

Oral History Interview

Ralph C. Hawley

with

Joseph A. Miller

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MILLER: When we start these interviews we usually ask the person to tell us something about his early life and particularly how he came to be interested in forestry and how he entered the profession.

HAWLEY: Well, I was working there in Philadelphia for an insurance company the year after I graduated from college. I ran across some material put out in regard to forest mensuration, articles--I can't remember now whether it was newspapers or something else, but anyway I--my attention was called to forestry and the fact that there was a good deal of scientific work connected with it, and I became interested in it. Perhaps another angle to it would be that like any young man when he first starts out to work, why, he's likely to get fed up with the office work. This forestry problem, this looked like something that would take you out of doors a lot, and I wrote both to Yale and to Cornell and got information and decided to enter Yale.

MILLER: In your early youth had you been out of doors a lot?

HAWLEY: Before that time, no, I don't think I'd--no, I hadn't made trips in the woods much, but I had been playing baseball and played on the Amherst team and so I was athletically inclined, and the idea of being able to work outdoors appealed to me. That isn't very--- substantial reason, maybe, for going into it, but I think that's the way it often works out. I like the outdoor work. But of course as you get into forestry why you see the better jobs are inside, rather than out in the field 90 percent of the time, but I was clean enough so that I didn't appreciate that, and the outdoor life undoubtedly appealed to me.

MILLER: Now perhaps you can tell us just a little bit, if you would, about your family background and boyhood, because you mentioned you were in New York State most of your time, in central New York state. Did you live there most of the time? As a young man?

HAWLEY: Well, my father was a clergyman and he had parishes out in Denver, Colorado, down in Atlanta, Georgia, at one time was treasurer of Fiske University. I was born while he was at Atlanta, and he went from there to Fiske University. And then our coming up to New York State was because he bought a girls' school up there about nine miles south of Utica, New York, little town of Clinton. And his voice was giving hell, that is, he had what they call a clergyman's sore throat, and he thought that getting into some other kind of work would probably be better for him. So he got this girls' school, and my mother was a successful school teacher and worked with him in organizing and running this girls' school. And so we lived in this little town of Clinton for about fifteen years, until the situations changed in New York State, and the school system became more organized and you had to go to a state normal school in order to get a job as a school teacher in New York State. Well that ruined the

business my father was running and another crowd in the same town also. It put the private schools for girls out of business in New York State. And I was getting up, oh, about the college age. My father decided to go back into the ministry and took a parish up in East Sandwich, Massachusetts, where we could--my brother and I could go to school very handily right near home. We went to college there. So that really ended my stay in New York State.

MILLER: I see. Well, I just wanted to get on a recorder something about your family and early background as a prelude to going to--well, you went to Amherst and then worked for the insurance broker in Philadelphia and then went to Yale in 1902. Why don't we talk a little bit about the Forestry School when you were a student? I don't quite know how--I'd just like to ask you first of all what was the most memorable thing during your time as a student there?

HAWLEY: What do you want to know - about the men in the class or things of this sort?

MILLER: Yes. Well, just start out with anything in particular that stands out in your mind.

HAWLEY: Well, of course the--that's the class of 1904 - had several interesting men in it. Colonel Greeley was in that class, and Besley, Fred Besley. And we had a pretty good time during the last two years we were there at New Haven. I remember one winter, it was the first winter I guess that we were there, Greeley and another man by the name of Mike Merrill, who's dead now--he went into forestry but he didn't stay very many years. He finally became a postmaster out at Paso Robles, California, and ultimately died there. So Merrill and Greeley and I, we had to go out somewhere and get into the woods and make a report for the school, and so we arranged to go up to the Berlin Mills Company up in northern Maine at Christmas time. That's when you had to do it, go away for a couple weeks at Christmas time and do your field work and write up your report. So the three of us took a train up to Maine, got into a {Query Author} at Maine, and there we were going to go back into the woods and meet Austin Cary, who was at that time forester for the Berlin Mills. I don't know as he had the title of forester, though he may have had. And he was back in the woods there somewhere. We got directions, and we had to walk out about four miles across a frozen lake there and pick up the toll road on the other side and walk over the trail. They were sled roads, most of 'em. And we got in about dark to the camp where Cary was staying. And Cary wasn't there that night. He was gone out for a couple of days. And the foreman of the camp didn't like to let us stay there. He looks us over and, well, "those guys have probably got books." And he wasn't gonna let us stay there that night, so he finally got Cary on the phone at Berlin Mills, and we got permission to stay there till Cary got back. We had a very good time there for a couple of weeks going around with Cary and learned a lot talkin' to him at

his early job there with the Berlin Mills. I think he was about the first--certainly up in that country--that did any work for a private lumber company.

MILLER: How did some of the classes differ during the time that you were a student there compared to later when you were on the faculty?

HAWLEY: It could be both ways a prejudiced answer possibly that I'd make on that. I do think though that there were quite a wide range of men in that early class. We had, when we finally graduated, I think about 34, and we had something more than that in the beginning. The only reason I think one of 'em was there was because he was an alcoholic, and he thought being outdoors would be a good thing for him, or his folks thought so. I don't know which it was. And then there were some of 'em, I remember one fellow by the name of Jack Appleton from Maine. He was more or less the playboy type, but his people I guess had property, timber property, and thought this would be a good thing to put him into for a while. But on the whole, the class, I think, perhaps averaged up a little older than the classes that came along later. As forestry had just started, the students that we would get would be mainly just recent graduates of some other college who'd been thinkin' about forestry and they just came right along automatically, whereas in this early class there were a good many fellows that were old, had been in something else before they finally decided to take up forestry.

MILLER: This class you were in, this was at the very beginning of forestry.

HAWLEY: Well, yes. That first class, 1902, at Yale, they're all dead. Second class, 1903, why, they're most all alive. I wonder how they're doin'? And then 1904 that I was in, why you see that over half of them are dead.

MILLER: Being in something new like forestry, did you talk among one another as to why you had gotten in the profession?

HAWLEY: Well, I don't think there was any very serious discussion on that subject. We did know a little about each others' past, said enough to show that's why we came in, but frankly I don't remember just the reason why everybody came in there.

MILLER: Was there a great deal of enthusiasm and zeal, would you say, in your class?

HAWLEY: Yes, I think the class was awfully enthusiastic. We thought we were going into something new, and certainly being started in it, we found that everything was pretty new.

There wasn't much background for American forestry at that time. One of the oldest men there in that class was this fellow, Fred Besley. He was really a mature man when he came into the school. You probably have records on his history, but he is an illustration, I think, of one of the older fellows in that group. It was only--let's see, there was one, two, three--only five alive out of 34 that graduated. Besley's one of 'em, and he was probably the oldest man in

Manufacturing Company up on Mount Moosilauke in New Hampshire, and then from there, we finished that and went over and made a survey and timber estimate for the big hotel company there at Britten Woods. They had about seven thousand acres of land up on the slopes of Mt. Washington. And that party, I was in charge of it, and the others followed; there were either three or four, I guess. Had been forest assistants, so called, and they hadn't gone to forestry school but they'd been working for the old Bureau of Forestry. They were transferred from the swamps of Texas for this summer experience up here in a much better climate. Boy, they were glad to get up there! I don't think any of these fellows are alive now. Possibly one fellow by the name of Yarnell, but they didn't, none of them, take any part in forestry except for a few years after that time. I think John Ell worked up here on the Coconino for a while, but I don't think he ever took a forester's degree. And that was rather a luxurious party for a forest survey camp. We were quartered in the annex of the Butler Woods Hotel, which is now--it wasn't permanent; it was burned to the ground quite a number of years ago. And we ate in the main dining room of the hotel, right along with the guests. I won't say right along with them, because we had to eat at seven o'clock, and the guests didn't get around quite that early. And the hotel put out our lunches, which were pretty lunches, for a forestry crew, and we'd be out all day and be back at night for the dinner there.

MILLER: Why did they want their timber cruised?

HAWLEY: Well, that was in the days when the government was doing that kind of thing, you know. They were trying to interest land owners--to have something done to get them interested in forestry. And I think they wanted a management plan made for the 7000 acres of land. Whether it was more an advertising proposition with the hotel company or whether they really wanted to do something, I don't know.

MILLER: Did anything ever subsequently come of the surveys? Did they ever use the data to do anything?

HAWLEY: Well, that I can't tell you. My position was such that I carried out the field work, the results were turned in to Washington, worked up there, and I haven't heard anything more about it.

MILLER: About either the Pike Manufacturing Company or the hotel?

HAWLEY: No, I don't--well, the hotel company, I was in their woods this summer for a short trip. They undoubtedly made use of the data we had and I think have cut conservatively on their property.

MILLER: That's what I was trying to get at.

HAWLEY: They didn't have too great a stock of timber, that I remembered. It had been at least cut once before, but I would say that they have continued conservative management of the property. Now the Pike Manufacturing Company, I don't know anything about whether they ever did anything or not. That was a relatively small concern on the slopes of Mt. Moosilauke.

MILLER: Well then in 1904 and 1905, you were on another

survey party--

HAWLEY: Well, I'll tell you. {Query Author} in 1904 took the civil service examination and qualified and got an appointment as a--what did they call them in those days, "forest assistants?" I'm not sure the exact title. I've still got a record of it. Show it to you if you want to see it.

MILLER: Fine.

HAWLEY: The thing is that I became a kind of an employee of the old Bureau of Forestry and was sent out from Washington with this party in the summer of 1904 to go over the lands of the Island Creek Coal Company, which had requested the Forest Service to have a survey made of their lands and timber on the same type of plan that they were using the year before. Then after finishing that survey, which ran I think for about three months, summer, I was detailed to continue on there in West Virginia and Virginia in the Roddard {Query Author} plan which was in progress under Greeley. Looking over that whole area, the southern Appalachian mountain area, I'm not sure just exactly what the purpose of that was, but to find out all the information you could about the forest of that part of the country, other than beginning to change the boundaries of the national forests or to create new national forests. I suspect that was the purpose of that. Again I reported into Washington and didn't hear anything more about it.

MILLER: Did you ever hear what happened to the lands of the Island Creek Coal Company?

HAWLEY: Well, the Island Creek Coal Company is still going ahead, but I doubt very much whether they ever got thoroughly interested in forestry.

MILLER: It was just something they thought they might be interested in when they heard the offer, some of these companies, and never followed up on the data.

HAWLEY: Well, I think you can get from other sources more of the history of that attempt by the government to interest land owners, particularly in the lumber industry, in having work done. There was a period there when lots of these things were carried out, and their files must be full of them.

MILLER: Many of them were published in bulletin form. I was just wondering, since you were in many of these surveys, what the difference of the attitude of some of these companies was toward it and whether you personally knew about the follow-up. Sometimes the follow-up isn't very well recorded.

HAWLEY: The actual truth of the matter is that as far as I was concerned, I did not meet, either in the case of the Pike Manufacturing Company or the Butler Hotel Company or the Island Creek Coal Company, anything but local officers who really knew nothing about the policy of the company. They just had orders to take care of this crew and did so.

MILLER: Do you think this experience was valuable, these surveys that you were on?

HAWLEY: Valuable to me, you mean?

MILLER: Yes, to you professionally.

HAWLEY: Oh yes, it was good training in forestry field work,

and it was very interesting. Then came along about the end of the year, why I was called into Washington and stayed down there through the winter working in the old Bureau of Forestry office under Tom Sherrard, who was really the man in charge of these cooperative surveys at that time. And about that time I had an offer to go up there and assist Alfred Akerman, who was then state forester of Massachusetts. He was in the class ahead of me at Yale Forestry School. And I did accept that offer and along in the spring went up there to Boston.

MILLER: What did you--what were your duties as assistant state forester?

HAWLEY: Well, at the time, the Massachusetts state forester's office was just really getting started, and they had very much the same ideas that the Bureau of Forestry had of trying to interest as much as possible important land owners around the state in doing something. I remember I was sent out to one job, over to the western part of the state. There's a mountain up there in the west--I'm gettin' old, and my memory--the exact names isn't always reliable. You've been in Massachusetts, have you?

MILLER: No, in fact I never have been in Massachusetts.

HAWLEY: Well, anyway there was a park over in the west end of Massachusetts, and Akerman felt that they could be interested in handling that park somewhat from the timber standpoint. So he sent me over there, and I spent the summer in going over the lands and talking with the man in charge there. This is out near Williams College. Anyway it's the state park out in the northwest corner of the state. Akerman didn't finally get too much cooperation from them, largely because the man on the commission that was most interested died about a few months after that, and the other members of the commission apparently weren't interested. So it didn't come to much. Then I carried out some work around the state in stump analysis work, making up volume tables and growth figures on the trees that were being clipped in the different parts of the state, principally on white pine. I was there something over a year, I guess, and Mr. Graves, the head of the Yale Forestry School came up to Boston and offered me a place on the faculty there, and I took it. I think conditions--Akerman they replaced by a political appointee there in Massachusetts by the name of Lane. The only time that was done, I think. Conditions weren't so good, so I was really glad to get this offer and went down there. While I was there at Boston, I again ran across Austin Cary, who was teaching at Harvard University, the School of Forestry that had recently been opened--if you called it a School of Forestry or not, I don't know. And so that winter, why, he and I roomed together on Harvard Gold Coast, one of the dormitories there at Cambridge. I believe the students--it was becoming unpopular or impossible for the students to use some of those so-called Gold Coast Dormitories, and they would take in some other people. And so Cary and I roomed together there and had an enjoyable winter. And about that time also, Fisher, who was in charge of the forestry work at Harvard, asked me to take a couple of courses. They didn't

have enough regular instructors, and they wanted to get some part-time help. So I took one course, and that brought me a little closer association with Cary, who was teaching there, and Fisher. Did you ever meet Cary?

MILLER: No.

HAWLEY: He was a curious fellow, one of the real old timers, and we would--Fisher had a couple of meetings of the small crowd of students that were in forestry there. We'd hold these club meetings, usually in Fisher's apartment. And often times Cary and I would sit down on a sofa side by side and we'd listen to some speaker that Fisher brought in and every now and then I'd have to ram my elbow into Cary to wake him up, because that old bird would--he would actually go to sleep! But he'd sit there reeling kind of funny, when a speaker was talking. Very typical of Cary.

MILLER: Well, did you talk a lot with Cary on a personal level? Did you have a lot of discussions with Cary personally about forestry during that period or talk freely to each other?

HAWLEY: Yes. We had a good many discussions with him. He left us something after that. He only stayed about a year and went over to the Forest Service. And I saw Cary a few other times. I saw him in New Haven some times, and I also made one trip in 1928 down to Georgia, especially to go around with Cary when he was initiating his work on the thinning of slash pines and other pines. That, I think, was Cary's principal work, his lecture work was influencing the lumbermen in the South to actually start thinning practices and other conservative work, but particularly thinning. And the week that I was there with him, why, he and I'd go out on some lumber company's property and they'd have a formal--have a crew of men there, and Cary would mark the trees for these fellows and they'd cut 'em right there. And he put in a great many demonstrations of that kind in the South, which is probably fully documented {Query Author}.

MILLER: Did you--earlier, when you knew Cary in New England, did you learn a great deal, do you think, from talking with him?

HAWLEY: Yes, I think the first experience with Cary in our senior year at the Yale School of Forestry. We had one member of the faculty there by the name of Roy Marston. Ever heard of him?

MILLER: Yes.

HAWLEY: And a well meaning fellow, but as a teacher he was a complete washout. He didn't say anything about it anyway. But he had become acquainted with Cary because his father was a big landowner up in Maine, and Marston was the influence that sent Greeley and Mike Merrill and me up to the Berlin Mills Company where Cary was working as part of one of Marston's courses. And then the following spring, a few months later why Cary came to Milford, P.A., where we got our final survey work in the School of Forestry, and he gave a course to the students, field instruction mainly and field surveying methods, in Milford P.A. where we had our summer camp. And I got pretty well acquainted with him there. And he came several times to New Haven while I was teaching

there, and I corresponded some with him, and also visited him down there in Georgia in 1928. He was quite a critic of a great many foresters and didn't consider them practical enough all the time, which the years have justified.

MILLER: Well now when you came to Yale, then you had the problem of setting up a course. You taught silviculture right away, didn't you? Wasn't that the course you first taught?

HAWLEY: Well, that, for the early teachers, and particularly in silviculture, I think you started off against it. If you were teaching botany in a forestry school, why you had all the background of the customary courses in botany that are given in universities all over the world. When you came to the question of teaching forest management and silviculture, why you had nothing to go on so far as this country went, and not too much textbooks--

MILLER: This is tape two of the interview with Professor Ralph C. Hawley in Phoenix, Arizona, November 2, 1964. On the last of the other tape you were talking about setting up a course in silviculture and about the shortage of teaching materials--

HAWLEY: Well, you had so far as teaching courses in silviculture, you either--as distinct from silvics--you had to either go to European sources. At that time they weren't really good textbooks either, many of them. From what you knew or could find out about the way things worked abroad and theoretical principles that should be included, so that I put this book on the practice of silviculture out, the first edition, in 1921, and revised that every few years. It's now in the seventh edition. Well, I have turned it over--the sixth edition I took in my successor there at New Haven, David Smith, and got him to cooperate in the edition, the sixth edition, published in 1954, and told him that from then on after that edition ran out why I would turn the whole thing over to him. I'm getting too old to travel around the country and keep in touch with all these myriad new developments, and so when the seventh edition came out in '62, it bears his name, and is still going strong as the principal textbook in the subject, I think, in this country. But you had to build that up primarily from theoretical information we had on work in other countries, such things as even-age versus uneven-age forests, the selection system and clear cutting, and adapt all this to American conditions. Now one of the things that helped me greatly was I went over to Europe in 1927 and specialized on a study of reproduction methods, that is, the ways of reproducing forests naturally. And for that purpose I went to Germany, where the best examples existed in the past and I think still exist today of various methods of application of natural regeneration. And I spent the summer in going to different forests, made appointments with the men in charge of the given forests that I wanted to see especially. I traveled around by bus and met the man some spot and then spent the day in walking through the woods, largely learning what he had to show in the way of actual management of the forests in his charge. And in that way I got a great knowledge myself of the possibilities, what

was being done, and was better able to apply them to the conditions in this country. The first edition in 1921, I think, was pretty crude.

MILLER: What had you been teaching between 1905 and 1906 when you started and 1921? Not just gathering your information--

HAWLEY: You had to teach something. I can remember I wrote one fellow that I talked with in the Forest Service who was carrying on timber sales, asked him some pertinent questions about what methods he was using. "Well," he says, "We're just cutting timber" was what he wrote. He didn't really know. And it's practically impossible to know just what would happen when you cultivate certain kinds of cutting in an unknown situation. And as time passes, why, tried out different things. We know now very much better what it's possible to do with a given species in a given part of the country. To begin with, it was pretty much theoretical stuff based on partial information or inaccurate information.

MILLER: Before 1921, say from the time that you started at the school up until the time that the first edition of your book came out, what were some of the advances? Were there any advances at all in our knowledge of silviculture during that period?

HAWLEY: Oh, I'd say there was advances right along. I had put out a book in forestry on New England before that, before 1921. I think in here I would refer you if you wanted a record of my writings, where you can find it in the Library of the Yale School of Forestry there. The author's alphabetical list. I don't know whether you want it or not, but--why every year as foresters tried cuttings and a year or so passes why you were able to get a little ground knowledge of what you can do under given conditions. Of course conditions varied tremendously from forest to forest, and ultimately you have to build up a local knowledge, say, of how you can get reproduction of the eastern white pine or of ponderosa pine, and it will vary from place to place. What you can do on the Coconino National Forest in securing natural regeneration of yellow pine is one thing, and what you can do off in the mountains of California might be another thing.

MILLER: But in general with a species in wide areas there are some similarities, however.

HAWLEY: Yes, there is. But in the early days all you had to go on was, "Well, here's a tree. Perhaps you only see it coming up where there's plenty of light, and well, you better then make some heavy cuttings and let a little light in." That's a pretty elementary way of getting at it, and you have to refine that knowledge, including other factors, moisture and so on and what's on the ground, and ultimately a forester may be able to predict with considerable accuracy what he can do on his forest in getting the reproduction of a given tree. Some of what he had learned may apply to the same tree five hundred miles away, or it may not. You'd have to learn that by experience. Well, so, in the early days the Forest Service fellows cut a lot of timber, why, he wasn't too far wrong at all when he said, "We just cut timber," because he

did not know how it was going to come out.

MILLER: But you did know what, for example, were destructive practices to the forest, though. I mean there were--you knew enough to say not to do certain things to the forest.

HAWLEY: Well, I don't think you could say that some of the things which Tom Jones would call destructive necessarily were destructive. For example, this question of the use of fire is an illustration. Why it'd have been like heresy in the old days to suggest such a thing as burning over any area. And you had to learn whether that was good or not, just the same way as whether you should leave a heavy cover of humus on the ground or whether you should rake that off, clarifying the ground. Things of that sort, they have to come from detailed study and experience for the locality in which you work.

MILLER: What I was trying to get at was that there wasn't much technical knowledge available to enforce the public regulation, like for example, the arguments for public regulation of forest practices, particularly in the 1920's, then, were not being argued from very much technical knowledge of what to do about it. In your opinion.

HAWLEY: No. Their basis for public regulations, control by the public over cuttings, was based more on the just general fear that in the past practically unrestricted clear cutting had been carried out and that was not good forestry practice. Some places it was good forestry practice; but in most places probably it was not, not unrestricted. But the public regulators didn't have any clearer basis for their recommendations than those that favored private initiative, excepting in that bald way. "You can't go to work and destroy all the trees on a thousand acres of land and get very much of a new crop right away."

MILLER: What were some of the--say between the time that you started teaching and the time that your first textbook came out, what were some of the advances in knowledge about silviculture that would have happened in that period of years, about 15 years or extend it to a larger period if you'd like.

HAWLEY: I don't know that I can answer that question the way you'd like, in detail. There were tremendous advances in detail all over the whole country. For example, we already mentioned the fact that the use of fire might be a good thing, although in 1921 I doubt whether that was at all well established. But you discover such facts as the life history, let's say, of some insect--the white pine weevil--and you got a little advance in ways of controlling that weevil. Know something about it. But only recently, last year, there was some further advance on that. But those things are just progressive. They're tiny points that cumulatively may build up a control of an insect or may build up the right detail for getting good natural regeneration on a piece of land that you're cutting. And I think that the minute the foresters became numerous, graduated from the schools and went out to work, look, watch in the woods, why every year there were advances in detail in different parts of the country different types, on how to do things. I can't

say I think there was any--it didn't happen all of a sudden all over the country. It just came gradually.

MILLER: Well, could you point to any specific ones that you thought were more important than others--advances?

HAWLEY: Well, I just don't know that I could--staying on the eastern white pine, the gradual build-up in knowledge of how to control the white pine weevil and the blister rust were very important points on that particular species. And you might find examples of similar things for most species.

MILLER: But teaching the course in silviculture you had to keep abreast of these key developments in many of the different timber species from around the country, because your students could be going to any of these different timber regions.

HAWLEY: Yes.

MILLER: So when you were revising your own teaching each year, some developments must have seemed more important than others, or some advance--that's what I was trying to do.

HAWLEY: I don't think that I could really cite any what you might call a great break through in knowledge. I don't think that that's the way it really develops. I think it's just pluggin' along, people workin' in a given locality, they get wiser and wiser as to how things can be accomplished. I remember over in Germany in 1927 I went around with a fellow that made a name for a certain type of method in getting natural regeneration, spent a day with him out in the forest, and the thing that he had the greatest pride in (he said it was his greatest success), he showed me a little patch of, oh, probably thirty or forty, fifty square feet, on which a whole crop of seedlings, fir seedlings, were coming up. And that was quite unusual. He'd accomplished that by some little detailed change in his treatment and didn't have to plant any more of that species. He knew how to do it. And that was considered his achievement. It had taken a good many years of experimenting to find it out. That's the way the development of the right silviculture system for a given tree and forest type region comes, is by experimentation on the part of the practitioner who is working in that forest, gradually extending his knowledge and when he's got his thumb on top of something, it may hold only for the peculiar conditions of that forest area that he's dealing with. That's one reason why foresters, at least those that are actually working on timber cutting, shouldn't be transferred too frequently from one part of the United States to another. They ought to be kept on one locality so that they can build up their own experience and actually get to the point where they can get natural regeneration of the trees they're dealing with. After all, the criterion of successful silviculture and practice is to be able to reproduce the forest you're dealing with, and of course do it in the least expensive way. Possibly sometimes planting may be the least expensive way and the best way, but natural regeneration is preferred if it can be attained. I don't think there was any great breakthrough in silvicultural knowledge over the last fifty years. I think it's accumulation of detailed work, detailed knowledge acquired in thousands of places over the

country as foresters get to work.

MILLER: Perhaps you could tell us now something about the detail that you acquired when you were working on the forest lands belonging to the New Haven Water Company.

HAWLEY: Well, of course, in the New Haven Water Company the silvicultural system was maybe a little different --not exactly normal, because a great deal of the right silviculture there may be the changing of the forest type from certain low-grade hardwoods to a coniferous plantation. And that, of course, takes time, and it requires, in most cases, artificial regeneration. They used that quite a lot while I was there. They, oh, made approximately 3000 acres of coniferous on land that was, some of it was hardwood land before and some of it was open fields. But it was a question of changing the type instead of...

MILLER: How did you become affiliated with the New Haven Water Company on their...?

HAWLEY: Well, the Yale School of Forestry, of course, is located in New Haven, Connecticut, and there's no national forest in the state, and at the time the school was established there was no state forest. At every school you need a place for field work, and the New Haven Water Company was just the logical place for a good deal of the field work during the school year, so arrangements were made with the New Haven Water Company to allow the school the use of their lands. And on our part, the school furnished to the company the knowledge or management of the property to keep it forested, keep it in good shape for their water purposes. And I was suddenly appointed as a member of the faculty who dealt with the New Haven Water Company and represented the school in carrying out work on their lands--planting work and timber cutting and so on was all under my direction.

MILLER: Looking over the whole time where you were doing this work on the New Haven Water Company's land, what do you feel the greatest accomplishment has been over the years on this...? Were you successful in changing the cover type or only partially?

HAWLEY: Well, from a physical standpoint, of course, the greatest accomplishment was the establishing of the more productive forest type on a considerable portion of the property, in other words the converting from the oak stands to spruce and pine stands, which, from the standpoint of final yield was greater than the original stands and I think also from the water protection standpoint and fire protection standpoint they were a better type than that originally found there. You see, the original forest type in Connecticut, most parts of Connecticut, is a mixture of oak, and they're relatively slow growing. The coniferous stands yield anywhere from two to four times as much material in a given period of time, and they have from the water company's standpoint, an advantage, particularly in the zone next to the reservoirs and streams, of not shedding as much foliage which flows in the reservoirs and has to be cleaned out in some cases. So if you want our major achievement I'd say that it's the carrying forth conversions to coniferous stands of a considerable portion of the watershed.

MILLER: Do you think the story of the operations has been pretty well covered in the bulletins that have been written on the forest?

HAWLEY: Yes, I think so. I think so. You mean for that particular forest?

HAWLEY: Well, I'll tell you what I think. On this particular tract there's a good resume of the conditions at the time it was written. Of course, this was quite a while back, so that the type of management employed...

MILLER: So we don't have to ask you questions and take up valuable time on something that's already been published.

HAWLEY: No.

MILLER: So anything that you care to say about the New Haven Water Company, for example, that is not in the published literature, that would be interesting relative to its operation or our understanding of the forestry--

HAWLEY: Well, I'd say that this particular bulletin with the pictures of lots of cutting and planting operations pretty well gives you an idea of the type of management that was suited there for Connecticut forests, particularly for the quite numerous properties that had water supply as their main feature. All the towns there, you know, and cities in Connecticut have water companies. Well, I think that's fairly well covered in this bulletin here. I think we would have been better off first to bring out the valuable thinnings and pine plantations which covered a number of the bulletins. You have gone over those bulletins, all of them?

MILLER: I know them, I know them, some of them by title mostly. I'd like to ask you about the Northeastern Forestry Company, which--as far as I know there's very little knowledge about or written about, that you were in on the organization of that.

HAWLEY: Yes, I can tell you a little about that that might have some significance outside of the company I think too. Why about 1907 or in fact from the time the school was started around 1900 there was a great shortage of forest planting stock. In the first place, of course, they didn't know what kind of stock they should use, and if they did have an idea from what they'd learned in Europe, they couldn't buy it anywhere. In fact, in those early days some of the early plantations were made by stock purchased in Europe, particularly in Germany and imported into this country. And that was --I think finally it was barred to some extent, as it should have been. So a few states, New York State in particular, got started in--largely due to efforts of Clifford Pettis--in raising stock; they started a state nursery and produced stock of the size and species which was considered probably the best for forest planting. About 1907 in Connecticut the Water Company had gotten some European stock for early plantations, but we didn't like to do it, and another fellow and I started a little nursery--Walter Filly. You've talked to him at all?

MILLER: No.

HAWLEY: He is, I'd say, one of the principal figures in the Connecticut State Forestry Department. He was state forester of Connecticut for a number of years. Finally dead now.

Well anyway, Filly and I bought a piece of land, started a forest nursery to grow some planting stock to fill the need for planters in Connecticut. And about the same time, without him knowing it, Pettis over in New York State had started a private nursery which he later turned over to the state. And another fellow--wasn't it Lewis R. Jones up at the College, University of Vermont--did a little something in that line. Well, a couple of years later, Pettis, Lewis R. Jones, Toumey, and myself organized a corporation called the Northeast Forestry Corporation to grow and sell privately raised nursery stock for forest planing. And we combined the--what Pettis had started. He'd started a seed collecting plant there in Wilsboro, New York. When this corporation was formed, why we took over his seed collecting plant--I think it was the first in the East--at Wilsboro, New York and we established a nursery in Connecticut, hired a man to run it. Pettis soon felt that there was a state sufficient that he should drop out of the company and did so. Lewis R. Jones died, and Toumey and I carried on until his death in 1932. And we developed considerable forest planting stock, mainly white pine and then later red pine, and I think we were a good factor in making more stock available here in the East in those early days. Very soon, however, all the states established big nurseries, and it became practically impossible for a private nursery to stand in competition with them. Not on the basis of price, because we could go just as low as they did, but because the people would buy from the state more than they would from private nurseries in those days, and so this Northeastern Forestry Company expanded its operations to include a different stock, which was not entirely for forest planting. We joined the Association of American Nurserymen and carried on a successful business and sold stock way out in the Middle West. The seed business we had--well, we found again, in those days couldn't successfully compete against the New York State Nursery, which supplemented seed clerks on a big scale, and we finally sold our plant at Wilsboro back to New York State. This nursery and the Northeastern Forestry Company continued on as a going concern until 1953--I think that the pioneering on the growing of forest nursery stock should be laid at Clifford Pettis' door. He really was the first man that did that, and of course there've been developments in the detailed operations continuously right on through, but he's the fellow that really started the idea of growing forest planting stock, particularly for the forest planting in this country, and developed early methods. We followed, really, his methods. Now...Oh, yes, I was going to say this company was sold out in 1953. I sold it out to some fellows who wanted to enlarge it in a retail way, having branch nurseries around. So that company disbanded, just sold the company out and they used their own name. I think, however, and this applies not only to the Northeastern Forestry Company, but it applied to some other private companies that also got started, that an opportunity was missed by not allowing private enterprise to participate more wisely in the growing of forest nursery stock. They carried on a big business in

Europe, you know, and it could have thrived in this country, nurseries all around the United States, but that's one of the lines of endeavor that state ownership, national ownership, has squashed. We found that we couldn't make a profit on forest-planting stock alone; we had to enlarge and cover all other lines of nursery production in order to make a profit on the thing.

MILLER: How would the opportunity have benefited forestry, if there had been more private enterprise running those nurseries?

HAWLEY: First of all, let me say this. That usually the free enterprise vital industry to the fullest extent possible in all lines of work, and I see nothing in what I know of the private efforts to lead me to believe that the private nursery industry established in all parts of the country would not have been fully as successful as the monopoly by state of that business.

MILLER: Well, do you think by and large the state nurseries, as nurseries producing planting stock, have functioned effectively and kept up with the need for them? The need for planting stock? Or did they lag behind?

HAWLEY: Well, it's hard to say that. The situation probably differs in different states. I would base my feeling on the matter mainly on the idea of private versus state development. Because I am for private development of power sources, rather than having the government control the power development through the United States. I don't think that in any case the interest of the United States would have suffered if both lines of work had been kept in private hands.

MILLER: This is tape number three in the interview with Ralph C. Hawley in Phoenix, November 2, 1964. Now earlier, Professor Hawley, we were talking about some survey work that you did under the old Bureau of Forestry. I was wondering if you could tell us about the summer of 1907 when you interviewed lumbermen in North Carolina for the U.S. Bureau of Corporations.

HAWLEY: That session this Bureau of Corporations was apparently making a timber estimate over a large share of the country by sending out men to interview lumbermen, and I was asked to take North Carolina coastal territory and to interview the lumbermen there. So I did it and handled it as directed, mainly by calling on the different lumber concerns and attempting to get from them an estimate of their timber. But quite naturally they seemed reluctant to give the government information on how much timber they owned. In fact, they were more interested in trying to find out from me how much timber had been imported by their rivals in a neighboring territory. So that it became necessary to try to find out not only from them but from other sources how much land they owned and if possible the character of that land so far as timber values went. I personally felt all along that estimates I was getting were not particularly reliable, turned 'em in, whether they could be reassessed or revalued in any way by the people in Washington I don't know.

MILLER: Now this summer work in 1907 was part of what you

were telling me before the machine started up. It was the normal pattern of your summer time activities that you'd go away, be doing something in the summertime that would generally increase your knowledge. And could you tell us something about the--in 1909 when you were on a survey for the government in Montana?

HAWLEY: Well, in 1909 I was asked to go out to Montana, take charge of a party to look over some of the lands connected with the North Pacific, Northern Pacific Railroad land exchange proposition, and we outfitted at Livingstone, Montana, got a cook and a team of horses and a big wagon, tents and so on, and went up to the Crazy Mountain section of Montana and spent the summer there in estimating timber in that area. At the end of the summer our results were turned in to the Washington Office of the U.S. Forest Service and I don't know what was later done with the results.

MILLER: Any particular problems on that survey that makes it interesting or memorable in any way?

HAWLEY: Well, it was interesting to me because I had never been in that part of the country before.

MILLER: What was the principal timber type in the--

HAWLEY: Lodgepole pine. It was not a very heavily timbered part of the West. It was partly in the national forest and partly out and partly owned by the--I think the idea was to pick up the holdings of the Northern Pacific Railway with the idea of ultimate exchange.

MILLER: So you learned a bit about lodgepole pine from this. or a bit more, I should say.

HAWLEY: Yes. It was primarily in the lodgepole pine type, not very heavy forested country; that is, it was light stands of timber.

MILLER: Earlier we were talking also about the work other than teaching. You also did some consulting work in the--

HAWLEY: Well, over a period from about 1910 to 1945, I did a good deal of consulting work, particularly on fire-damage cases, working mainly for the New York, New Haven, Hartford Railway; on some cases for the claimant against that or other railways. My belief is that in most cases against railroads the claimant, if he brings his claim up to the lawsuit stage, usually is asking an exorbitant price for the damage sustained. I found that at least the New York, New Haven and Hartford Railway would always pay a reasonable trade without going to law about it at all. The reason I got into this type of consulting work, requiring only that I taught at the school the subject of protection, particularly fire protection in addition to other silviculture courses.

MILLER: Would these owners just seek you out then because they knew you were a----you say you represented the railroads sometimes?

HAWLEY: I had represented both sides.

MILLER: Both sides. I mean they sought you out at the school to represent them?

HAWLEY: Yes. Well, the Yale faculty, forest school and other places, was allowed to do consulting work in their fields without any trouble at all.

MILLER: Was there quite a bit of this, even in the 1920s,

among the people on the faculty there at Yale and other members of the faculty?

HAWLEY: Forestry faculty?

MILLER: Yes. I meant at Yale, say during the 1920s. Was it quite common? Were other members of staff doing quite a bit of consulting work?

HAWLEY: Oh, yes.

MILLER: I was going to ask you another question in connection with the school and the fact of all the years that you were at Yale. Would you say that there was any great differences between the students, say, whom you taught before World War I and the students of the 1920s and the students in the 1930s? Would you make some kind of a comparison?

HAWLEY: What period between World I and World War II?

MILLER: Any period. I was thinking of the time you began up till World War I and there was the period of the '20s and the period of the '30s and the '40s and of course after World War II. There are kind of major--

HAWLEY: I don't think there was any substantial difference in the students before and after World War I. But after World War II, principally because of the willingness of the government to give these students financial aid, why we had a somewhat different class of students come in. I think some of them were not, on the whole, were not as well prepared as those who would normally come; but on the other hand they would be a little older.

MILLER: How about the students during the Great Depression? Were they any different from their predecessor of the 1920s?

HAWLEY: I don't see any difference in 'em {Query Author} without consulting that strike {Query Author}.

MILLER: Did you, as a teacher of silviculture help place your students in jobs?

HAWLEY: Indirectly, yes. They could always use my name when applying for a job. {Query Author} They would often write to me and ask me to tell them something about an individual that had given 'em my name.

MILLER: I just wondered if you--well, if these students who had formerly been in the school, if many of them kept in touch with you over the years. A fair number?

HAWLEY: Oh, yes. {Query Author} One of my best men was {Query Author}. Tass Coulton. You've heard of him, have you?

MILLER: Yes, I've heard of him.

HAWLEY: {Query Author}. A lot of these students I never did hear from at all.

MILLER: Yes. Did you ever think, when you were young or when you were starting out, that you were going to enter into a lifetime of teaching?

HAWLEY: No, I didn't. When I started out I thought I was marching on to a career in forestry, but I didn't know what line of work it'd be. I started out a government employee, was then in a state administration before I went into teaching.

MILLER: Well, once you were there you never thought of changing over the years that you were at Yale.

HAWLEY: Well, I certainly made no effort to change, and I

think things were comin' along naturally. I had advanced in the ranks pretty well. I guess it takes a long while for a man to start as an instructor and to be a professor.

MILLER: Everybody came in on the ground floor.

HAWLEY: Yes.

MILLER: Earlier in this interview you were talking about Austin Cary?

HAWLEY: Yes.

MILLER: And I gather he was a fairly influential man in the sense of your own career?

HAWLEY: In what sense?

MILLER: Well, in your own terms, would you call him an influential man on--

HAWLEY: Yes, I think he was. I think Cary was. His greatest influence was in the work in the Forest Service and in private land accomplished before he went into the Forest Service in interesting people in the industry in starting conservative practices. And I consider him one of the important early pioneers in establishing of forestry before the industry or, as they say, in industrial lines. He was a very crude, brusque type of character, as that little story I told you of his going to sleep in the class indicates, but, and he in some ways didn't have too high respect for any of the leaders in forestry; that is, he thought they were, some of them, impractical and big talkers that didn't do much. But if you were willing to work yourself and were of a practical nature why he approved of most of the foresters.

MILLER: Could you point to some other influential men, let's say, for example, in the Northeastern part of the country? Influential foresters?

HAWLEY: In the early days?

MILLER: Well, either in the early days or in subsequent periods. People that you would point to that made a marked impression on you as having an influence.

HAWLEY: Well, I think Cary was very outstanding in that respect, because he not only gained prestige, influence in his own country, which was northern New England, but pretty well over the whole United States through his work with the Forest Service. Then I would class Clifford Pettis as really an outstanding man in the development of the practical side of state work, particularly in the lines of their nursery production. This is when he started that seed collection. This fellow, Lewis R. Jones up in Vermont, he was not really a forester. He was a pathologist for the University of Vermont who rather specialized in forest tree diseases. I think he had a lot of influence in starting the forestry work up in Vermont, more or less indirectly. He never himself was the state forester. And of course, Ed Hirst in New Hampshire at one time I think was the head of the Forestry Commission there, but his principal influence or the way that he helped was through his connection with the banking industry in New Hampshire. He exercised a very considerable influence on the forest policy there in that state. He's still alive, and I think still president of one of the banks up there at Concord. He was a Yale graduate.

MILLER: Shifting from individuals to companies, for example,

what were companies in the Northeast that were leaders in adopting, well, let's see, advanced forest management practices?

HAWLEY: Of course, the Brown company there at Berlin Mills, who employed Cary, was as far as I know the first concern in the East that really started any kind of organized forestry work and I think was very influential on the other land owners in the, at least in the Maine territory in getting them to carry things out. Too bad that Brown Company's more or less dropped into the minor position as far as the paper business goes in New England. Then, Demerrit up there in Maine I think has had a very good influence in more recent years on the industry, lumber industry in New Hampshire. He worked--let's see, what was the name?--it seems to me the Dead River Company, some such name as that. Demerrit is now connected with, and got to be one of the main officers in it.

MILLER: What is his full name?

HAWLEY: Dwight Demerrit, Dead River Lumber Company, Bangor, Maine.

MILLER: And he is an influential forester.

HAWLEY: He is probably the most influential forester in the state of Maine, the same way as Hirst, I would say, was in New Hampshire.

MILLER: Did you ever visit some of the companies who had advanced forestry practices while you were a teacher and use examples for them?

HAWLEY: Visit them?

MILLER: In general, over the years, visit companies that had advanced forest practices in order to see what the industry was doing or--

HAWLEY: Remember, I've been retired from teaching since 1948.

MILLER: Yes.

HAWLEY: I did, three or four summers that I traveled out west just on my own hook. Well, I tried to see companies or have some more maybe looks at national forest timber sales, so that the real developments of forest staffs on these companies, like the paper companies, I'd say dates from the last 20 years. It doesn't go too far back over my actual teaching experience. Berlin Mills, that was, you see, Cary was working for them in 1903 or 1904, somewhere in there, but that was the unusual company then who really had any organized system of forestry going, who even hired a forester.

MILLER: Well, let's not just confine it to companies. Any advance, any type of forest management practices that stand out in your mind that you ever used for examples? You mentioned earlier keeping in touch with developments. Well, were there any developments to keep in touch with in the '20s and the '30s?

HAWLEY: Well, I don't know as there were developments just along the lines you have mentioned. I think, for example, in 1913 I went, was gone all summer, to the Southwest. I was on the Coconino National Forest and saw Pearson there and came up through the Sierras into the Pacific Northwest, ran across Bill Greeley riding horseback in one of the forests. He just

happened to be going through on an inspection trip. No, that wasn't 1913, that was a later year. In 1913 I came back through the Snoqualmie in the Northwest back to New Haven. Well, I didn't see a single instance of private forestry on that whole trip. I was on national forests and saw several of the sorts of work they were doing in those lines. Somewhere in the '30s, I guess--I went out into the Northwest again and I was on the Deerlodge and Jefferson and some of the other forests in Idaho and Montana, and I saw some timber sales by the Ohio Match Company, where they were buying timber from the Forest Service, but the time of these companies actually employing considerable staffs of foresters, I believe, is a product of the last 20 years. I haven't made many travels since 1948 on other lines of forestry.

MILLER: What were some notable examples of silvicultural management that you saw on the national forests? Or lack of it?

HAWLEY: Well, I went out one summer, stopped with Colby Evans, and he was working up in northwest Oregon around Baker. We went in there and he showed me some of the first sales in western yellow pine in that territory where they were attempting an improved type of cutting.

MILLER: What year was this?

HAWLEY: Well, I'd have to go back--I would say that was in the '20s, early part of the 20s. They were modifying their cutting somewhat, and were approaching clearcutting in patches, which they hadn't used before.

MILLER: Would you say that just taking the western United States, there's been more of an advance in silvicultural technique in some timber types over others?

HAWLEY: In the West than there has been in the East?

MILLER: NO. Just taking the western United States and the different timber types in the West, would there be more of an advance--more advanced silvicultural practices in some timber types than in others?

HAWLEY: Well, I think you can say this. Of course, most of the West is owned, a good share of it is owned by the U.S. Forest Service, and so there's more closer control over cuttings in the western United States than there is in the eastern United States on the whole, because it's in the hands of the government. I don't know whether I'd say that there's been a greater advance in knowledge of how to reproduce types out West than I would say in the East. I think that in both parts of the country they made advances in the art of cutting so as to establish regeneration. Now most work, timber cutting, has probably taken place in the West, probably taken place in the western yellow pine, ponderosa pine types, or the Douglas fir types in the western part of the country and in the white pine types in the eastern part.

MILLER: I was just thinking of areas where there might be a greater advance than in other areas, for example, down in ponderosa pine Gus Pearson became the greatest authority on ponderosa pine silviculture and stayed at one research station for a number of years, worked, studied and thought about ponderosa pine silviculture, and I was just wondering

about the advance of knowledge for that timber type as opposed to, say, western white pine silviculture practice in Idaho.

HAWLEY: Well, both advanced a great deal. They perhaps know more definitely how they can get western white pine reproduction than they do on yellow pine reproduction, I think. It's a simple proposition that, in the first place, there's very much less timber in that type: the type is very much more uniform. And in western yellow pine, well, you have the Southwest here, where Gus Pearson was. His conclusions that he found wouldn't hold in some other parts of the western yellow pine country. And because of the large percentage that western yellow pine makes up on the national forests, the advance in methods of management in that type and in West Coast Douglas fir and in western white pine, those three important types have been greater advanced in their silviculture than almost any other part of the country. Largely due to the management and ownership by the U.S. Forest Service. And you come back into the East with a much greater complexity of forest types and lack of uniformity, why the greatest advance has been in the management of eastern white pine and spruce types. Gus Pearson's ideas probably held all right for the Coconino, but they'd have to be modified as you get farther north.

MILLER: Over the years in the West on the national forests, the foresters in charge of the timber sale have more and more chance to actually use silvicultural practices--in the beginning you mentioned, for example, that you asked some of the people out there and they were just cutting the timber. But there's a gradual change over the years as more knowledge becomes available and then these men are actually adopting certain silvicultural techniques.

HAWLEY: Yes, and that along the line already talked about, that it takes time and continued efforts to decide on what the best ways of accomplishing reproduction are. And they have learned from past experience and continued work, so that they're getting better results now, and they feel a little more confident in being able to actually accomplish the establishment of reproduction. In the long run that's what forestry, silviculture is, to replace one crop with another, presumably and hopefully a better crop. And to begin with, the foresters were just cutting timber. Hoping for God's help and rain.

MILLER: Give me some examples in the West when they first stopped cutting timber on some of the national forests, when they began to adopt some idea--

HAWLEY: I believe that's impossible to say. I think that there were fellows right from the beginning that were using their heads when they were cutting timber, doing the best they could, but they did not know how the cuttings that they were making were going to come out.

MILLER: Oh, I know you can't generalize, but can you just give me one example? The difference between just cutting and the result of experience. Tell us one example that you would know about or that would serve to illustrate this gradual progression that you've talked about. Or perhaps one doesn't

come readily to mind.

HAWLEY: Well, I don't know that offhand I can pin that right down to an exact instance, but let's say it this way. The fellow has a stand of--ho, take up on the Green Mountain National Forest. A few years back I was in there when they were trying out some group selection ideas in the hardwood--beech, birch and maple. And they were cutting these groups clean and hoping God was with them and that the yellow birch would seed in and establish a complete cover on these openings. That was the theory. Now, in some cases that happened; other cases it didn't. But undoubtedly those fellas learned something from the individual cases. They may have treated certain of the clear cut areas by raking up all the debris, burning the brush carefully. Others they didn't treat so carefully. They might--not up in that territory. They might up other places have used fire, but--

MILLER: This is tape four in the interview with R.C. Hawley in Phoenix, Arizona, November 2, 1964. The reason I asked you that question about which timber type did you feel closest to was that I wanted to ask you how, for example, your own opinions had changed about the approach to a particular--the silvicultural management of a particular timber type, for example, white pine or in the East here, spruce fir.

HAWLEY: What do you mean by this, "Difference in Approach?" What do you mean by that?

MILLER: How your own knowledge and beliefs as to how this particular type could best be handled had changed over the years.

HAWLEY: Well, it certainly had changed in this way. That in the beginning we knew nothing about how to manage, say, eastern white pine or western yellow pine. And up until 1948 I followed the details of studies, so far as they were published or by talking with people that were working on that particular type all the time. Since 1948 I have not followed those details on any particular forest type. I have nourished, perhaps, the eastern white pine type, because of my friendship with Foster, Curt Foster, who ran the Pack Forest at Warrensburg, New York. I see him occasionally. He's the leading authority, in my opinion, on the management of eastern white pine, and as I see him, why I keep posted on whether he's changed his opinions on how that type can be managed.

MILLER: Weren't there, during the 1920s and the 1930s or even the 40s or right on up to the present, differences of opinion on how a type was to be managed among equally knowledgeable foresters?

HAWLEY: I would say that with every forest type, the foresters started with pure guesswork. As he works year by year, from seeing the cuttings he's made and what followed each one of those cuttings, he becomes better able to assess what a certain line of operations is likely to do. When you reproduce naturally a timber type, you contend with all the natural factors of rain and insects and all kinds of bad influences, and you hope to come out with a new stand of that tree that you're after. But you are progressing all the

while in your knowledge. You're going forward, if you're any good at all, ordinary type, but--that is about as close as I can tell you, I think. I know that the management of the eastern white pine is no longer quite so much of a guess-and-take-a-chance proposition that it was fifty years ago. I know that the same thing is true of western yellow pine or western white pine. Any one of the major types around the United States, there are foresters working in it in each one of these localities that their knowledge has increased. And they are better able to get the given result that's wanted by their actions than they were 50 years ago or 10 years ago.

MILLER: What I was interested in is the process of learning over the years. The ups and downs, the starts and stops, and the guesses and the certainties--the process itself over the years. Now, as a forester teaching silviculture in the East and familiar and close to the eastern white pine type, you had a process of learning yourself about the type. Would that be a correct statement?

HAWLEY: Yes.

MILLER: Well, what I was trying to identify is some of the main lines of your thought or the development of it as opposed to some other forester in the East who may have had a different line or process of learning about that.

HAWLEY: Well, the process of learning you're talking about I think has to be a combination of going out and trying different things with as detailed a record as possible of the factors involved each time you try one of those. For example, perhaps in late season, summer, why we had an unusually heavy rainfall. You get a certain result. Can we count on that every year? Well, it turns out you can't because that extra rainfall was a vital factor. Take in western yellow pine, in particular, you had Pearson way back in the early days found out that you had to have a special combination of a good seed supply with unusually good rainfall in a critical season. All right. And his process in getting at that, I think, is the same as in all other forest types. You try certain kinds of cutting and you keep as close tabs as you can on all the factors that exist at that time, and, in the course of time, why maybe you come out with the right combination to get results. Unfortunately, in western yellow pine on the Coconino, you don't get the right combination once in maybe 25 years or more. And to attain reproduction certainly in western yellow pine I don't think is known with certainty at the present time. And take loblolly pine, if you have relatively seasonable seed years, and if you get a good bare soil, why you're pretty certain to get a good reproduction. But you don't find that kind of a proposition with most trees. Your process of learning--what you're driving at is to try specified types of cutting and other actions like soil treatment and keep a close record on what has happened that clears that session and gradually build up your knowledge--

MILLER: What would you say, speaking about a record--what would you think, say, of the record of the Harvard Forest in keeping track of their work on white pine over the 50 years? The results of that?

HAWLEY: Well, I haven't looked at their record recently, but what part of the record are you particularly referring to?

MILLER: Well, as showing--there's a couple of bulletins that they wrote on white pine management assessing both their management, the financial results, and also the history of silviculture on the forest, that is, the different tacks that they tried to do, certain things. And as I read those bulletins, I got the impression that a lot of different things were tried, because, as you say, there was guessing, and that other people in different parts of New England or the white pine area may have thought of still other ways of approaching the same thing. So what I was just trying to get here was differences in approach among foresters in the same types.

HAWLEY: Well, I think the approach is rather the same. They had good sense in keeping records, and I think they'd be able, if they were still in business, which I don't think they are--

MILLER: Whatever happened to that operation, anyhow? Harvard Forest? What do you think--

HAWLEY: They had bad losses in the hurricane. I agree with you there. I don't think there's so much essential difference in the ways in which people are trying to find this out. I mean you come right back to it, that it has to be by experimentation of trying different methods. You can theorize as to what is likely to be the best method and try that, try something else too, and you keep a record of what you've done and all affecting conditions, climatic and so on, and in the course of time you learn something.

MILLER: Can you give me an example from your own career? Did it ever happen to you where you tried one thing and you experimented and you gradually...

HAWLEY: Well, you've got one very simple example. I tried an experiment on planting once in setting out very small seedlings, some of 'em with no protection at all and others with a wire cone over them, and the result was that it was quite evident that under the conditions prevailing there if you were going to get success on that planting you would have to protect the small seedlings because there were too many rodents there. So you learned from that the ones that weren't protected were entirely destroyed by the rodents, and the ones that had the wire cone over them were still alive at the end of the year. It seems to me that's just a pure illustration of one of the fundamental things that you would try in an experiment and see how it comes out.

MILLER: Fine. That's what I was getting at. But I was thinking perhaps of a cutting operation that you ever issued the necessary instructions for, planning to do it a certain way because you wished to see if a certain thing happened, whether you learned things from that cutting operation and another cutting operation of the same type maybe ten years later. How your own particular point of view had changed.

HAWLEY: Well, in other words, your point of view might have, you might have decided that particular operation was no good. Other one was. Well, for example, I 'member one time somebody had a lot of small hemlock under a stand of oak.

These were planted trees, but they also were in the same area with stuff that had seeded in naturally, and some of this small hemlock seedlings, certain patches of 'em we left right the way they were under the oak cover. Others we cut that cover right down. And we found in that case that the hemlock just didn't get anywhere where the oak was left as a cover. So we decided that in trying to replace an oak stand with hemlock, the desirable thing for the water company, that we had got to carry out a pretty thorough cleaning of oak over the hemlock until they were well established to get 'em through. I don't know whether that really gives what you're after or not.

MILLER: No, I'm just--there wasn't really yes or no to it. I was just trying to get some example to illustrate some of the general things that you've been saying about--

HAWLEY: It seems to me you have these examples all over the country all the time where the fellows are doing certain things and most practicing foresters today keep enough records so that they can learn something from the--what really amounts to experiential efforts to get reproduction.

MILLER: Why don't we talk now for a little bit, if you will, about the organization of Connwood, Inc. in Connecticut?

HAWLEY: Well, several of us felt that there was a need there in southern Connecticut of a private organization to help people that were interested in doing something with their woods. One of the problems over the whole United States seems to be to get small owners to do something in their woods, so we organized a corporation and appointed directors and hired a manager and went out to sell service to woodland owners in Connecticut. And one type of service that we offered was selling the timber for them. We'd go in and estimate the timber that a man had on his place, advise him what ought to be sold; if he wants us to show him we'd sell it for him and charge our expenses when we gave him the balance. If he wanted general management advice as to his policy for handling his whole lands we'd make him up a plan for that. In other words, we were furnishing privately the service that to some extent anyway may be furnished by the county foresters systems or the state forester. They'd be termed differently in different states. And we've made the thing go for a number of years now, and the Connwood has certain corporations, like some of the water companies in Connecticut and Rhode Island, who look to us for annual advice and have the right to call on us any time they want to. We will get such things as planting stock for them, either tell them how to grow it themselves, where they can best buy it and so on, and that company has filled a need which we believed existed and still exists in many parts of the country. We are people that believe in what the private individual can do for himself, why, let him do it and don't have the government do it. And we've been successful enough in that we're still in business and operating, own some property, and I think it's a going thing. And a fella by the name of Sherman Perkins, young fellow, is the manager of it now, and he employed several other people, and they will go out either to you as an individual or to a company or a water

utility and furnish almost any service along the forestry line.

MILLER: About how many people are employed by Connwood now, altogether?

HAWLEY: Oh, not very many. Manager Sherman Perkins and-- whether he's got two or four permanent employees I'm not sure.

MILLER: But about that size.

HAWLEY: Well, it only operates in Connecticut and a little bit in Rhode Island, so it doesn't cover very much territory. But Perkins has been earning his living out of that company for a number of years now.

MILLER: Do you think this has an application to the small landowner problem in the United States, this type of an organization?

HAWLEY: I think it does. Yes. I think it--there's a demand for it, which wasn't fully well filled by the foresters working on the state forest problem. They have consulting foresters working on the state forest problem. They have consulting foresters that will go out on certain types of that work there in Connecticut, but they won't furnish all the services that Connwood does, particularly in the line of handling the sale of the timber and actual planting work on the properties.

MILLER: Do you know of many other such organizations around the country that have--

HAWLEY: No, I don't. I think Harry Gould--you know him at all?

MILLER: No, I don't.

HAWLEY: Well, he's a consulting forester, a graduate of Harvard, and sometimes I think he's been connected with the Harvard school, but I think he now runs a business somewhat along that line, a consulting forester. And of course there's the New England organization, New England Forestry-- what do they call it?--New England Forestry Foundation, I think, that operates in a somewhat similar fashion all through New England. There's one--and of course you can class all consulting foresters in much the same kind of a group as Connwood is in. This was just drawn up, established as a legal corporation, operating in Connecticut and in part of Rhode Island, you know, we don't try to cover other parts of the country.

MILLER: I'd like to ask you, if I might, about the establishment of the Division of Silviculture in the Society of American Foresters.

HAWLEY: Well, there is one established.

MILLER: No, that's what I wanted to ask you about. I mean just the events surrounding its creation. There were a lot of divisions of the SAF that were founded at the same time, and the whole division idea came in right about during the '40s, didn't it?

HAWLEY: Somewhere in there. Yeah. I can't give you the exact date.

MILLER: Yeah. But it's part of that same thing. Each of the areas of forestry, more or less, has a division in SAF, isn't that right?

HAWLEY: Well, the idea was, I didn't have anything in particular to do with it. I suppose Henry Clepper was the fellow that--I was on the council at one time, but whether that came up before the council, the years that I was on, I'm not sure. You see something wrong with it or--

MILLER: No.

HAWLEY: A use for it or not?

MILLER: Well no, I was just curious to know, because you wrote a little note saying objectives of the division of silviculture and since you were in on it from the ground floor I just thought I'd ask you about it.

HAWLEY: Well, let's see, when did I--

MILLER: 1944. I just wondered if the division--what kind of objectives the division of silviculture might have filled.

HAWLEY: Well, I didn't realize that I was very influential in getting that thing going, but I think the thing arose something in this fashion, that here we're having annual SAF meetings, and there's too much to talk about. You can't be everywhere at once and be up on everything, so why not have divisions made of the society of general interest so that people that want to talk silviculture can go off in this corner and talk it, and those who want to talk about range management will go over here and so all the way around the line. And to me that looks like a logical thing, and I think it enabled us in the annual meetings to talk more about many more subjects than we otherwise would have, and to the point. And so, when I was going to the annual meetings why I would make a point to attend the section meetings that I was particularly interested in and the meetings of the sections I wasn't particularly interested in why I might not be in any of their sections. So that I think that was a good idea. I don't think I can claim any great credit for doing much of the pulling it through. I may have been on the council at the time, but it certainly is a good idea, enables you to really get down to brass tacks at the annual meetings and giving a group of fellows that wants to talk about one name together and have papers that apply to the point. The general meeting now is just what it says, it's just a general meeting and covers the things that everybody might should be interested in and doesn't go into the specialties of any one subject.

MILLER: Do you think that especially since the war and since the specialization of the Society in these divisions that you could trace a greater progress--silvicultural progress from--

HAWLEY: Well, I would certainly think as far as the section of silviculture went that we probably had more papers and discussions at the annual meetings than we otherwise would have gotten in on the program. Now this I think is just in the fact that it brings together the specialists on one subject, enables you to talk more on that specialty and in terms that perhaps to the general run of foresters are not intelligible. I go into a forest products meeting, for example, and well, half the stuff they're talkin' about might be Greek to me.

MILLER: Still on the subject of the Society and so forth. you've always been very interested in matters of forestry

terminology, haven't you, during--

HAWLEY: Yes, I was--I think I was chairman of the original committee that started that study and also was chairman of the original committee of the--the forest type committee. And those studies were both of them originally started and then the revisions well worth while, I think, in both lines. As far as forest cover types went it went {Query Author} in a definite focus what the forest cover types were in the eastern and the western United States and made some kind of a systematic arrangement. And forest terminology, certainly, was pretty much of a, well, there was quite a lot of disagreement on the meaning of such terms as "woodland" in the beginning. We had considerable arguments in those committee meetings about accepting some of the definitions. I wasn't on the committee for the last revision, at least I wasn't active. I think Hare was the head of that.

MILLER: We were talking earlier about one of those terminology disputes in regard to selective cutting, and did that finally get ironed out to everybody's satisfaction in forestry terminology?

HAWLEY: Well, I think we got it lined up to the satisfaction of the fellows on the committee. Whether it satisfied everybody over the whole country I don't know. It comes back to this, what you were talking about before, that a lot of fellows are not interested in splitting hairs on many of these distinctions, and of course it depends on you especially, whether you are or not. For example, forest products to me deals with the products of the forest. Talk with an expert on forest products and he's gonna make about 20 or 30 more divisions, maybe and he will ask a question, if I was talking with him, on some of the words that I would use in talking to him, and the same way with silviculture, why lots of these fellows don't give a hoot whether the cutting they're making is best described as selective logging or an example of the selection system or partial cutting or something else.

MILLER: But if you don't agree on those terms it becomes difficult to tell another person what you're doing.

HAWLEY: Well, yes. That's why it's advisable to have a forest terminology set up. If I was dealing with some part of the subject I don't know anything about and I see a term, I want to know what it is. I look it up in forest terminology. I think it's extremely useful, but some of the classes of terms are perhaps more easily confused with one another and less easily separated definitely from one another than certain other classes of terms. You have to--you have to go back to the background of the systems I think and know what the four primary systems as I see it are: clearcutting, the use of scattered seed trees, shelterwood system, and selection. Now you could have such a thing as a selective cutting is a sort of a vast term, should be related to one of these other four systems. If you know what you did, what your plan of operation is over the rotation, you've got timber, here; you're growing timber. Now it's a forest crop, and what is the life of that forest crop? Rotation comes in, and if we have a forest crop on ten acres, it will be.

harvested one time whereas absolute clear cutting, if you get the ten acres so that never would all the trees be taken off, and trees of all ages will be left standing there, you've got, at all times, you've got a genuine selection cutting. If you're gonna have your timber harvested over a fixed period like a hundred years or a hundred and twenty years, whatever your rotation may be, by a series of partial cuttings, you've probably got shelterwood system. If all the old stuff goes off at a given time, well, that, in my opinion, is where too many of these fellas that get involved in this fancy term of selective cutting and so on, they don't realize what the intention is as to the length of time that land is gonna be used for that given crop or not.

MILLER: In the history of American silviculture do you think this was by and large true, that the people did not know what they really meant in terms of these basic operations?

HAWLEY: Yes, I do. I think they were very likely good foresters. They were not experts in silviculture, and these different terms meant nothing to them at all. There of course was some prejudice on the part of the Forest Service. I think, in the past that foresters, why, we can't allow any such things as a clear cutting, you know. Well that's ridiculous. And so we must outlaw clear cutting. We've got to go into selection cutting. And actually all the nations in the past all over the world found conditions where clear cutting is the right way to harvest their timber. And we know that's the best way now for such things as Douglas fir. It's better to grow it in even aged stands than it is to grow it in uneven aged stands. You may have a variety of clear-cutting methods. You can clear cut the whole area, you can cut it in blocks small enough so that seed blows in from the side, and you can get it very much smaller than that why you get into shelterwood or selection, depending all on the unit that you use as your area for your stand. If your area is a thousand acres and you're going to clear cut that and have seed blow in from the side, you can't cut the whole thousand acres in one year. You've got to do it over a long period of years and you get a selection group system. Possibly if the groups are small. If you get over the whole thousand acres, say, in fifty years, in all parts your cuttings are scattered through there, you probably used the shelterwood cutting. So that when they talk about these fellas not knowing much about silvicultural systems, they haven't thought the thing through, and they haven't got clearly in mind the difference between those whose fundamental systems of clearcutting, shelterwood selection, and {Query Author}. You hafta know the unit of land area that you're considering as a stand.

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