

# TIMBER-LINES



## THIRTY-YEAR CLUB REGION SIX U.S. FOREST SERVICE



SUPPLEMENT TO VOL. XVI

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"RECOLLECTIONS....." by Thornton T. Munger

T I M B E R L I N E S

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Contents

"Recollections of My Thirty-eight Years in the Forest Service, 1908-1946"

By Thornton T. Munger

Part 1 - In the District Office, Portland, 1908-1924

Part 2 - As Director of the Pacific Northwest Forest Experiment Station,  
1924-1938

Part 3 - As Chief of Forest Management Research, Portland, 1938-1946

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RECOLLECTIONS OF MY THIRTY-EIGHT YEARS IN THE FOREST SERVICE, 1908-1946

By Thornton T. Munger

Part I, In the Portland District Office, 1908-1924

I have persuaded myself to write down some account of my earlier Forest Service days, not for the edification of my grandchildren, but in the conviction that history of the birth and growth of forestry ought to be preserved, and that one way to do that was by recording some of the every-day doings of an every-day forester. Perhaps some of the contemporary readers of "Timberlines" will find this worth reading, as I have found several of the "autobiographies" by my friends already published.

In these annals there is nothing spectacular. I never was treed by a bear nor killed one with an ax. I never was threatened by the shotgun of irate squatters or timber trespassers. I was never surrounded by a forest fire. I have, however, the rather unique distinction of never being assigned to a national forest, always being in the headquarters of the District Office or Experiment Station in Portland. Throughout my 38 years I stuck to the Pacific Northwest.

My Forest Service career can be said to have started when I took the Forest Assistant examination at the Yale Forest School Camp in Alabama in April, 1908. Two days of seven hours each writing as fast as I could think - 29 foolscap pages the first day. Previously I had had a summer counting rings and making stem analyses of white birch in Maine at \$25 per month. Between undergraduate days and the Forest School, 9 months were spent in Europe, three of which were in Germany, Switzerland and Austria learning some forestry.

When I reported in Washington on July 1, 1908, for the going salary of \$1,000 a year, I expected to go at once to some romantic-sounding assignment in the "wild and woolly" west to make boundary examinations or to be a perhaps unwelcome technical assistant to a politically appointed Forest Supervisor, a holdover from the Land Office days. Instead Raphael Zon asked, or ordered me, to join his staff in the Office of Silvics (Research). He said that if I did not like it I could be transferred later to Administration.

I started unromantically working under an electric fan in the old Atlantic Building. For a first job I was told to write instructions for a cooperative study of Phenology, a subject entirely new to me. Then I had to rewrite a short manuscript on giant arborvitae, a species I had never seen, and put together material for other Silvical leaflets.

Eating dinner at the boarding house with sweat pouring off me, riding the open trolley cars in the evening to keep cool, and sleeping on a balcony under a sheet, or nothing, convinced me that I never wanted to make my home in Washington, a resolution I have kept.

I was preparing for a field study of ash in the middle west when a call came from Inspector W. H. B. Kent for someone to study the "encroachment of lodgepole pine on western yellow pine in Central Oregon". I was soon on the train for Portland where Chief Inspector E. T. Allen and two or three others had offices. The only one I saw when I reported was Shirley Buck, then clerk in the Inspectors' office.

Off for Central Oregon

The next day I started for the Deschutes country, via train to Shaniko and that night by 4-horse Concord stage to Prineville, 64 miles in 13-1/2 hours; thence an 18-hour run by 2-horse stage to Bend and Rosland. Arriving at Rosland after midnight, the stagedriver said he would find a bed for me in the hotel. After looking with a candle in a couple of rooms and finding them occupied, he spied an empty bed and said that was a good, clean bed, he knew "Bill Jones had slept there last night and he was O.K."

I bought a horse the next day for \$65 from Ranger Beach of the Cascade National Forest (now Willamette) which then came to the Deschutes River. For the next three months I roamed the country from Rosland (near the present Lapine) to Pelican Bay, mostly on horseback, trying to puzzle out the ecological relationship of lodgepole pine to western yellow pine (now ponderosa pine). \*

It has since struck me how audacious or naive it was for the Washington Office to assign a forest assistant with no experience, who had not even seen the two species before, to such a study that now would be assigned only to subject specialists with Ph.Ds.

Rosland then consisted of a store, hotel, stage and feed stables, the ranger's 2-room house and office (the former saloon), and a couple of residences. But it was the biggest town in 10,000 square miles. In a letter written while there in 1908, I said; "It is a hotbed of land squabbles, and the air is full of them. The Forest Service is more talked of than any other subject, and, though the people are very polite, some of them are awfully sore at the Service. Many of them have gotten claims fraudulently and got caught by the Service, or are trying to get timberland and claim that it is agricultural. Nearly everybody who passes through town is looking for a place to locate."

An interlude in my silvical study was occasioned by a wire from Washington to the Supervisor in Prineville telling me to make "a general notice sale examination" of the fire killed timber where a couple of months before a fire had raged over a reported 100,000 acres, east of the Paulina Mountains.

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\* "Replacement of Yellow Pine by Lodgepole Pine on the Pumice Soils of Central Oregon" by Thornton T. Munger; Proceedings of The Society of American Foresters, July, 1914.



Starting out from Seven Mile Ranger Station, Crater (now Rogue River) National Forest, 1908. R to l - Harold Foster, Sam Swenning, Ranger Steve Moore and his brother. The author took the picture; his saddle horse's head at extreme left.



Timber sale inspection, 1912. Assistant District Forester Fred Ames and Ranger John Riis on Crane Prairie (now under water) Deschutes National Forest; Maiden Peak in the background. Photo by author.

Ranger Petit and I with a 4-horse rig made it to camp on the burn in two days. Most of the way there was no road, but a wagon was necessary to haul our two whiskey barrels of water. In six days of criss-crossing the burn on foot and horseback, I found the area to be about one-eighth as large as reported - this didn't please the Supervisor. Of course, thought of sale of the timber was preposterous as there was no sawmill within 40 miles and such as there were had all the timber they wanted within a quarter-mile radius. But such was the lack of knowledge of local conditions in the far-away Washington office.

Meanwhile Chief Forester Pinchot had decided to decentralize the Forest Service and set up six district offices with a miniature Washington office in each. I was told to report in Portland on December 1, 1908. I rode from Klamath Falls to Medford, 75 miles on icy roads, in a day and a half, sold my companion of three months, and took the Southern Pacific train to Portland.

Public's Attitude toward Pinchot and Forest Service in 1909.

In a letter written in July, 1909, I wrote: "One sees Pinchot's name more than that of almost any other public man, except Taft, in these western papers and not entirely in a friendly connection. The Portland Oregonian is trying to keep alive the Pinchot-Ballinger disagreement and sides wholly against Pinchot. But there is a great deal of friendly feeling toward the Forest Service from all sides and most of the complaints come from disgruntled grafters, whom the Forest Service has very rightly opposed."

Pinchot was dismissed as Chief Forester in January, 1910, because he appealed to the public to do something to stop the patenting of illegal coal claims in Alaska by Secretary of the Interior Ballinger, since Secretary of Agriculture Wilson and President Taft would do nothing about it. This was considered "insubordination."

But Pinchot's influence continued to be felt through the warp and woof of the Forest Service led by men trained by him and very loyal to him. Policies and procedures he so wisely founded continued to vitalize the Forest Service; the form and language to be used in correspondence, the policy of de-centralized administration, the spirit of public service that pervades the personnel, the principle of conservation through use, the concept that a research unit is a necessity for progressive administration.

The District VI Office Is Established.

With some 25 or 30 people from Washington, and others recruited locally, the District VI (name changed to Region in 1930) was established in 37 rooms in the Beck Building (northwest corner of Oak and 7th, now Broadway). E. T. Allen was District Forester, Fred Ames, chief of Silviculture (name changed to Forest Management in 1920 and to Timber Management in 1935), and under him Julius Kummel and I had the one-man sections of Planting and Silvics respectively. Most of the crew were in their twenties.

It is an evidence of the vision, progressiveness and scientific spirit of the Forest Service that even under the pressure to take over the administration of a tremendous acreage of almost unknown and undeveloped public forests with a ridiculously small crew of very young men, research was not neglected. Coincident with the pressing problems of manning, developing and protecting the national forests, studies were carried on of growth and yield, silvical characteristics of the important species and methods of reforestation.

My first work was as a sort of technical roustabout. I organized and catalogued a library as a necessary foundation for any technical work. I looked into the causes of dying timber reported here and there. I answered questions the supervisors and the public asked on technical matters; wrote instructions for the field on various subjects.

In a swing through eastern and southern Oregon in the spring of 1909 (400 miles in horse stages and riding 8 different saddle horses), I put in two pairs of plots on small timber sales to test "no slash disposal vs. piling and burning", for that question was then in my mind, though not settled until the exhaustive study 22 years later.\* I also started a tiny nursery of 1700 wildlings of yellow pine at the Rosland Ranger Station thinking that this pumice country would need some planting; also tried some direct seeding there. In this circuit I talked up forestry at seven supervisors' offices.

The First Growth and Yield Study of Douglas Fir.

Believing that the most important thing to know about the Douglas fir region was the rate of growth of its forests, on July 1, 1909, six of us went into the field - Dean Frank Miller of the new University of Washington Forest School, four student assistants and myself. After a couple of weeks of measuring even-aged stands of Douglas fir near Portland, we split up into two field crews. Dean Miller took Washington and I, Oregon. We measured trees and stands up to about 125 years old wherever we could get to them by logging trains, horse stages or walking. We moved often and boarded at farmhouses, logging camps and country hotels, sometimes putting up our tent when there was not room inside. A walk of three or four miles to work was thought nothing of.

The study was resumed in 1911 with Ed Hanzlik in charge of one of the field crews. The results \*\* gave the first convincing evidence that Douglas fir forests grew at an astonishing rate, but the industry took little cognizance thereof for many years.

\* "Slash Disposal in the Western Yellow Pine Forests of Oregon and Washington" by Thornton T. Munger and R. H. Westveld: USDA Tech. Bull. 259: 1931.

\*\* "The Growth and Management of Douglas Fir in the Pacific Northwest" by Thornton T. Munger: Forest Service Circular 175: 1911.



Reconnoitering on horseback for  
a cruising project in June, 1914.  
Crater (now Winema) National  
Forest.



They cut high stumps in  
those days! The author  
climbs up on one in 1910.



A growth study crew in  
camp, 1911. L to r -  
Russel Watson, Harold  
Barbur and Thornton  
Munger.

In the spring of 1910 I established three permanent sample plots on the south side of the Middle Fork Willamette River in a beautiful 54-year old stand. These were, I believe, the first growth plots of this nature to be established in the west. They have been measured periodically ever since (several times by myself) and yielded most definitive information on the productivity of such Douglas fir second-growth.

First Growth Study of Western Yellow Pine.

In 1910 the Section of Silvics turned its attention to the growth of western yellow pine (now ponderosa pine), and two three-man crews were in the field all summer under Dean Hugo Winkenwerder in the Klamath region and George Bright in the Blue Mountains. I worked with both crews. In the course of the summer, when in the Blue Mountains with Bright's party, I wanted to visit Winkenwerder at Fort Klamath. Rather than take the trains from Austin to Baker, to Portland, to Weed, to Klamath Falls and thence by boat up Klamath Lake, I decided it quicker and cheaper to go by stage and private conveyance across the state. By horse stage I got as far as Crescent, except for one 50-mile gap I hired a team and driver, and one short auto lift. But there was no stage from Crescent south; I thought to hitch-hike, but in the one and a half days I waited at Crescent only one automobile went through and he wouldn't take me. So I ended up by borrowing a horse and saddle and riding to Klamath. Such were the problems of transportation in those days. This pine growth study was continued in 1911 and later expanded to cover the silvicultural aspects of pine management. \*

In 1913 I was in on the establishment of three 15-acre Methods of Cutting plots on the Whitman National Forest, the first of a large series of plots to study the silviculture of western yellow pine. These were laid out by T. J. Starker, E. H. MacDaniels and others to show the effects of leaving a 15%, 25% and 35% reserved stand. These plots have been examined periodically ever since. Parenthetically, Starker and I revisited these Whitman plots in 1959 and wrote a story about them for "The Timberman".

Volume Tables.

There being no reliable volume tables for even the major species, a feature of the above studies in Douglas fir and pine was the preparation of regional volume tables. Later, with the help of forest assistants on the national forests, we made standard tables of other species, hoping to replace the many "local" volume tables made by cruisers for a special job based on just a few trees. \*\*

\* "Western Yellow Pine in Oregon", USDA Professional Paper 418, by Thornton T. Munger; 1917.

\*\* "The Problem of Making Volume Tables for Use on the National Forests" by Thornton T. Munger; Jour. of Forestry, May, 1917.

When I was exploring for areas where cedar that we might measure was being cut, I asked a logging foreman about the character of his cedar; was it large or small? He said the trees were about 14 feet in diameter! I thought he was kidding. But when I went up into the felling there were several trees 12 to 14 feet across the stump, but they were no good for stem analysis, being hollow and too odd-shaped for volume table preparation.

Sand-dune Planting, Direct Seeding, Private Forest Practices at Coos Bay.  
A four weeks circuit in the spring of 1910 started with a voyage on the steamer, Ramona, from Portland to Coos Bay. Near Marshfield (now Coos Bay), I went over the logging operations of the C. A. Smith Lumber Company with their forester, John Lafon, who was trying to install some pioneering good forest practices.

On the sand-dunes between Coos Bay and Florence I put in some planting experiments with maritime pine, Scotch broom, willows, etc., to test the practicability of revegetating at least the inter-dunal areas. Transportation between these points was then by horse stage on the beach at the lowest tide, or, as I did a time or two, on foot, with shoes off, walking on the wet sand at the water's edge.

From the sand-dunes I went over some of the backwoods of the Siuslaw National Forest looking at the results of the recent direct seeding in the deforested fern patches. Seeing something of the problem in the administration of the Forest Homestead Act of June 11, 1906, I wrote a memo on the situation. The ranger at Florence then had a boat, for the only way of getting into the interior was by the river.

#### Avalanches.

An avalanche at Wellington, Washington, in the spring of 1910 buried 100 passengers of two Great Northern Railroad trains. That called for a study of the relation of deforestation to avalanches, so I spent some time that summer prowling around the slideways of recent snowslides on both the Snoqualmie and Wenatchee National Forests. I made the important distinction between "slope slides" and "canyon slides", the Wellington avalanche being of the former class and very definitely the result of the burning over of the hillside above the stalled trains. \*

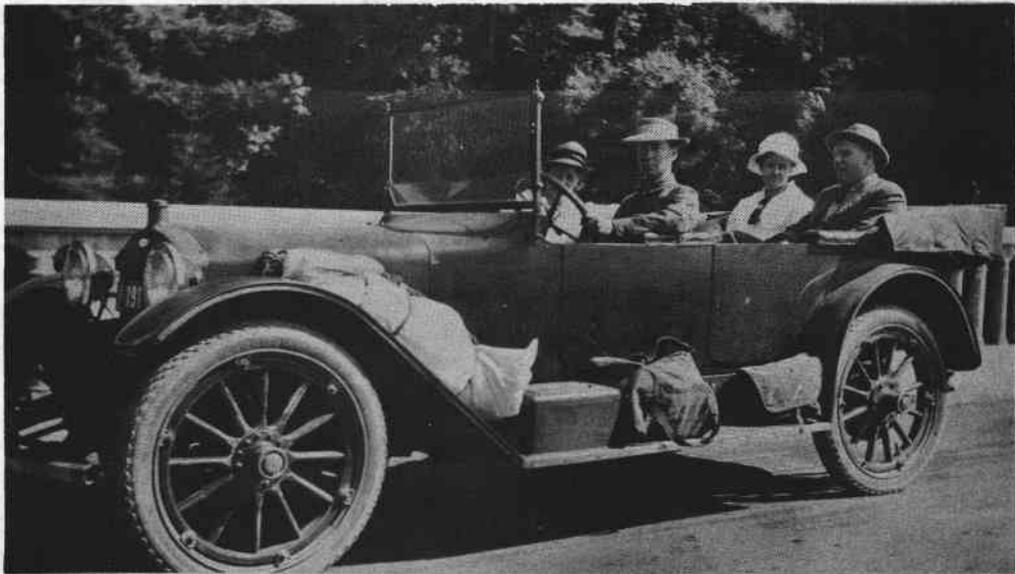
#### Incidental Fire Fighting.

Though forest protection always had first priority, the organization was so meagre in guards, lookouts and equipment, and often the "attack" so casual that it is a wonder more of the country was not burned up. I, like all forest officers then and now, had a taste of unexpected fire fighting now and then. As an example: When in Central Oregon in 1908, I ran

\* "Avalanches and Forest Cover in the Northern Cascades", Forest Service Circular 173 by Thornton T. Munger, 1911.



A group on the steps of the \$650 combined office and residence of the Wind River Experiment Station during Raphael Zon's inspection in 1914. L to r - Raphael Zon, Thornton Munger, Julius Kummel, Helen Freeman, Viv Brown, Julius Hofman and Charles Kraebel.



En route to Larch Mountain, via Multnomah Falls, in the 1915 Hupmobile to watch the USC&G Survey doing triangulating at night. L to r - Mrs. Munger, Thornton Munger, Mrs. Allen Hodgson and Fred Matz; Allen Hodgson took the picture.

across a fire two miles from Crescent that had been burning for some time. The next afternoon I got a shovel and, as my diary states, "fixed all the dangerous places by removing the logs and needles and throwing sand on the vigorous fires and in three or four hours had it in such shape that it will cause no more trouble, I think. The nearest ranger is 21 miles from here, so I felt authorized to take time off from silvical work."

In 1909 when on the Douglas fir growth study, I discovered a 160-acre fire on the Umpqua National Forest on a bad brushy mountain side. I walked 15 miles (round trip) to notify the ranger, who was not at home. Next day our crew of three went to work on the fire, the ranger rode 20 miles to get to it and together we surrounded it with a line. That evening I rode horseback several miles to inform the state fire warden of this fire that was on railroad land under his supervision. Then to sleep in the hay in a barn to the tune of cow bells, goat bells, sheep bells and horses munching their hay. After these two strenuous days I wrote, in a letter, that I wished - "Senator Heyburn could be with me even for part of a day to disprove his statement that 'Forest Officers sit around hotel verandas in their gay green uniforms all summer'."

At another time District Forester Chapman, Raphael Zon of the Washington Office and I ran across a brisk fire on the Whitman National Forest which we controlled by makeshift means, but I doubt that it was ever reported or got into the records. But, in spite of inadequate facilities and only strong-back methods, the Forest Service got on top of the fire problem surprisingly quickly - except for the disastrous year 1910.

#### Wind River Experiment Station Started.

Three of the other Districts had Experiment Stations by 1911, so D-6 followed suit. It was placed at Wind River on the Columbia (now Gifford Pinchot) National Forest beside the Nursery, largely because it was then thought by some that most of the problems that an Experiment Station might settle were in connection with artificial reforestation. An office-residence was needed; the statutory limit on any building was then \$650 and that was reached before the plumbing fixtures were acquired. So Julius Kummel paid for the toilet and I for the bathtub. A small greenhouse was built at about the same time, mostly by contributed time of a few of us. It was intended mostly for germination tests.

Odds and ends of exotic trees were planted in the stump land adjoining the Nursery in 1912 and this was the beginning of the Wind River Arboretum, which was considered to be a desirable adjunct of a research agency. To this Arboretum I devoted considerable time up to the time of my retirement.\*

\* "The Wind River Arboretum from 1912 to 1937" Mimeo. by Thornton T. Munger and Ernest L. Kolbe. 1937.

"The Wind River Arboretum from 1937 to 1946" Mimeo. by Thornton T. Munger. 1947.

C. P. Willis was in charge at Wind River for a while and did notable work on nursery practice problems. In 1912 the heredity study of Douglas fir was launched, initially to see if conky trees made good parents. Seed of 120 trees was gathered and the progeny planted on four widely separated national forests. Observations are still being continued. \*

In 1913, after interviewing J. V. Hofmann at the Priest River Experimental Forest, he was put in charge at Wind River where he remained until the spring of 1924. Appropriations were meagre - \$5,614 for 1916, for example, but a lot of productive studies were made.

Beginning in 1919 the supervision of the research program was directed from Washington, D.C.; the local Section of Silvics was discontinued. My work thereafter was largely as Fred Ames' understudy as Assistant Chief of the Office of Silviculture. I spent much time in the field, on timber sale inspection, visiting the reconnaissance parties and sometimes on trespass cases.

#### Extensive and Intensive Reconnaissance.

To get quickly an inventory of the National Forests, the "extensive reconnaissance" project was started in 1909. On every Forest, the Forest Assistant or somebody else was assigned to the job of type-mapping and ocularly estimating timber volumes. On some Forests the task was done in a year; on others several seasons were spent. My only activity on this extensive reconnaissance was on Malheur National Forest, where with Herbert Miles, fresh from Harvard, yet wearing purple chaps, I type-mapped and cruised the east end of the Forest in June, 1911. This was partly to fill a request of the Eastern Oregon Land Company, which owned a checkerboard swath through the Forest, for information on the health of this timber and advise as to what to do with it. I worked horseback running lines one day and on foot the next to rest up the horse.

Before the extensive reconnaissance was finished for all Forests, "intensive reconnaissance" projects were begun, i.e. intensive cruising and mapping on a scale of 4 inches to the mile. Crews were made up by leaders from the District Office, supplemented by local forest officers and students. These projects paved the way for an expanded program of timber sales. For over 10 years I visited most of these projects in the field, helped lay out the job, instructed new men in running lines, using an Abney, Biltmore stick, etc.

One trip in 1914 illustrates how things had to be done in those days. In late May project leader Robert Craig finished an intensive reconnaissance

\* "Vital Statistics for Some Douglas Fir Plantations" by Thornton T. Munger, Journal of Forestry, January, 1943.  
"Growth of Douglas Fir Trees of Known Seed Source", USDA Tech. Bull. 537 by Thornton T. Munger and William G. Morris, 1936.

project on Salt Creek (Cascade, now Willamette National Forest) near Oakridge, where I joined the party. His next project was in the "panhandle" of the Crater (now Rogue River National Forest) east of Crater Lake. In the move the crew of five or six walked, their equipment on four pack horses, across the Cascades to Crescent in two days. I hired a horse at Flat Creek so rode ahead and engaged a 4-horse rig to take the outfit the rest of the way. In two more days, the last part through almost trackless pine forest, we reached a camping spot where Cabin Creek sinks into the pumice soil. Craig and I then spent several days horseback scouting out this project in beautiful pine timber, which was soon included in a sale to the Pelican Bay Lumber Company.

In the early 1920's a Model T Ford was purchased to facilitate transporting a reconnaissance crew. This was the first passenger car to be purchased by the Forest in this District. There being no way to license it, I designed and had made at a sign shop two identification plates. Soon thereafter the government bought many official cars.

In 1915 Julius Kummel and I bought for ourselves a Hupmobile, which was much used to take official visitors about at 5¢ per mile.

Another "first" that I had a part in was the purchase in 1909 or 1910 of the first adding machine in the District Office, a Dalton, for use mostly by Silviculture's computing clerk, Erma Bell, who checked all the scale books used throughout the District - up to that time by mental addition.

#### Bachelor Household and Busy Days.

For several years, five or so of us foresters batched together in three different houses. The group changed with transfers of personnel, but Julius Kummel and I were the mainstay throughout until our marriages in 1916. This house was quite a headquarters for visiting forest officers, both for dinner and for the night. The Society of American Foresters met there for a time. Until after 1915 it was six full days of work, no Saturday half-holidays, except in summer. In the field very commonly work on Sundays, too. My field diary frequently states "breakfast at six" and "back to camp at 7 PM". But we loved it.

With the completion of the New Post Office at Glisan and Broadway in 1916, we moved into much expanded quarters.

The District Office was very small in the 1910's by present day standards; there were relatively few transactions, little money to spend, a minimum of paper work. Several of the present day Divisions were not in existence then. There was no separate office of Personnel, but perhaps the very best kind of personnel management was when one of us from the Portland Office rode horseback with a ranger all day, stayed overnight in his log cabin ranger station, played with his kids and really got acquainted with him. Such contacts made friendships that were close and lasting.

Lecturing.

The College of Forestry of the University of Washington began in the winter of 1911 a short course especially for forest rangers. The Forest Service was glad to cooperate thus in their training, and I, along with others from the District Office, gave courses of lectures there for several years. Likewise, similar lecturing was done at the Forestry School at Oregon State College. And we young foresters were quite in demand for talks before various groups which were curious to know what forestry was all about. In 1916, on leave from my job, I gave a 5-weeks course at the Yale Forest School on national forest administration.

Contrasting Modes of Transportation.

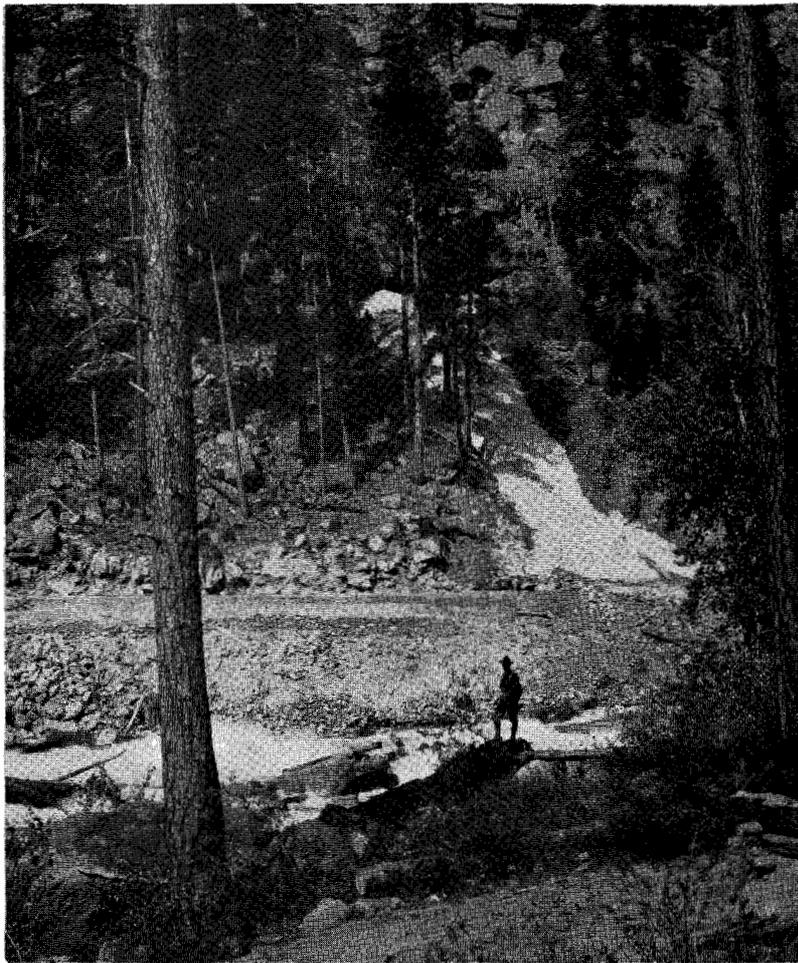
An outbreak of mountain pine barkbeetle in the Blue Mountains in 1910 triggered the first attempt at forest insect control in this region. I went to Baker and thence, my diary states, in automobiles went to North Power with a party of 20 lumbermen, Forest Service and Bureau of Entomology men. Near North Power we "spent two or three hours looking in woods for insects" and then drove back to Baker "27 miles in 1 hour and 45 minutes, with 1/4 hour out for a puncture." This was my first official automobile travel.

That same year when I was on one of my many trips to Wind River, T. P. Mackenzie, Chief of the Office of Grazing, asked me to bring his saddle horse to Portland. I rode Rondo to the boat landing near Carson, a cut-bank sandbar, and when the stern-wheeler came alongside the captain said, "We're late; no time to load horses. Pick you up tomorrow." So, rather than wait a day on the Columbia River's bank, I rode on a then partly grass covered wagon track into Portland in a day and a half, spending the night at a house where I asked for accommodations for myself and the horse, which I got without cost.

I had many 12-hour horse stage trips and that meant going only 50 or 60 miles. Once I horse-staged from Shaniko to Klamath Falls via Prineville, Bend, Silver Lake and Lakeview. One stretch of 100 miles in 22 hours, broken only to change horses and get a meal, was from Silver Lake to Lakeview. My diary says - "reach Summer Lake at midnight and have fine lunch there . . . arrive at Paisley about 6 AM and have bum breakfast."

In the horse country long days were spent in the saddle, even running section lines horseback. One season I counted that I had ridden 18 rented horses and sat in as *many* different saddles. West of the Cascades it was shank's mare for transportation mostly, and hikes of 20 or 25 miles a day were commonplace.

A three weeks' trip in 1912 to the Okanogan and Colville Forests stands out in my memory. Arriving in Wenatchee by train I got aboard a Columbia River steamer in the late evening and at dawn we pushed off up the river and bucked the current with the stern-wheeler all day. At one or two rapids the deck hand took a line ashore and with the capstan the boat pulled itself through to quieter waters. After a night in Brewster a horse stage took me in five and a half hours to Okanogan. Supervisor Hale and I inspected the work of the reconnaissance crew and worked with them for a few days, travelling on horseback and on foot.



The remnant, in late summer,  
of one of the many avalanches  
mapped in the study following  
the disastrous Wellington  
"slope slide" of March, 1910.

Establishing the first perma-  
nent growth plot in the west,  
April, 1910, in a 54-year old  
Douglas fir stand near the  
Middle Fork, Willamette River,  
the author with the calipers.  
This sample acre is still be-  
ing re-measured periodically.



86676

On Buck's Peak the lookout demonstrated heliographing to other lookouts, this being an innovation. Vernon Harpham picked us up in his auto for a ride back to town, another novelty.

From Okanogan to Republic was a 24-hour trip on a mixed freight train. With Fred Cleator I visited the reconnaissance party and inspected railroad cross-tie and cedar pole sales, then very active on the Colville National Forest. We travelled back and forth on the Great Northern Railroad tracks by Forest Service speeder.

Train, boat, stage, shank's mare were used to get to the Olympic country. A trip to inspect the reconnaissance crew on the Olympic National Forest in 1914 was very pleasant, but rather time-consuming. I took the train from Portland to Seattle, boarded the steamer Bellingham at midnight for Clallam Bay, where I arrived at 8:15 PM the next day and left at once by auto stage for Forks, arriving after midnight. The next day I walked 15 miles to Ed Hanzlik's camp, fording the Bogachiel River a couple of times.

#### Pelican Bay on the Crater National Forest.

The study of decay in white fir being conducted by Dr. Meinecke and Arthur Kerr took me to the Crater (now Rogue River) National Forest in 1912. While there I put in some permanent plots near Pelican Bay for the study of light selection, heavy selection and group selection cutting in those beautiful pine stands. During this work, and on many other trips to that active center of timber sales, I stayed at the Odessa Ranger Station, where an attempt had been made to build a house with four bedrooms, an office, kitchen, etc. for \$650. Twelve inch rough green boards were used for flooring. Ranger Neff, being something of a wag, requisitioned a lawn mower of Supervisor Martin Erickson though there was no lawn within 30 miles. When asked to explain the need, Neff said he needed the mower "to cut the weeds coming up through the cracks in the office floor."

On this same month-long trip I visited reconnaissance crews, inspected the Page Creek Nursery and checked plantations on the Siskiyou, Umpqua and Siuslaw Forests.

#### Appraising Oregon Caves.

When the people of Grants Pass clamored for the Forest Service to do something about caring for the Oregon Caves, District Forester Cecil sent me down to look at them, since I had visited several other well-known caves. With Melvin Lewis in May, 1917, I rode horseback over to the Caves from Page Creek Ranger Station, the last part of the way in old snow. We tied our horses to trees, made camp and after supper with Dick Rowley, a chief explorer of these "Marble Halls", went through the Caves. I reported so favorably to the District Forester that the Forest Service soon started protection and development of what has since become a great tourist attraction and taken over by the National Park Service.

Ranger Lewis related to me how these remarkable caves narrowly missed being lost to the public. Early in 1907 Ranger Lewis got wind of the fact

that a couple of parties contemplated filing limestone mining claims on the area over the caves. He at once told Supervisor M. J. Anderson who had the area withdrawn as a National Monument, but still a part of the National Forest.

#### Land Policies.

The Forest Homestead Act of June 11, 1906, opened the way for land hungry folks to apply for any scrap of land that was level enough or had soil enough to be considered agricultural. At one time there were 1,100 applications for forest homesteads on the Siuslaw Forest alone, many of them having only a ribbon of bench land along a little creek. District Office policy was then rather liberal in approving such homestead applications, but Ames and I in the Office of Silviculture quite commonly initialed such homestead applications with a circle, meaning disapproval, when the papers went the rounds of the Assistant District Foresters.

Likewise a controversy in basic land policy smoldered for years over the lodgepole and juniper lands of Central Oregon. District policy, and also Washington policy, was for throwing out of the national forests areas of low timber value, in order to appease a certain clamor that was, they thought, threatening the very existence of the whole national forest system. So in Colonel Graves' administration, in spite of the opposition of the Office of Silviculture, but at the insistence of the Office of Lands under C. J. Buck, a big area of juniper woodland and lodgepole pine forest, with some fingers of nice ponderosa pine, was in 1915 thrown out of the national forests. At this time the Paulina National Forest, with headquarters at Crescent, which embraced much of the controversial area, was discontinued. Time has proven the un-wisdom of this over-liberal land policy in the 1910's.

#### Inspection of Siskiyou National Forest in 1918.

In this epoch a trip that sticks in my mind was a three weeks' inspection of the Siskiyou National Forest with Supervisor Nelson Macduff, who was then much discouraged by the incendiarism and antagonism of the backwoods settlers. My wife, of less than a year's standing, accompanied us. In Ranger DeWitt's personal Model T Ford, we drove from Grants Pass to Crescent City, California, and then by an indescribable road to Gold Beach. At Brookings I inspected the O & C Lumber Company's timber sale. They were buying national forest stumpage for 75¢ per M feet and going broke. (Too bad it was sold and cut then.)

At Gold Beach our Ford turned back and we took the mail boat to Agness, a full day's journey. That evening we walked to Illahe, and the next day to Powers 25 or 30 miles, on an up and down trail. We had horses for the lady and the baggage. Near Powers was a timber sale to the C. A. Smith Lumber Company, which Macduff and I went over.

#### First World War and Airplane Spruce Problems.

When Fred Ames left for France with the 20th Engineers, the Washington Office listed me as "an essential employee of the Government" and directed that in filling out my questionnaire I "claim deferred classification under Class 3, Division 1." I was then made Acting Chief of the Office of Silviculture and continued so for a couple of years.

Our special activity to help the war effort was to stimulate the production of spruce for airplane use. First we made an inventory of the supply and location of virgin spruce stumpage. Twenty people were employed on that at one time. The national forest spruce was mostly inaccessible; but we made a lot of sales, chiefly in Alaska and on the Olympic National Forest. Some of the material cut on the Olympic had to be riven into straight-grained cants and hauled by horses 30 miles to shipping point. Our office was looked to for all sorts of information that might speed up the war effort. We tried hard to help the Signal Corps of the U. S. Engineers in their initial attempt to run a lumber production enterprise at their cut-up plant at Vancouver, Washington.

#### Minimum Requirements Study.

When federal legislation to compel good forest practices was being agitated, a series of "minimum requirements" monographs was projected. I was assigned to write the one for the Douglas fir region. \* To prepare for this and acquaint myself with existing practices and get the point of view of private operators, I visited, usually with the local logging superintendent, a number of major operations in western Washington and Oregon. This was very instructive for me, since most of my field work had hitherto been on the National Forests.

#### A Pre-View of Pinchot's Dismissal.

During the height, and heat, of the Pinchot-Ballinger controversy \*\*, I had a memorable experience. On a Christmas vacation trip East I was visiting in Washington my sister and her husband, Philip P. Wells, a Yale classmate and close friend of Gifford Pinchot.

On January 7, 1910, Chief Forester Pinchot was invited to a family dinner at their house. He arrived a little late and, now quoting from my diary, "He greeted the company very graciously and cordially took a seat by Eleanor (Mrs. Wells) on the lounge. He had two envelopes, one opened, the other not, which had been given him by a messenger on leaving his house. Soon after seating himself he said very cheerfully - 'This tells me I've been bounced. Excuse me if I try to find the reason.'

"After reading himself the two-page letter he said - 'Possibly you may care to hear what it says', and proceeded to read the letter from President Taft.

\* "Timber Growing and Logging Practice in the Douglas Fir Region" by Thornton T. Munger: USDA Bull. 1493. 1927.

\*\* The "Pinchot-Ballinger controversy" started early in President Taft's administration when Pinchot called attention to the several anti-conservation acts of Secretary of the Interior Ballinger, most notable his recommending for patent the illegal Cunningham coal claims in Alaska. Effort of Pinchot to get Secretary of Agriculture Wilson to persuade the administration to check the Interior Department having failed, Pinchot appealed to the public. Specifically he wrote a letter to Senator Dolliver (requested by the latter) explaining the situation. This was considered insubordination, so Pinchot was "fired". Ballinger resigned within a year.

After reading this letter he opened that from the Secretary of Agriculture dismissing him, and read it aloud at the first reading. He showed great pleasure at having Potter named his successor . . . . . During dinner all thoughts were on the matter and Mr. Pinchot referred to it but always in the most cheerful vein. He said his only regret was for the others whose positions his dismissal might affect.

"When asked why he wrote the letter to Senator Dolliver, he stated that they were twofold -

1. To clear Price and Shaw;
2. To enable him to have a voice while he was needed, as he expected that if he kept quiet it would have been only a matter of a few months that he could stay."

Still quoting from my diary, written late that memorable evening - "During dinner he went to the 'phone repeatedly, calling Amos Pinchot, Hill, Shaw, and was going to call Price but Phil (Wells) suggested waiting, and G. P. said, 'Much better, let him get a good night's sleep first.'

"G. P. was much affected by what little Elizabeth whispered to her mother, who repeated it, 'Lewis is crying about Mr. Pinchot.' When Lewis (a 12 year old) came in later, G. P. put his arm about him and said very cheerfully, 'I'm all right. I'm just as happy as a clam.'"

The next morning at the old Atlantic Building Mr. Pinchot assembled all of us Forest Service people and bid us "Good-bye" saying, "Stick to the Forest Service".

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Part 2, As Director of the Pacific Northwest Forest Experiment Station  
1924-1938

Start of the Regional Forest Experiment Station \*

In 1924 Congress made possible a regional forest experiment station in the Pacific Northwest to replace the local Wind River Experiment Station. Much to my surprise, District Forester Cecil asked me if I would like to be its director. I was happy in Silviculture (now Timber Management) under Fred Ames, but I accepted this pioneering opportunity at a salary of \$3900. So the Pacific Northwest Forest Experiment Station was born on July 1, 1924.

Assistant Forester Clapp, believing in having the experiment stations, like the Madison Laboratory, affiliated with a university, invited cooperation from local institutions, but, much to my satisfaction, none was proffered. On Clapp's principle that the experiment stations should be physically, as well as administratively, separate from the district offices, we rented four little rooms in the Lewis Building, a half-mile from the District Forester's offices.

We had an allotment for the year of \$26,000. Our crew consisted of Miss June Wertz (whom we "stole" from the District Office); A. G. Simson, resident officer at Wind River; Leo A. Isaac, recently forest assistant at Wind River; R. E. McArdle, fresh from the University of Michigan; and a stenographer and myself.

Initially, the pine country of Central Idaho was assigned to our Station since it so closely resembled the Blue Mountains of Oregon. Isaac and I made an exploratory trip through there in the fall of 1924 with Assistant Forester Chet Morse of D-4, but that District decided they wanted to have their own experiment station and not be appended to the Pacific Northwest Station. So the matter was dropped and our territory limited to Oregon, Washington and Alaska.

Growth and Yield of Douglas Fir

Our first project was a resumption of the 1909-1911 study of the yield of Douglas fir. I quote from a reminiscent letter of McArdle's about the start of this project. "Thornton Munger, as I was later to learn more fully, was not a man to waste time. On July 3 he took me to Yacolt, Washington, to select a place to begin work on the yield study, and on July 4 (which, heretofore, I had thought was a holiday, but that was before I began working for the Forest Service) he moved me and my crew in his personal car to Yacolt. We spent that afternoon measuring sample plots."

\* At the Station I initiated early the writing by Miss Wertz, McArdle and myself of the informal annals of each year, to supplement the formal annual reports to the Washington Office. These were kept up for some years and will trace for those interested in detail the year by year comings and goings of personnel, the expansion of activities, the finances, the publications, etc.

Silvicultural, Reforestation and Heredity Studies

In addition to growth and yield studies, silvicultural, reforestation and heredity studies were major activities at the Station from the start, some of them being carried over from the program of the Wind River Experiment Station. Isaac's work on Douglas fir silvics formed the basis for practices that have since been adopted, though modified with changing conditions from time to time. His ingenious tests to measure seed flight and seed crops were very enlightening and attracted wide attention. Col. Greeley said these silvical studies were "the building blocks in the foundation of silviculture for the Douglas fir region."

The Station grew. R. H. Westvelt came in 1925 and devoted his time mostly to growth, regeneration and slash disposal studies in the western yellow pine (now ponderosa pine) region. Besides well executed studies of advance and subsequent reproduction under all sorts of conditions of slash and shade, he had a part in putting in during 1927 nine new permanent methods of cutting plots. A series of inter-regional marking conferences, which we sparked, focused attention on the conclusions we were reaching about lighter marking and less slash burning. Westvelt was succeeded in these pine studies by Ernest Kolbe in 1928.

The Douglas fir heredity study, started in 1912, came in for periodic measurements, in several of which I took part. (See citation in Part 1) In 1926 we started a study of the regional races of western yellow pine by growing stock from seed collected in ten widely scattered locations, and out-planting it in six situations. Three of these were in cooperation with Oregon State College, the University of Washington and Washington State College. I have followed these with a good deal of interest. \*

Mensuration

Dr. Walter H. Meyer, an expert mensurationist, took on the growth and yield studies in 1926. He first expanded McArdle's studies of 1924-25 in Douglas fir by applying the normal yield tables to actual stands. He then turned his attention to the pine region for a couple of seasons, and then to the spruce-hemlock type. As a result notable growth and yield monographs were produced for these types and published as government bulletins. After Meyer's departure for a professorship at the University of Washington, the Station had no replacement mensurationist for a while.

Field Work Interspersed the Office Routine and Writing Jobs

With few administrative duties, a minimum of red tape and far less conferences and meetings than later took my time, I was able in the period from 1924 to 1930 to spend a lot of time in the woods doing the actual work of a research forester. I enjoyed many field days with McArdle, Isaac, Westveld, Kolbe and Meyer counting seedings, mapping ground cover, measuring stands.

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\* "Progress Report on a Study of the Regional Races of Ponderosa Pine"  
by Thornton T. Munger: Mimeo. April, 1941.

Enjoyable features of each season were the visits of forestry school classes to the experimental forests. For many years we always had a class from Oregon State College, sometimes from the University of Washington; one year, I recall, we had at Wind River groups from five different schools for "show-me" trips. This was the best possible way to disseminate the results of research and instruct in research methods. Commonly either Isaac or I, or both of us, conducted the boys and their professors for a day or two over our experimental plots.

There were, of course, many other "show-me" trips on the experimental forests beside the forestry school groups - all the way from Society of American Foresters meetings to Congressional delegations. We took around a great many visiting foresters from other districts, from the East and from abroad. At one time it was considered that Wind River had more visitation from technical foresters than any other forest in the country.

#### Silvical Reconnaissance in Alaska

Alaska was a part of District 6 until 1921 but our responsibility for research continued. When, in 1927, it seemed probable that there would soon be some big pulp timber sales on the Tongass National Forest, I was told to explore the silvical problems of Southeastern Alaska and suggest methods of cutting that should be employed. I had about six weeks there that summer, mostly in company of Ray Taylor, Charles Flory and other forest officers. I saw the principal logging areas from Ketchikan to Juneau and Sitka, especially Prince of Wales Island. I enjoyed that summer living on the Forest Service boats, but not the land work in devil's club, salmonberry and other prickly wet brush, laced with moss-covered decaying logs. I wrote a lengthy report on the boat coming back to Seattle recommending various research projects that should be undertaken, and venturing some suggestions as to methods of silviculture to be employed in these spruce-hemlock forests. It was some years before the big timber sales materialized and, meanwhile, Alaska, Region 10, took up its own research.

#### The Wind River Arboretum

From the time the Wind River Arboretum was started in 1912, it interested me greatly. The testing of exotic trees is an important aspect of research forestry. Each April, after 1924, for a number of years we had a "planting bee" there of Isaac or Kolbe, or others of the staff, as well as myself.

#### Fire Studies

Fire research was one of the fields in which the Station pioneered. This work was first centered at Wind River with Simson's study of weather and relative humidity, and the relationship of atmospheric static to the probability of lightning storms.

Beginning in the late 1920's McArdle did notable work on the causes and behavior of fires. He devised some inexpensive weather instruments that could be supplied cheaply to all lookouts and ranger stations to measure fire danger. He arranged to equip lookouts with more effective smoked glasses. He used smoke bombs to test the efficiency of lookouts. After he

left us in 1934 to become Dean of Forestry at the University of Idaho (though he had been gone three winters getting his Ph.D. at Michigan), Don Matthews and Bill Morris carried on in fire research and contributed much. The study of Douglas fir slash, \* begun by McArdle, is an illustration of the many fruitful projects in this field.

Snag falling techniques came in for considerable study when compulsory falling of snags was being agitated. The Station conducted tests with explosives, of burning them down in various ways, as well as falling them by conventional methods.\*\* \*\*\*

#### Thinning and Pruning

A number of thinning experiments were put in on the experimental forests, some dating back to Hofman's work in 1912 at Wind River. The "spacing test plantations", originated by Isaac in 1925, attracted much attention. With the advent of the CCC boys labor became available and thinning and pruning, both experimental and extensive, were much expanded. When high pruning was being tried, I proposed a "multiple-spur climber" which would not puncture the sapwood as the single spur did. Under the supervision of Ted Flynn at the Engineering Laboratory, a few pairs were made and used by CCC boys quite successfully. My invention was patented in the name of the Government, but so far these multiple-spur climbers have not been used much, perhaps because there is so little pruning above pole-saw length.

#### Forest Survey Started in 1929

Anticipating the need for an economic forest survey of the region, we started in a small way to assemble data even before Congress had authorized the nation-wide Forest Survey. On July 1, 1929, we got \$30,000 for that purpose, the first region to get underway. We began to assemble a staff. Phil Briegleb, just out of New York State College of Forestry at Syracuse, was the first to come, then Floyd Moravets and Bob Cowlin.

We were well under way when Horace J. Andrews came to be director of the Survey, selected because of his successful conduct of Michigan's land economic survey. Appropriations grew, and we assembled a strong staff of trained foresters and practical cruisers. After the first couple of years, much of this was financed by "emergency funds" - CCC, ECW, NIRA, etc. For a time there were over 100 people on the Forest Survey.

#### Mechanical Strip Sampling vs. Compilation of Existing Cruises

There was sharp differences of opinion as to how to get the best record of the volume of timber by the units of area we wanted. Some (including

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- \* "Slash Disposal and Forest Management after Clear Cutting in the Douglas Fir Region"; USDA Circular 586 by Thornton T. Munger and Donald N. Matthews, 1941.
  - \*\* "Snags" by Thornton T. Munger and George L. Drake; The Timberman, December, 1926.
  - \*\*\* "Snag Falling" by Thornton T. Munger and A. G. Simson; The Timberman, April and May, 1929.

experts in the Washington Office) favored a mechanical sampling by strips run at intervals over the two states, as had been done in the Swedish forest survey. I and others favored compiling existing cruise records, of which there were many of both private and public lands, and reducing them by check cruising to a common standard. Thus we could make a type map of a hundred percent of the country.

After we were well under way by the latter method, we were ordered to make a test of the mechanical stripping method. This was done for a chunk of country near Mineral, Washington, under the most arduous conditions of weather and topography by crews of two camping on the survey line.

A comparison of the two methods resulted in adopting the compilation and complete coverage method. Thus we were able to produce a type map involving some forty cover types for the entire forest area of the two states, as well as volume statistics for fairly small units of area.

Regional Forester C. M. Granger was made national director of the Forest Survey in 1931, and for a while he made his headquarters with us before moving to Washington.

During the 1930's the Forest Survey was the dominant project of the Station and took a major part of my time in conferences, administrative details and sometimes in the field. Andrews, with Cowlin as assistant in the office, did a fine job of training and directing a frequently changing crew assembled mostly under the emergency programs.

The Station's prompt publication of statistics, county by county, were well received. The colored type maps in four quarters for each state were beautifully lithographed by the USGS in Washington and were the first showing such detail for so large an area ever produced in this country.

#### Moving to the U. S. Court House

Meanwhile we had outgrown all the space we could rent in the Lewis Building, and in 1933 moved to the brand new federal court house where we had 27 rooms, some specially designed for us - laboratories, assembly room, etc. Before this McArdle had centered his fire studies in an old garage we rented and fixed up as a laboratory.

#### The Division of Forest Products

The Regional Office's section of Forest Products was transferred to the Station in 1931, bringing to us Allen Hodgson, Herman Johnson and four others. A little later Dr. J. Elton Lodewick took charge of that division and directed many mill scale studies, made statistical and census compilations and acted as a liaison with the Madison Laboratory.

#### Range Management Research

A section of grazing studies was set up in 1937 with G. D. Pickford in charge, later assisted by Elbert Reid. My contact in the field with their projects was slight, especially because soon after this grazing work started I had a long period of sick leave and then left the directorship.

### A Division of Forest Economics Started in 1931

With the growing appreciation that progress in forestry depended upon an understanding of the economic problems and obstacles, as well as the silvicultural problems, a Division of Economics was set up. This was separate from the Forest Survey. It encompassed various phases of forest economics and was divided into appropriate sections.

### Forest Insurance

A pioneering study of forest insurance was conducted by Harold B. Shepard for a term of years, beginning in 1930. This resulted in a classic, but unfortunately now almost forgotten bulletin, "Forest Fire Insurance in the Pacific Coast States" by Harold B. Shepard; USDA Tech. Bull. 551:1937. We had high hopes that as a result of this study the insuring of standing timber would become general, as it still has not.

### Financial Aspects of Forestry

This was essentially a study of logging methods and costs in relation to value of the product. Axel Brandstrom was in charge, assisted by Burt P. Kirkland for a while (though the latter was attached to the Washington Office) and quite a sizeable crew of young foresters, like Clarence Richen, Roy Carlson, John Lierch. A vast amount of time study data was collected on tractor logging, then an innovation. In 1931 time and cost studies were made of 13 logging operations in western Oregon and Washington.

### Selective Cutting Controversy

Kirkland and Brandstrom came out with a thesis on selective timber management which strongly implied tree selection cutting in the Douglas fir region, apropos of the practicability of using tractors in this region. I, and others who were silviculturally minded, could not agree with their recommendations, in spite of the short term advantages of selective cutting. But Regional Forester C. J. Buck took it up and ordered that hereafter every timber sale on the National Forests of the Douglas fir region was to be on a tree selection basis unless the Supervisor could show some reason why it should not be. Quite a controversy arose. The Kirkland-Brandstrom manuscript was greatly toned down before publication. \*

The Regional Forester opposed publication of a paper I had delivered, but on appeal it was OK'ed by the Washington Office. \*\*

Exhaustive studies of the selectively cut areas by Isaac and others at the Station carried on for several years exposed the undesirability from a silvicultural and fire protection viewpoint of tree selection cutting in most mature Douglas fir stands. In a couple of years, after sporadic

\* "Selective Timber Management in the Douglas Fir Region" by Burt P. Kirkland and Axel J. F. Brandstrom; published by the Charles Lathrop Park Forestry Foundation, 1936.

\*\* "The Silviculture of Tree Selection Cutting in the Douglas Fir Region" by Thornton T. Munger; University of Washington Forest Club Quarterly; March, 1939.

trials, it was practically abandoned on the National Forests. Fortunately throughout the controversy Brandstrom and I remained the best of friends.

#### Logging Economic Studies in Pine

In 1935 the logging economic studies moved to the pine region, as well as mill scale studies conducted by the Division of Products. A new approach to selective cutting in the pine type was developed which we dubbed the "maturity selection system". A vast amount of data was collected to demonstrate which trees should be cut first for greatest profits and best growth and survival. As a result of these convincing findings, methods of cutting on the National Forests of the pine region, and to some extent on private lands as well, were revolutionized. Unfortunately Brandstrom resigned in 1940 before the data could be prepared for formal publication under his authorship, so the findings of these pine studies were passed on rather informally. \* \*\* \*\*

#### Forest Land Use and Taxation

Another section in the Division of Economics had to do with tax delinquent lands and taxation; it was called the "new public domain study", because of the staggering amount of land coming back to public ownership because of unpaid taxes. This was under Sinclair A. Wilson who came to the Station in 1932. A follow-up of this study of taxation was carried on by Wade DeVries who joined us in 1937.

Some years before, in 1928, a branch of the national study of taxation under Professor Fred R. Fairchild and R. C. Hall was headquartered with us for a while. At about that time the Station had a considerable share in supplying data and advice that resulted in the Oregon Reforestation Land Tax Act of 1929. While this subject was still in the fore, I sat on a "Special Committee on Forest Taxation" appointed by the Governor of Oregon.

#### The Depression Years, 1930-1937

The depression years of the thirties were hectic times at the Station, particularly for Miss Wertz who had most complicated, ever-changing and expanding payrolling and bookkeeping to do. Our regular appropriations were cut, but were supposedly compensated for by the allotments of emergency funds. No promotions for regular personnel were allowed. In July 1932 annual leave was cancelled and employees forced to take two days off a month without pay. Leave was restored in April 1933, but a flat 15% cut in salary was made which was gradually restored two years later.

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- \* "They Discuss the Maturity Selection System", by Thornton T. Munger; Journal of Forestry, March, 1941.
  - \*\* "Recent Developments in Pine Silviculture" by Thornton T. Munger and Philip A. Briegleb; Northwest Science, May, 1942.
  - \*\*\* "Notes on Maturity Selection System" by Thornton T. Munger; The Forest Log, August, 1943.



The personnel of the Pacific Northwest Forest and Range Experiment Station (including emergency office employees) on the steps of the U. S. Court House in 1934. In front row, beginning at sixth from left - R. E. McArdle, Elton Lodewick, Thornton Munger, H. J. Andrews, Axel Brandstrom, Harold Shepard and Walter Meyer.

First of the New Deal projects came the Civilian Conservation Corps (CCC). This gave us at the start money to hire some capable foresters who were used to make detailed cruises and maps of two experimental forests and to work on the Forest Survey. Side-camps and details of CCC boys gave us lots of labor for buildings and improvements on the experimental forests for several years. However, there was usually not enough expense money to go with the labor.

Under the National Industrial Recovery Act, there were various other funds made available to us under constantly changing rules and amounts. There was WPA, ECW, Impnira, Lieunira, etc., all with separate quotas and restrictions. We were fortunate in getting many very capable people for computers, draftsmen and field assistants. This expedited and enlarged many of our projects far beyond what could have been done with our regular allotment, especially the Forest Survey. But it took a lot of planning, organizing and supervision.

Our allotments in 1935, including emergency funds, amounted to \$274,934. In some other years almost as much, with a personnel of well over 100. In 1933 to accommodate our 48 CWA workers (who were on a 30-hour week) at 30 desks, we operated a double shift.

#### The Lumber Code of 1933-1934

Early in the depression the National Industrial Recovery Act provided for a "Code of Fair Competition" to encourage the sustained production of forest resources and forest conservation. Under Article X, Schedule C, the industry in cooperation with state and federal governments was expected to comply with certain provisions. Committees were set up for both the fir and pine regions to write the forestry requirements appropriate for each region. These committees consisted of representatives of industry and of the trade associations with a few state and federal foresters. I attended many meetings. A product of the West Coast Committee's work was the "Handbook for Forest Practices for the West Coast Logging and Lumber Division", published in November, 1934. McArdle and I had a large share in writing this.

During this period I made a trip back to Washington to urge the NIRA Lumber Code Authority to relax their quota on Douglas fir production to permit more rapid salvage of the fire-killed timber in the Tillamook Burn.

When in about a year the courts invalidated the National Industrial Recovery Act, this code of fair competition with its prescriptions for forest practices became non-compulsory. Nevertheless it was quite effective in an educational way in stimulating better forest practices on private lands.

#### More Meetings; Less Field Work

As the Station grew, I had fewer days out in the woods on sample plots or traverse lines, and more at meetings, preparing and giving talks, and doing the routine in the office that the job required. There were the prolonged Investigative Program Meetings at Madison, Wisconsin, each year and occasional details to Washington, which I disliked except for the chance it gave me to see my relatives in New England. In 1932 I had ten

weeks in Washington, as one of many, working on the "Copeland Report". In October 1933, I got to the Washington Office a few minutes after Chief Forester R. Y. Stuart had fallen to his death from his office window in the Atlantic Building. This was a tragic period for the Forest Service, for he was the victim of worry over the administration's political interference with the CCC program. A year or so later, when we directors were in Washington for conference, under the inspiration of Ed Kotok, a "testimonial" dinner was given by us researchers for Stuart's successor, Ferdinand Silcox, perhaps to "butter" him up on research.

In these years I spent much time reading, editing and sometimes rewriting the manuscripts coming from the pens of the staff, often working in the evenings, and at the expense of my own creative writing.

#### Natural Areas

In 1921 I was appointed regional representative of the Ecological Society's Committee on the Preservation of Natural Conditions, and my interest in this subject has continued and grown since then. The first Natural Area in this region (if not in the whole West) was one of 160 acres at Wind River, Washington, set aside, after considerable remonstrance, in 1926. It was later enlarged to 1,180 acres. At first these were called "virgin timber reservations". I had an active role in selecting and establishing, before my retirement, 13 Natural Areas averaging about 1,000 acres each. A friendly letter from Regional Forester Andrews in 1946 says that I "have been the power behind the (Natural Area) Committee throughout all its nearly 20 years of existence."

#### Experimental Forests

Believing that the setting aside of Experimental Forests primarily for research to be under the jurisdiction of the Experiment Station was a "must", I rapidly built up a series of five of about 10,000 acres each. The Wind River "research reserve" of 160 acres, so designated in the 1910's, was enlarged in 1932 to two big units. Pringle Falls was established in 1931. Then followed in the next three years Cascade Head, Port Orford Cedar and Blue Mountain.

Mostly with CCC and CWA labor substantial residences, offices and garages were built at most of these experimental forests. Planning for these and watching the expansion of their research projects gave me much satisfaction.

#### Advisory Council

In 1926 an Advisory Council was appointed by the Secretary of Agriculture - an innovation at the time - consisting of representatives of industry, the states and the forestry schools. With one to three all-day meetings a year, occasionally at an experimental forest, this Council helped to steer our studies into the most productive channels and gave us good liaison with the public, with industry and the other agencies represented.

#### The Public's Growing Interest in Our Research

In the early days of the Station's life the industry and the general public

took little serious interest in our findings. Research and researchers were not considered to be "practical". There was little concern about the timber shortage, lumbermen were liquidating their timber to keep ahead of the sheriff, sustained yield was just for Uncle Sam, and fire protection was only a matter of a strong back.

But we knew that our studies were building a foundation for the practice of forestry locally, and that our findings and recommendations would sooner or later be put to use on private forests. Our program was directed, from the start, especially for application by the private forest owner, thinking that there was the greatest need for improvement in forest management. On the National Forests the best then known silviculture was being practiced (within the economic limits of the time), and forest officers were prepared to use our silvicultural advice, growth and yield data, fire protection suggestions, etc. as fast as compiled.

I and other members of the staff were invited to give technical papers at Logging Congresses, Western Forestry and Conservation Association conventions and at other gatherings, where we got a respectful hearing. But by the early thirties, certain of the larger companies were absorbing and putting into practice the results of some of our studies. Of course, since the post-war boom in stumpage prices and mounting interest in tree farms and sustained yield, the basic knowledge learned in the 1920's and 1930's on growth, silvics, regeneration, slash disposal, fire control techniques, land management economics has become general knowledge and the gospel for forest managers. The bulletins and Research Notes issued by the Station were used as text books at the Forest Schools, and this spread the fruits of research to new generations of practicing foresters.

#### Personal Mention

The above reminiscences of the period of my directorship have mentioned a few of those with whom I was in closest contact. But there were many others with whom I worked in field and office who were equally important in the life of the Station that the limitations of these sketches preclude mentioning. In the early days it was a close-knit and congenial group; later with 100 or more on the payroll my associations were less intimate with everyone. But many of those who came to us as emergency employees or field assistants established personal friendships that I still cherish highly.

In the clerical force there were several "career girls" (always addressed as "Miss" or "Mrs." in the early days) whose loyalty and efficiency made life in the office pleasant and easier for the rest of us. Beside June Wertz, there were Emma Johnson, Erna Jeppeson, Frances Elliott, Leona Stevens Bates, Edith Parmeter Tomkins, Kathryn Flaherty, Christina McPhail (the last four still with the Station), just to mention a few of those who did so well their routine work and thus helped to keep the Station in the fore.

In the preceding pages a number of publications are cited of which I was the author or co-author where such citation indicated my connection with certain projects. This by no means constitutes a bibliography of the 100 or more reports and articles I wrote, but are merely illustrative samples. Other members of the staff likewise wrote many bulletins and articles of equal or greater significance, but these were not cited because these reminiscences are intended not as a history of the Station but rather merely recollections of my own experiences and professional life.



Driving to Diamond Lake from Brown's Cabin over the "John Day Trail" in 1911, the first wagon over it since the old miners' trail had been made passable.

Part 3, Interlude in 1937 and Transfer to Chief of Forest Management  
Research, 1938 - 1946

In 1937 my doctor put me on the shelf because of high blood pressure and insomnia and I stayed in his hospital for three months, then never expecting to get back to work. But after three months more of loafing at home and part-time work, I went back on the job. With hard work I improved rapidly. Meanwhile I had decided that I did not want to handle the directorship any more, with distasteful trips back to Washington, D.C., endless meetings, budget raising and little real forestry. So the Washington Office gave me in 1938 the job of Chief of the Division of Forest Management Research at the Station, and very generously set my salary at only \$100 less than as Director. During my illness "Hos" Andrews was Acting Director and, when he was made Regional Forester, Steve Wyckoff was transferred here as Director.

From then on I had a rather productive 8 years, from a forest research standpoint, in spite of exceedingly lean allotments in the war and post-war years.

The War Years

As the effects of the depression years of the thirties faded out, the work of the Station was again upset by World War II. Many of the younger men went into one of the military services. The War Production Board and other agencies requested the Forest Service to make all sorts of surveys and studies to expedite the war economy.

The projects were most varied and required from a few man-hours to several man-months each. Some of the subjects we worked on were - requirements for truck tires; planning for an emergency supply of hemlock tanbark and of cork from Douglas fir bark; current census of production of pulpwood, aero lumber, pontoon lumber, plywood; industry's need for power saws, trucks, loggers' boots, wire, lumber carriers; monthly census of log inventories and of lumber production with analysis of factors affecting production; methods of increasing meat production on western ranges; techniques of planting for camouflage. \*

In 1943 I served as "research advisor" to the local kok-saghyz (rubber substitute) project which had put in some plantations of this dandelion-like plant near Klamath Falls.

The Port Orford Cedar and Blue Mountain Experimental Forests were closed in 1942 "for the duration", and Pringle Falls in 1944 except for a few weeks in the summers when Morris and I did the routine examinations.

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\* "Forest Experiment Station and the War" by Thornton T. Munger, The Annual Cruise, Oregon State College, 1943.

I had only a small part in the war emergency projects and directed my efforts mostly to the routine examinations of sample plots and their resulting office work. I tried hard to not let lapse the periodic measurements of our long-time studies, but in some cases the interval was extended from five to six or seven years. Our regular travel allotments were very short in forest management research; in one year Isaac and I each had only \$100 for travel; but we stretched it.

Soon after the Conscientious Objectors' camps were started, we obtained the detail to the Station of several selected men who, for two or three years, did, for practically no pay, effective work. They acted as caretakers and routine technical assistants at Wind River and Cascade Head and on office compilations. Bernard Fedde, Eldon Helm and Loren Minear deserve special mention for their loyal assistance under difficult conditions.

#### Fruits of Research

In this period many of our continuing projects were coming to fruition. The growth plots, put in 20 to 30 years previously, were yielding significant results. In 1946 I had the unique experience of being in on the 8th measurements of the Douglas fir growth plots on the Willamette National Forest that I had put in in 1910. The planting experiments, the thinnings, the ecological studies were ready for progress reports, and I enjoyed analyzing the findings and writing them up for publication in technical and trade journals. The plots put in on selectively-cut areas of the Douglas fir region were given much attention by Isaac, myself and others in the war years and yielded very significant evidence of the undesirability of attempting partial cutting of mature Douglas fir forests, except in certain unusual stand structures. As a consequence of these studies, the Experiment Station was called more than ever into conferences with the Regional Office on timber cutting practices and slash disposal policy. The range of subjects worked upon is illustrated by the titles of a few of the articles I published in this period. \*\* Many other progress reports were issued only in mimeograph form as "Forest Research Notes".

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- \*\* "The Cycle from Douglas Fir to Hemlock" by Thornton T. Munger, Ecology, October, 1940.
  - "They Discuss the Maturity Selection System" by Thornton T. Munger, Journal of Forestry, March, 1941.
  - "Vital Statistics for Some Douglas Fir Plantations" by Thornton T. Munger, Journal of Forestry, January, 1943.
  - "Out of the Ashes of Nestucca" by Thornton T. Munger, American Forests, July, 1943.
  - "Oregon's Rarest and Most Distinctive Forest Type" by Thornton T. Munger, The Living Wilderness, September, 1944.
  - "Growth Records of Some Permanent Sample in Douglas Fir and Spruce-Hemlock" by Thornton T. Munger, West Coast Lumberman, March, 1945.
  - "Sample Acres Prove Point" by Thornton T. Munger, Timberman, March, 1941.
  - "Watching a Douglas Fir Forest for 35 Years" by Thornton T. Munger, Journal of Forestry, October, 1946.

From time to time I had written a number of pieces on artificial reforestation but this was not my forte. But it fell to my lot (with Charles Rindt) to complete the monograph which my good friend, Julius Kummel, had begun, "Forest Planting in the Douglas Fir Region", mimeo. 154 pp; 1944.

Steve Wyckoff was transferred to Berkeley in 1945 and J. Alfred Hall took over the directorship. Phil Briegleb left for an assignment in Chile in 1943 and his place was not filled, but he returned to the Station to succeed me as chief of the Division of Forest Management Research in 1946.

#### Co-Lateral Activities

One of the committee activities from which I got much satisfaction was the West Coast Forestry Procedures Committee of the Western Forestry and Conservation Association. It was composed of a dozen or so technical foresters from industry, the states and colleges, with myself as chairman during the life of the committee - 1945 to 1950. Its several reports clarified the thinking and the practices on various highly technical matters.

As I approached retirement age I became increasingly interested in the recreational and aesthetic uses of forests, and this developed into active participation in several organizations - Save the Myrtle Woods, Inc., Oregon Roadside Council, Forest Park Committee of Fifty (chairman, 1947-1960), Oregon Academy of Science (president, 1946), Recreational and Natural Resources Committee of the Portland Chamber of Commerce, and various other forestry-related activities.



The Recreational Resources Committee of the Portland Chamber of Commerce at Cape Perpetua on one of its many tours to study parks and recreational needs. L to r - Kenneth Wolfe, Thornton Munger, Walter Horning, Arthur Kirkham, R. T. Moore, Walter Gerke, Alfred Loeb and David Charlton.

Photo by W. L. Finley

Retirement from the Forest Service

in 1943, at the age of 63, I put in my resignation in accordance with the then retirement policy. I must say that I did so reluctantly because I always enjoyed my days in field and office and did not know what I would do from 8 AM to 4:30 PM each day. My salary at retirement was \$8,059.80 gross.

However, I have not found time heavy on my hands and have been busy at one thing or another, mostly in connection with natural resources conservation, especially as related to recreational and scenic values. Of the many friendly letters I received at the time of my retirement, I cherish especially one from McArdle with whom I worked so closely in his formative years. Mac wrote in part (when he was Assistant Forester in charge of the Division of State and Private Forestry), "It seems only a short time ago when I showed up in Portland as a brand new Junior Forester. When I look back I often think how lucky I was . . . . You know - because I've told you but it won't hurt to repeat it - that I've always felt about 97% of my Forest Service work in one way or another stems back to you . . . it may be that you could have some feeling of ending an influence on the Forest Service. If you do, you might take a look this way now and then. Here's one sample plot you laid out that will be around for a while."

When my associates suggested a retirement luncheon I assented, provided that I was the only speaker - wishing to escape the encomiums of the orators and the jibes of the jokesters. In that swan song, "The Forest Service Then and Now", I said - "I don't want to be thought of as one who harps back to the 'good old days' as though things were now going to the dogs. Far from it; things are different now; they reflect the times. Then we travelled by horse, now by auto. Each fitted the times; each had advantages. Then we were in an era of small governmental expenditures, and we were thrifty, got lots out of our official allotments and lived frugally. Now we are in an age of extravagant public spending and lavish living, and the Forest Service shares in it. However, there is a danger in any government bureau gaining size and strength to the degree that it exerts its power in excess of what the public will stand for. Much of the respect that the Forest Service gained from the public in the early days was due to its being thrifty, delivering the goods, and to the fact that its people were modestly paid and there could be no charge of nest-feathering and extravagance. We may laugh now at the slowness and simplicity, or call it crudity, of the 'good old days', but they had something the modern, mechanized, highly-organized, regimented and manualized Forest Service has lost and might well recapture."

Further on I reminisced - "I would not have enjoyed so much my years in research had it not been for the hope of seeing the results put into practice. I do not care for research for research's sake. But I always had faith that research could greatly promote the practice of better forestry. For years it seemed terribly slow in coming. Even on the

National Forests the apathy was most discouraging. Latterly the progress has been very fast; progress among the forward-looking private companies has been particularly gratifying."

I continued my swan song with this hopeful thought - "I have heard some of the old-timers, in speaking of the halcyon days of the past, imply that the interesting days of the Service were gone and now it was merely hum-drum. I hope none of the younger men subscribe to that idea. Of course youth has advantages over middle age, but I would not grant that the Forest Service is much past adolescence. It is fun to do firsts; I enjoyed pioneering in putting in permanent sample plots, buying the first official automobile and adding machine for District VI, proposing the first natural area, making the first yield tables, drawing up the first real research program, getting the first of the regional forest surveys started. But there are lots of firsts yet to be done. There may not be new tree species to discover, but there is plenty of opportunity for pioneering, for originality, for enterprise. There is yet a long way to go before forest management, forest protection, forest utilization, forest land economics are utopian."

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