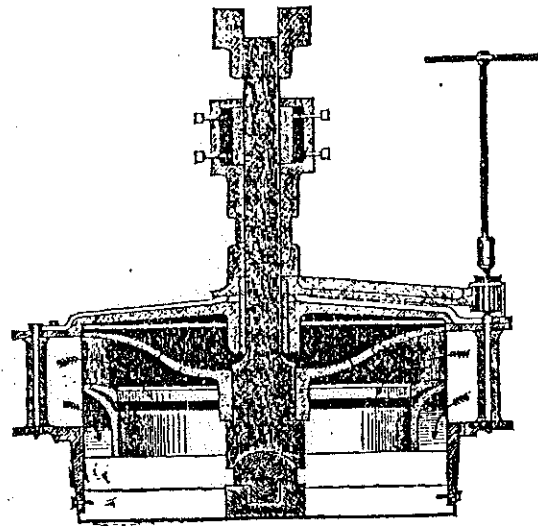


Fig. 82. Leffel's double turbine waterwheel. The upper section of this wheel is of the conventional inward-flow type. In the lower section the buckets are of mixed-flow design, which channels the water inward and then downward. (James Leffel Co., *Leffel's American Double Turbine Water-wheel* [Springfield, Ohio, 1869].)

4/14/27
Published in April 1927 Issue of
American Forests and
Forest Wildlife

PRIMEVAL FOREST GIVEN TO HARVARD

33:248

In a rough and inaccessible corner of Cheshire County, New Hampshire, there has survived up to comparatively recent years a block of 5,000 acres of primeval forest. For two generations this tract has been in the hands of one family. Little by little it has been logged off until only a few considerable portions of the original forest remain. Nowhere else in New England is there any remnant of virgin pine forest which is equal in size and authenticity to this so-called Pisgah Forest in southern New Hampshire.

Realizing that without prompt action this last sample of original woodland would vanish, a number of public spirited donors have purchased an isolated area of approximately twenty acres which has been deeded to the Harvard Forest to maintain and protect unaltered as a sample of forest conditions that have now practically disappeared from central New England.

For the purposes in view this piece of old forest, although small, is peculiarly well located. It lies mainly in a long hollow on the summit of Pisgah Mountain. On two sides there are ledges having almost the character of rim rocks, which keep the forest floor moist and protected and greatly enhance the beauty and visibility of the forest. The nearest public road is several miles distant, and from the end of a lumber road one must walk a mile and a half up an old trail to reach the big trees. This isolation together with the character of the surrounding forest makes the danger from fire relatively slight; and the steep approach through second growth hardwood makes the contrast with the tall forest on the summit unusually impressive.

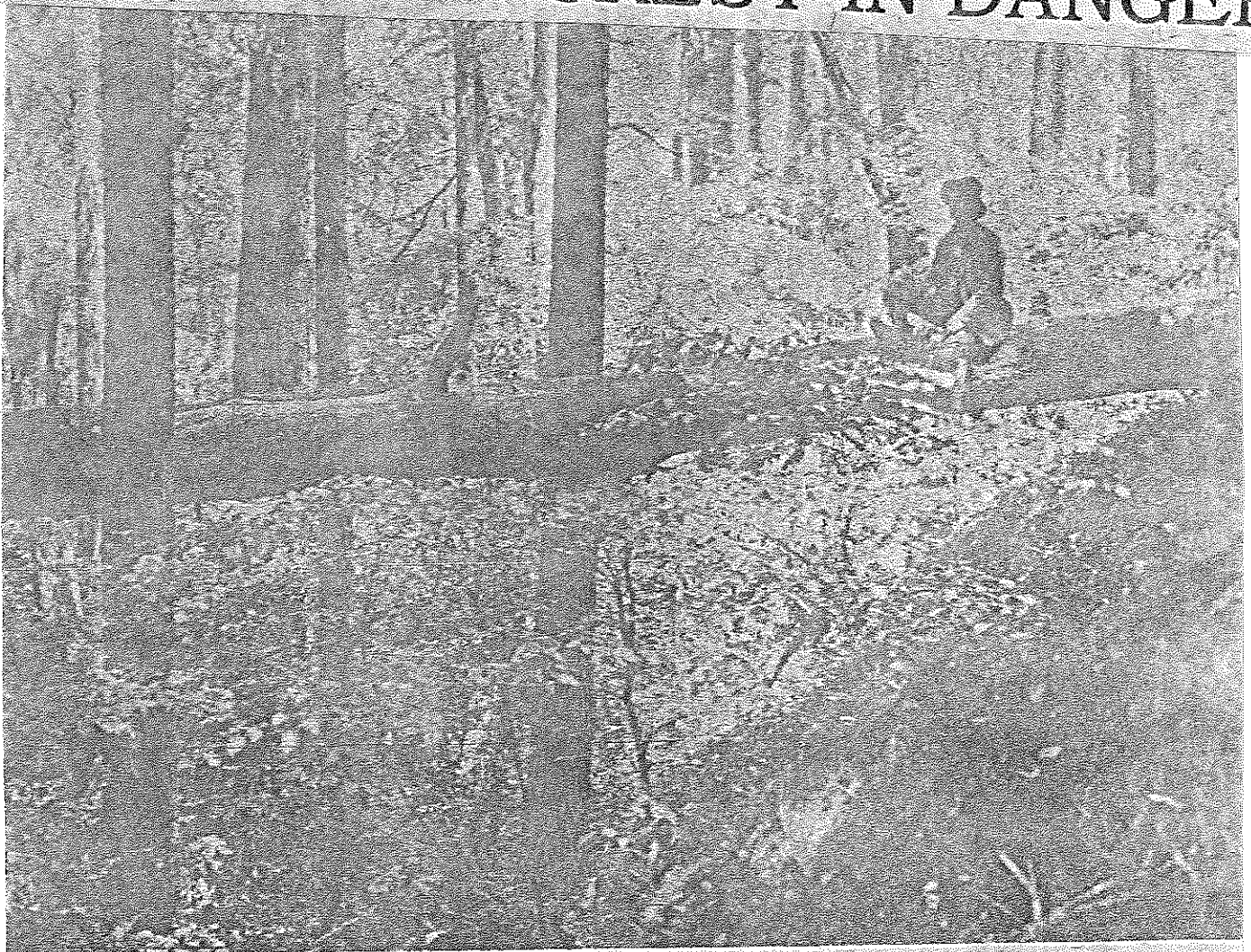
The dimensions of the trees in the Pisgah stand do not equal the records of old growth pines in more favored locations, but they are

nevertheless far beyond the ordinary sizes of trees seen in New England woods today. As is usual in primeval forest, the pines overtop all other trees, rising singly or in groups 100 ft. to 140 ft. and with diameters at breast height up to $3\frac{1}{2}$ ft. or more. Slightly lower than the pines and forming in themselves a handsome forest are great numbers of hemlocks, among which are occasional spruces and a scattering of beech and oak, with much of the characteristic undergrowth and small plants which are found only in undisturbed forest. To judge from the age of trees in similar stands which have been cut on other portions of the property, the age of the Pisgah pines is from 200 to 300 years, well antedating the arrival of the first white men.

Apart from the beauty and picturesqueness of the tract, it will have, particularly for ecologists and foresters, a real scientific interest. The problems of forestry and ecology are very much concerned with understanding the operation and importance of the physical factors in second growth forests where the influence of man and his agencies has brought about unstable and changing conditions. Only by the observation of the primeval forest can such alterations in forest condition be finally interpreted.

The Pisgah Forest will not be in the usual sense a public reservation. Primarily it is a museum of forest antiquity to which interested persons will always be welcome. Its interest and value will be the greater in proportion as it remains unaltered and undisturbed.

LAND'S VIRGIN FOREST IN DANGER



A Fallen Monarch of the Primeval Forest, Mount Pisgah, New Hampshire.

BY MARY LEE

THE last remaining stretch of primeval forest that covered the New England hills before the Pilgrims landed at Plymouth seems doomed to fall under the lumberman's axe next Winter. Unless some one steps forward to save them the huge survivors of the "murmuring pines and the hemlocks" that once sheltered the wigwams of Indians are to be drawn down on next Winter's snows to the mills along the Ashuelot River in lower New Hampshire, to be sawed up into window sash.

This stretch of the virgin forest lies high up along the ridge of Mount Pisgah in the town of Winchester, N. H. It embraces thirty-three acres

covered with huge trees that remind one of the forests of Oregon and California. For more than a hundred years this timber has been owned by a family of hard-working, practical New Englanders. Lately timber land has been heavily taxed by the State of New Hampshire. In view of the high price for timber, and of the heavy taxation, the own-

ers have announced that, unless some one should buy the timber standing, the last of the virgin forest must go.

Difficult to Find

It is an elusive, mysterious, unheralded thing, this last bit of the virgin forest of New England. Few of the thousands of people from all parts of the United States who go to New England for their Summer holidays, know of the forest on the rugged slopes of Mount Pisgah. Few of the New Englanders in the towns around the little village of Ashuelot have ever been there, neither can they tell you how to find the great trees. The lofty pines and hemlocks toss their proud heads, majestic, unvisited, almost as they stood when an occasional Indian hunter made his silent way among their pathless spaces.

You hear of the virgin forest casually from members of the older New Hampshire families. "There's a patch of real, first growth timber somewhere over in the west of the State," they will tell you. But they have never seen it. It is al-

ways their cousin, or their uncle, who is dead, or a professor who stayed once at the inn down the road. They hear the forest is very far from the road. They hear you

have to climb through rough country to get to it. In fact, they don't really believe that such a thing exists. Timber is taxed too high nowadays. Yet you keep hearing the rumor.

To see the forest primeval, to walk among its tall, Gothic spaces, its paths untrammelled by underbrush—to see by looking at it how the country looked before our ancestors began their arduous task of cutting and burning and getting rid of the great trees—is an enticement vision. It induced a few congenial spirits to climb over the doors of an ancient Ford a few days ago and set forth toward the hills to the west of Monadnock in search of the forest.

At the tavern where we put up they discouraged us, with true New England pessimism. They'd heard tell of some first-growth timber over Winchester way somewhere. But the only reason it was left was because

It was in so inaccessible a spot that the lumbermen could not get it out. We'd never be able to get to it if it was there. And nobody over that way would be able to tell us. A wild goose chase, that forest. Better take a walk over toward the Appalachian Club's rhododendron swamp and get back in time for dinner.

"Over Winchester way" they were not much more encouraging. First growth timber? There might be some, over to Ashuelot, but if there was it was high up on the mountain. We would not be able to get to it. And if we got in there, "we'd be liable to get lost and not get out agin." But if we really wanted to hunt for the timber, there was a man named Dickinson up on the road to Chesterfield—he might tell us something.

The road to Chesterfield took us up 800-odd feet to a ridge where we could look across gray stone walls, under huge sugar maples, out across valleys of apple trees and red maples toward Monadnock and the Peterborough hills. High up on the ridge there was a white farmhouse, solid, small windowed, with a great barn sitting in the view. In the kitchen was found John Dickinson, who stood six feet in his stockings and was broad of chest and husky of limb. He and his two brothers own that first-growth timber over on the mountain.

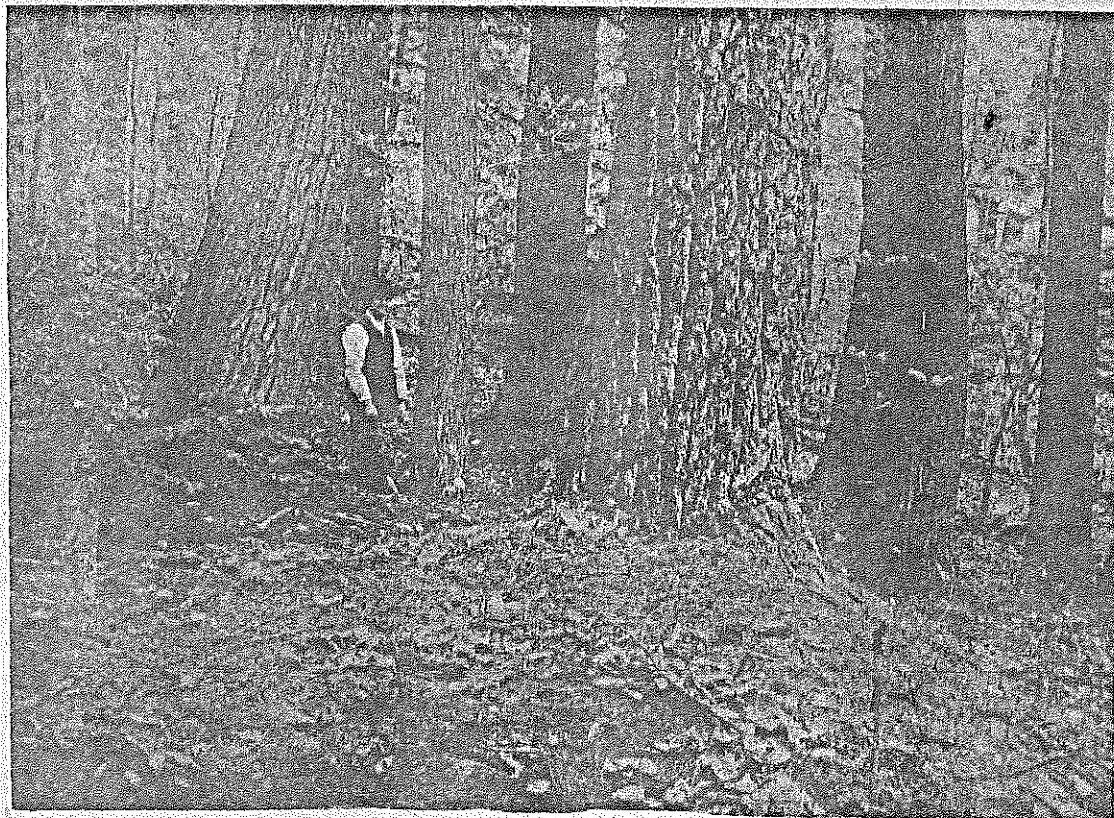
"It lays over in there." He waved his great arm toward Mount Pisgah,

"but it's too far for you folks to walk to." We urged our request. The best way, he told us, was to make our way down to the town of Ashuelot, and from there up again to the lumber camp in the woods, and ask for a French Canadian woodchopper called Joe Roberts. Joe would take us up to the big trees. "Not safe to go in there alone," he added, "liable to get twisted and not find your way out again."

Joe Roberts was sitting in a board shack at the lumber camp. Joe, they said at Ashuelot, could chop out

more railroad ties in a day than any other woodsman in the State. Joe was born outside Quebec seventy-four years ago and since that time he had mined it in Montana and ranched it in Texas, and acted as chief forester on the estate of former Governor Robert P. Bass. Joe announced that if the city folk wanted to climb up to the ridge at that time in the afternoon, why, he was ready to climb. Up the lumber road he led us, through a forest of

birch and maple and beech, some seventy-five years old. Black mud oozed through the corduroy trail under foot. Ferns uncurled by the trail-side, and violets, blue, yellow and white, grew in deep patches. Clintonia dangled pale bells above shiny leaves and the afternoon sun played yellow through new beech leaves. After a mile of steady up-grade we stopped beside the rotting buildings of a former lumber camp. Joe Roberts broke twigs to mark his trail and plunged into the underbrush. "Here we go up," he said.



The Glades of the Primeval Forest.

Photos Courtesy of Professor R. T. Fisher, Director of the Harvard Forest.

Up we went. Up through the underbrush that had grown where timber had been cut off recently, old Joe breaking the twigs as he scrambled through them. "Pretty soon we find 'em," he said. We came to a sort of shelf on the side of the mountain that lay, hollow shaped, between the top of the ridge and the steep slope. And there stood trees such as one does not expect to see this side of the Rockies. Pine trees with stems twelve feet round at the butt, rising 100 feet clear without branches, their tops so far away that there was a strange, distant sound to the wind that blew through them. Trees so huge that the ridges in the bark were as deep as the fingers of your hand. A forest without underbrush, save for the long, graceful branches of moosewood that grew now and then between the great trunks.

Man might never have walked under these trees, except—and here lies the tragedy—for a small tag tacked to the butt of each tree. The trees had all been measured and the amount of timber in each has been calculated.

"Next Winter we cut 'em," said old Joe, his dark eyes twinkling. He patted a great trunk. "My, I like to get my axe in him fine! Couple men would put down six of 'em in one day. If I owned this woodlot I wouldn't work no more all my life, and I'd buy me a nice 'li' car, too."

Men Who Know the Forest

The Dickinson brothers, who own the Virgin Forest, have got much the same idea. "We were cutting right in sight of those big trees last Winter," said La Fell Dickinson, "and next Winter we'll get to them. That timber's been held by my family for more than a hundred years, and we can't afford to hold it any longer."

One of the few men who know the forest is Professor Richard T. Fisher, Director of the Harvard Forest in Petersham, Mass. He has visited the trees several times. Part of the thirty-three acres, he said, is covered with pine and hemlock and part by hardwood, oak, maple and beech. The largest tree is 145 feet high and 4 feet through at breast-height. There are about 100 to 125 trees per acre, some 3,300 trees in all.

Professor Fisher has an option on the forest and with Dr. John C. Phillips of Wenham is now trying to raise enough money to buy and preserve it. Dr. Fisher hopes that the general interest in things "Early American" may, perhaps, arouse the public to its impending loss. He hopes that before the lumbering operations begin in the Autumn either public subscriptions or some public-spirited private donor may

2

NEW ENGLAND'S VIRGIN FOREST

(Continued from Page 20)

have contributed the money to save the trees.

"I think it is of great importance to save this forest for two reasons," said Professor Fisher. "In the first place it will be of interest to people in general and to all nature lovers to have one authentic primeval forest left to look at. This forest can never be reproduced, and it is of interest to everybody to see what the original, primeval forest looked like.

"Secondly, it will be very important from a scientific point of view, both for the study of botany and forestry. We can't learn to grow a forest such as this one again, but we can, by the study of nature undisturbed, learn a great deal about the scientific control of nature. We will never have a forest like this again, but we could learn how to grow good forests from the study of the processes that go on here.

"So the preservation of this forest would have a great scientific, as well as a popular and cultural significance. I would not want to see it made into a public park, but would like to see it under the joint supervision of the Harvard and Yale Forestry Schools, or some such arrangement. The public could then enjoy the forest, as they do the Harvard Forest at Petersham, but it would be available for scientific study.

"Such a forest, if left to itself, will remain a forest forever. These trees are now from two to three hundred years old. As the oldest ones decay and fall, the younger ones grow larger and take their places. The gradual decay of the older trees is made up for by the growth of the younger ones. If left alone, it will remain a primeval forest forever."

Similar sentiments are expressed by Philip W. Ayres, Forester of the Society for the Protection of New Hampshire Forests, which is now cooperating with Professor Fisher in an effort to save the primeval forest. As Mr. Ayres puts it: "There ought to be a few places left in the world where the work of the Almighty is

not spoiled. He has been about a million years getting this forest ready for us, and we can spoil it in a few months. This is by far the most important stand of original pine timber left in New England. There is nothing like it anywhere, either in extent, or in the size of the trees. We have here thirty or more acres that have never been touched by the hand of man. It ought to be preserved by a group of scientists for the future study of the proper conditions of forest growth."

Should the Harvard Forestry Department succeed in raising the necessary funds before the option on the virgin forest expires, Mr. Ayres thinks that the State of New Hampshire would probably exempt the forest from future taxation. "They are very chary about exempting any property from taxation," he said, "but if it were used for purely educational purposes I believe they would do it."

Others, including William A. L. Bazeley, Director of the Massachusetts Department of Forestry, and Harris T. Reynolds, Secretary of the Massachusetts Forestry Association, are deeply interested in Professor Fisher's efforts. Mr. Bazeley believes that the forest should be a scientific reserve; Mr. Reynolds says: "We ought to know how long a white pine will live and how large it will grow. It is only by saving a bit of our primeval forest that we can know what can be expected of our future crops of forests, but it should be saved especially from the viewpoint of the beauty of our country for future generations to see."

NOTES ON THE PISGAH FOREST

PISGAH FOREST

Oct. 24, 1972. Mark Swan, Jim White, Jim Patric, Art Van Slyke, Bill Pritchett, and Walter Lyford walked from the main road at Ashuelot up to the Pisgah Tract. Left Harvard Forest about 9:15. Left Ashuelot about 10:00 A.M. and arrived at the tract about 11:30. We ate our lunch before examining the tract and then spent until about 2-2:30 walking over the tract. We walked up the south side to about the middle of the ridge and then northward across it to the north side where we found the David Henry plot and Mark explained it to us.

The walking ^{on the Pisgah tract} this time was much easier than the other two times I had been there and this was really the first time it has been possible to get over the area in a satisfactory manner. Partly this is due to the larger growth of the hardwoods and partly to the decay of the branches of the larger prostrate trees. The large pine stems are still intact and the mound and pit topography is very evident. Root systems still are pretty much intact in the mounds. Several (or more) are fairly free of soil. They did not lift much soil, i.e. the pits are not ^{markedly bare} ~~exposed~~ because the soil is very stony and roots are very superficial.

One large tree trunk was paced to obtain some idea of the former height. This turned out to be 125 feet or so in length. It looked longer than this on the ground.

Three large live white pines still stand on the western edge of the tract and at least two, possibly more, dead stems still stand. There are a fairly large number of dead stubs, up to 40-50 feet still standing.

We walked westward from the plot over through the beech, birch, maple stand to the reservoir and then back by way of the road. This hardwood stand to the west of the Pisgah Tract seemed remarkably clear of undergrowth - at least it was possible to see for 4-500 feet rather than the 100 feet or so in the forests around the Harvard Forest. Possibly this

was because the undergrowth was free of leaves, but I think it was because there was not much there. I wondered about the effect of browsing by deer. At any rate, there was not much hemlock undergrowth (or pine) for then the visibility would have been much less.

In retrospect, both Mark and I were impressed this time by the sudden appearance of a beech, birch, maple stand ^{on the way in} as we left the site of the old sawmill at the end of the present road (just before it starts up over the hill to the reservoir). From the main road up to the old sawmill site the forest vegetation was mostly white pine, red maple, red oak and the other species commonly seen around the Harvard Forest. But after the old sawmill there was very little white pine or red oak. There seems to be a cultural or cutting boundary here that can explain this sudden change. It is not a soil or altitude change. The old records suggest there was not much red oak before cutting.

We saw a good deal of beech scale injury though none of the trees had been killed.

The one outstanding characteristics of the soils on the Pisgah Tract is their shallowness. Bedrock is exposed over 25 percent of the area and surely is within a foot or so of the surface over at least 75 percent of the area. One wonders how the trees ever were able to grow as large as they were when blown down by the hurricane. The gray layer (bleicherde) is evident wherever one examines the soil. Also, the return of B horizon material to the surface by ants is easily seen and on the Henry plot the tunnels of small fossorial mammals were evident and they had caused some disturbance of the A horizon. Thus, there is continual movement of the mineral soil in the upper two inches or so of the soil and yet there is persistence of the gray layer. This cannot form if the soil is continually being mixed, so mixing by the fauna is probably not as omnipresent as I think. On some of the nearly bare bedrock, there is a 2-3 inch layer of forest floor directly on the bedrock. Roots up to 2-4mm in diameter are numerous in this forest floor. On the large mounds the mineral soil is still exposed.

On the switchback road leading from the reservoir, basswood leaves were spotted in one place and also hepatica. Earthworm middens were also found here. This was not far from the sawmill. Earthworm activity was not noted elsewhere on the trip (no special attention was directed toward fauna activity except on the tract itself).

The absence of white pine all around Mount Pisgah is remarkable since the seed source has been abundant and old trees above present stand must provide a constant seed source. Pine was frequent in the prehurricane forest, but hasn't come back in. Why not?

Notes on Inspection Trip to Pisgah Tract
of Aug 31 1965

Purpose of Trip - Not visited since 1957 by anyone on staff and before that probably only 2 or 3 times since the 1938 hurricane.

Party Ramp.
Sise
Wilson
Lyford.

Procedure Went in Ramps Car. Found gate just to road to tract locked. ^{via Rt 78 to Rt 119} Sign on gate said

No Trespassing. Real Estate and Lumbering Co. Inquired at Esso Station about ^{+Stevens} ~~possib~~ ^{How to get a key} ~~to gate~~ & he looked at me slowly and said "Why you can't go up there that is ^{private} ~~Public~~ property." I told him ^{with papers for what we wanted} that we had a right-of-way and he said the only way we could get ~~in~~ a key would be to contact A.R. Dickenson of Greenfield Mass. His manner aroused me and made me a little suspicious so we then went to the Post Office and I asked the man there (Mr. Stevens) how to get a key. He knew of the H.F. Property & wondered if we wanted to sell it. I assured him we did not as we ^{are required} ~~would~~ ^{to} keep it ⁱⁿ ~~in~~ ^{its} ~~natural~~ state. He said two people in town had keys & he thought either ^{one} would loan ^{the key} ~~it~~ to us. One was Rodney Goodlett the other was the man at the Esso station. I told Mr. Stevens about the papers

Found remnant of an wooden arrow in a y b. on left fork
we decided to take left fork. Went up this road a half mile
to the top of a knoll and decided we were in the wrong place.
An old kitchen stove beside the path and other artifacts showed
this area had been a lumber camp at one time. We decided
we should have taken the right fork rather than the left.
So we returned and walked up the right fork looking for
a path to the left that would lead us up the hill to
the Pigeon tract. We found none and after ^{walking} paralleling
^{along the path which bordered} the wet peat swamp all the way we decided by cut of
compass. G. S. map a long hill opposite on the east side
of the swamp that we were ~~about~~ not far below
the trail. So we walked up the steep slope - perhaps
a sharp rise of 250' altitude. At the top we saw nothing
of ~~the~~ that game as told us we were near the trail. In fact
there were cut stumps and we knew ~~that~~ our trail had
never been cut.

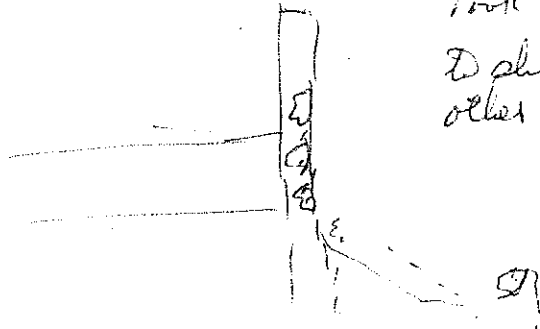
^{at the top of the hill}
So we ate lunch and Bill Wilson they strolled
over to ~~two~~ large stumps of trees ^{except him as per ~~him~~} and we then noted
a blue iron pipe in a Cairn of stones and a rotted
^{rough square 7"} piece of wood with an "A" carved on one side. Bill ^{cut about} then
found blue paint on some trees and soon found
^{by following them to the west} ~~that~~ even found the ^{old painted} sign at the SW corner of the tract
We had ^{just} hit the middle ~~water~~ bound - ^{certainly} ~~purely~~ luck
(See detail B)

After we located this on our way up
After our return to Key we drove up the

we looked around in an area 4-500' from the sign generally in a N+E direction - this we continually had to use the compass because it was cloudy and the down timber prevented us from having a land mark.

Notation on
 signs

The down trees were tremendous 4' in dia + long, and the mounds were out of this world. Some were 10-12' high with a 2'-2 1/2' thickness and 12-15' long I could see 25 ^{years} bushes growing in one and in general the bark was faced thru the old pine + hemlock roots. Large boulders were in most of the mounds, and in one a recent stone had fallen out + rolled to the back of the pit



Took a couple of black + white photos to show mounds. Ray is on here in other.

After an hour or so we returned to sign and after marking the tree with yellow paint. Started down the trail from the sign. This trail went mostly down an intermittent stream bed and there were blaze marks at frequent intervals. Yellow paint was used to outline the old blazes. We were interested to find that this path came out on the left fork path at a cairn of stones which we had not seen on our first trip up the left fork. This was about 1300' from the fork. We painted the cairn with yellow paint + placed a painted arrow on it to show the direction of the path, which was indicated here and with no features other than the cairn to tell which way to go.

When we were looking over the trail we went to one tall old snag on a rock outcrop and from here looking SE covered some open land with a barn + house. We located this on the G.S. map as on the N-S road about 1/2 mile. After leaving the Key we drove up the

somewhere near Fullum pond.
When we got to the hill where we had spotted the farm we
looked across the valley and saw one ~~over~~ hill top with a number
of dead snags sticking up above the rest of the forest like TV aerials
and presumed this was the location of the Pisgah tract. We drove ^{past} ~~to~~ the
checkered - Winkler T.L. had to turn there as the road was too steep
for anything other than jeep travel.

~~-----~~ ~~|||||~~ ~~-----~~

Dr. King said that enough money has been built up over the year
for a fellowship for a student interested in studying the area. \$3-4000 (maybe)
He thinks perhaps its about time to make a study. previously it was too
close to the humans.

Noted soil as about as described - all gray + red (d/b) possibly toward Bk
in upper 2" below the root through matrix. probably entire horizon of very
new class. Cert. only a weak podzol - perhaps reflecting "bleached"

June 1968
M.H.

D. W. MacLean Director, Pisgah Forest Exp Sta.
Canada.

M. H. Lyford.

M. H. Zimmermann. Acting Director, Hawant Forest

David Henry Graduate Student " "

John Clarke - friend of David Henry.

visited Pisgah Forest.

Drove up in AM. Arrived at end of private road
about 9³⁰.

Hiked up trail & walked around the 20 acre tract
Dave Henry described his thesis study.

Returned Hawant Forest about 2³⁰ pm.

Some photos taken.

(Primary purpose of trip was for Henry to describe area
plus methods to MacLean & Lyford as they have an idea
of starting a fallen wood study)