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Leo A. Isaac  
Douglas Fir Research in the Pacific Northwest,  
1920-1956

An interview conducted by  
Amelia R. Fry

Berkeley  
1967

Produced under the auspices of  
Forest History Society  
and  
Hill Family Foundation







LEO A. WACZ, research biologist for U.S. Forest Service, is shown here in a forest. The illustration is by Fred L. Johnson. The drawing is by Tomer, Cambridge.



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## FOREWORD

This interview is part of a series produced by the Regional Oral History Office of Bancroft Library, University of California at Berkeley, under a grant from the Forest History Society, whose funding was made possible by the Hill Family Foundation.

Transcripts in the series consist of interviews with: DeWitt Nelson, retired head of the Department of Natural Resources, California; William R. Schofield, lobbyist for timber owners, California Legislature; Rex Black, also lobbyist for timber owners, California Legislature; Walter F. McCulloch, retired Dean of the School of Forestry, Oregon State University, Corvallis, Oregon; Thornton Munger, retired head of U.S. Forest Service Experiment Station, Pacific Northwest Region; Leo Isaac, retired, silviculture research in the Forest Service Experiment Station, Pacific Northwest Region; and Walter Lund, retired chief, Division of Timber Management, Pacific Northwest Region of the Forest Service; Richard Colgan, retired forester for Diamond Match Lumber Company; Myron Krueger, professor of forestry, emeritus, U.C. Berkeley; and Woodbridge Metcalf, retired extension forester, U.C. Berkeley. Copies of the manuscripts are on deposit in the Bancroft Library, University of California at Los Angeles; and the Forest History Society, University of California at Santa Cruz.

Interviews done for the Forest History Society under other auspices include: Emanuel Fritz, professor of forestry, University of California, Berkeley, with funding from the California Redwood Association; and a forest genetics series on the Eddy Tree Breeding Station with tapes by W.C. Cumming, A.R. Liddicoet, N.T. Mirov, Mrs. Lloyd Austin, Jack Carpender, and F.I. Righter, currently funded by the Forest History Society Oral History Program.

The Regional Oral History Office was established to tape record autobiographical interviews with persons prominent in the history of the West. The Office is under the administrative supervision of the Director of the Bancroft Library.

Willa Klug Baum, Head  
Regional Oral History Office

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## INTRODUCTION

Leo Isaac probably has enjoyed more recognition as an expert on Douglas fir silviculture than anyone else around, and this account of his life shows why, for all the environments and events -- circumstances -- of his life seemed designed to produce one of the nation's most outstanding silviculturists. If one sat down at a typewriter to write How to Create a Research Forester, one could not do much better than to plagiarize the life of Leo.

First, one should choose a woodland setting for his childhood, like the farm in Wisconsin with a twelve-acre woodlot where Leo grew up. Give him time to walk home from school and, before chores, regularly take a side-trip through a forest so he will learn "every plant ... every bird and animal ... like a mother knows her kids." For high school, send him to a nearby town, make him live there, preferably performing menial and boring tasks in a ladies' apparel store to increase his appreciation of the forest environment he had left.

Of course, this won't be enough really to commit him to forestry: perhaps two years in the wilderness should be added, just at the threshold of adulthood. Usually such an interlude is difficult to bring about in our society, in Leo's life it happened because the only cure for an injured brother was complete quiet, relaxation, and good care -- such as he could get in the Wisconsin wilderness with Leo.

After such a sojourn, the young man will return to society with a realization that he has an affinity for work with men and trees, but that he will need a formal degree to prepare himself for such a place in the working world. Be sure that at this point there is a good school of forestry waiting nearby, the University of Minnesota served well for Leo. Have the young man waylaid by a salty dean, like E. G. Cheney, who tells him that the only way a clothing store fugitive could definitely remove himself from ladies' apparel would be to take either forestry or chloroform. This should clinch it.



His years in the forestry school will be good ones, for he has a first-hand knowledge of what academicians call "ecology," and a natural woodsmanship far beyond anyone on the campus. His enthusiasm produces the sort of academic achievement which, at graduation, lines him up for those Forest Service positions usually held open for top students.

At this point, he should be aimed at a more specialized goal, say Douglas fir silviculture research, which also requires the selection of a specific region of the United States. Better have him meet a native from the selected vicinity -- female and attractive. A war may be required to arrange such Minnesota-to-Oregon dislocation; Leo's work as wood products inspector in the Northwest during World War I left him helplessly addicted to the quiet ways and beautiful eyes of Oregonian Alberta Sherman, as well as to the giant scenery that cradled the Douglas fir.

However, in a career, as in love, the way to produce a definite commitment is to see that satisfaction is withheld for a time. He should not be sent to an experiment station right away; transfer him first to a forest, in the chosen region, and expose him to tasks that point up the need for more basic data on which forest management decisions can be based. (But be sure that the pretty girl is still living near the Research Station -- and waiting.) The interlude on a forest can also provide experiences in getting along with variegated samples of homo sapien -- old-time woodsmen types, well-educated Easterners, and overprotective wives. The Okanagan Forest in northeastern Washington served this purpose well for Leo.

Now the subject is at last ready to be placed in the Experiment Station. He can now marry the girl, for the aspirations of his heart as well as his career have been his major concerns up to this time, and now, on the threshold of fulfillment, he needs to have his mind free for research. If the proscribed training has indeed done its job, he will hardly need a nudge to see that something is askew in the methods and results of past research. Leo's earliest one-upsman-ship will long be the envy of anyone in any field of experimentation, for he:

- (1) reversed the conclusions in a report written



in 1916 by no less than the head of the Wind River Experiment Station (J. V. Hofmann), who had reported that Douglas fir seed lives for many years stored in soil and duff of the forest floor, then finally germinates. Not so, said young Leo, in the more cautious studies under his direction: a seed usually dies after being left in the soil for more than a year. Corollary experimentation with his now-famous kite proved that the main factor in Douglas fir restocking was the tremendous distance a seed can be carried on air currents.

(2) The next dragon that the young researcher slew was the partial (or "selective") cutting theory for Douglas fir management, born during the Depression days and adopted for official procedure in national forests. With the Station Director, Thornton T. Munger, Leo examined the plots selectively cut and showed that because of tremendous wind-throw propensities, the Douglas fir that are left standing after a cutting operation should be a block for protection from winds. Also, the selection of only the marketable fir for cutting left a forest made up of a higher proportion for sustaining a superior Douglas fir forest. In spite of stiff resistance from the Washington, D.C. Office, the Forest Service policy for selective cutting of Douglas fir was changed back to its previous process of block-cutting and remains that way to this day.

His studies in Douglas fir silviculture resulted in a book financed by the Pack Foundation in 1943, Reproductive Habits of Douglas Fir, which was a milestone in its field. Concurrent with his studies on partial cutting and other problems, he had also put in plots to study the effect of climate and soil conditions on Douglas fir seed from various sources -- the results of which became his next book, Better Douglas Fir Forests from Better Seed, although that book was not written until he was granted a nine-month leave to go to the University of Washington under an Agnes Healy Anderson grant in 1946.

Several years later Leo tried without success to put out a revised and up-dated book. That problems of financing and of joint authorship have prevented a later edition is a major disappointment in his otherwise successful career.

In his so-called retirement, Leo's crackling personality occasionally has to be bridled by his doctor



The Leo Isaac home in Portland, Oregon



The two Esare home in Portland, Oregon



lest his intense activity exceed his horsepower as a diabetic novice. This means that at the time of the interview he was limited to:

-- taking care of a sizable tract of forest land outside Portland on which he has planted Christmas trees for his grandchildren's college education;

-- adding to, maintaining, and enjoying a seaside spread where there are "no telephones, no television, and lots of room for grandchildren" -- who probably have learned that they can impose on Grandfather for anything from a tour of the Oregon coves on his motor launch to a walk in the nearby forest to learn how the trees grow;

-- running the Columbia River-Puget Sound joint section of SAF, a part-time executive secretary job from which, months after the interview, his retirement came as a grudging concession to his health.

His home nestles among trees in one of Portland's newer and more beautiful sections, where low, ranch-style homes ramble across broad expanses of grass and gardens. One can look through sliding glass doors to a prolific garden, where he and his wife have set out a variety of plants, from gladioli for her to a metasequoia for him. Next door in an adjacent garden one sees the blue of a swimming pool. Many of Leo's trees exhibit a wide array of grafts -- enough to be confusing to a layman attempting to discern which species Leo began with. He points out more than a dozen wild seedlings of fir, juniper, and hemlock that have cropped up uninvited, "although the nearest seed trees are more than a thousand feet away" -- a constant reminder of his earliest study that documented the tremendous flights taken by seeds on air currents.

In his front lawn stands a young weeping peach tree which is the source of a neighborhood joke: Leo went to the nursery to buy a weeping cherry tree one day, a joint selection by him and his wife. However, the nursery had no weeping cherry trees, so Leo, ever the one to improvise, quietly substituted a weeping peach sapling and set it out in the designated place. Come spring, the tree burst forth with peach blossoms, and Leo waited for the prank to hit the neighborhood radar -- including that of retired Experiment Station head J. Alfred Hall next door. But at this point Leo's little



joke turned on him unexpectedly. His so-called friends, and even his wife, gleefully alledged that the great silviculturist had confused a peach tree with a cherry tree. To this day, Leo remonstrates that he was precipitously judged innocent when he can indeed prove his premeditated guilt because the tree was wearing its name tag all along; but it is too good a joke for his admirers to relinquish to the realm of truth and justification.

It was in the atmosphere of his spacious ranch-style home, rich with the glow of brasswear and Persian rugs, that we tape-recorded his memoirs during an intensive two days and the evening between. His wife, busy with community club work, was the ideal hostess who quietly materialized when it was time for a break or a well-prepared meal. We had chosen July 31 and August 1 for our marathon, never suspecting that those days were to add Portland's name to the rapidly lenthening list of American cities torn by racial strife. The riot erupted across town in a section named "Albino," but rumors persisted that the rioters were planning an invasion of the better, all-white neighborhood where Leo lived. Our evening interview was held in his study, while near the front door stood Leo's shotgun, ready to protect his home ("All I've worked for you see right here in this house") if rumors proved true. The rumors were not true, the gun was not used, and our interview was taped without interruption that night, although neither of us were ever entirely unaware of outside noises.

For the recording sessions we had agreed on an outline beforehand, but it became much expanded in the flow of Leo the master raconteur. A few of his collection of anecdotes are included in the transcript, but even when we shut off the machine and went into the dining room to eat, his stories continued to tumble out in a Niagara even though there was no tape to catch them. Leo has instructions to record or write more on his O.V.I.

His work at the Experiment Station was covered in the interviews, and he further added to it with inserts here and there when the rough-edited transcript was sent to him for review. His main apprehension about the interview is that we did not dwell long enough or comprehensively enough on the work at the Station; I would suggest that readers supplement Leo's account with another oral history, that of Station



Errata Sheet  
Leo Isaacs Interview

Page 13	24 instead of 44
Page 40, mid-page	N and F omitted
Page 44	N and F omitted
Page 75, 1.4 from bottom	see should be <u>seed</u>
Page 77	now should be <u>snow</u>
Page 125	Douglas <u>fir</u>

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\* Many of these titles are filed with the interview in the Bancroft Library, University of California, Berkeley, California.





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Leo A. Isaac

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## EARLY LIFE AND EDUCATION

Living on the Farm

Fry: You were born September 12, 1892?

Isaac: That's right, on a farm near Fond du Lac, Wisconsin. It means "bottom-of-the-lake" it's right on Lake Winnebago. I lived my early life on a farm there a short distance from town. At age eleven I left home to go to town to the city school. We had only a grade school near the farm.

Fry: How many brothers and sisters did you have?

Isaac: I had six brothers and two sisters.

Fry: What kind of farm was this?

Isaac: We had a dairy farm with a twelve acre wood lot of hardwoods. We raised cattle, hogs, and a few sheep and horses. To feed them we raised hay, grain, corn, potatoes, beets, and so forth. We also had chickens, ducks, geese, and turkeys. Also had an apple and cherry orchard.

Fry: What were your duties on the farm?

Isaac: I milked cows; it was one of the regular duties. Then as I grew older, I did all of the things that a normal farm boy would do, like cultivating corn and plowing; taking care of the cattle and the sheep and horses; seeding, planting potatoes; cutting wood, cutting grain and corn, also marketing milk and other products. All the ordinary work that's done on a small farm in Wisconsin. And I got a hand in all of it.

Fry: How far down on the family line-up were you?

Isaac: I was third from the bottom. I had a brother and a



Isaac: sister younger than I. My two sisters and one brother are all I've got left alive.

Fry: Did any of these brothers and sisters grow up to be interested in forestry or research?

Isaac: No, none of them ever went away to school. I was the only one.

Fry: Did any of them finish high school?

Isaac: They all finished high school, I think. But no one ever went on to higher education but me.

Fry: Had your ancestors been in this country quite a while?

Isaac: My parents were born in this country. There were about three generations born in this country. I think their father and mother were born in this country also, but I'm not sure. My father's people came from the Darmstadt region of Germany and my mother's people were Hessians. My father was about three-quarters French and my mother's people were pure Hessian German.

Fry: You don't have any family trees lying around?

Isaac: No. (Laughter) I tried to look up some of my relatives when I got over there in 1953. I had the names of a couple of them, but I couldn't find them -- the war had come in the meantime and the country was all ripped apart and everybody thrown from hell to breakfast. Families were torn apart and everything else. People had gone into different lines of work, and I didn't find anybody. I couldn't get any connection with my father's people.

Fry: Well, three generations back is difficult to trace anyway.

Isaac: I think that my grandfather was born in this country,



Isaac: in New York. And his people came from the Darmstadt neighborhood, that much I knew. And I know they spoke German in their home when they were little. And when we were little my parents would talk to us in German and we'd answer them in English. I got so I could understand most of their German. That stood me in good stead when I went back to Germany. I remembered more of that spoken German from my childhood than I did of the technical German that I learned in college.

Fry: It just came back to you?

Isaac: Yes. In the month that I was over there at the Forestry Congress of Western European nations in Germany I was speaking German just like the rest of them on the street. But when I struck anything technical I would have to return to my German-English dictionary for terms, to know what I was talking about.

Fry: Had you spoken German in between times?

Isaac: No, not for thirty-five years. When we landed there I just felt like -- well, everything was blank to me, I couldn't understand what anybody was saying, just an occasional word. But in just a week or two I was speaking German like all the rest of them.

Fry: What kind of town was Fond du Lac around the turn of the century?

Isaac: It was a town of about 30,000 people, probably like Salem.

Fry: What kind of courses did you get in high school?

Isaac: I had arithmetic, and algebra, and I think trig, either there or in college. And history and botany. I know I had lots of English.

Fry: Was this considered a college prep course?



Isaac: Well, yes. I was taking a "classical" course in high school that would prepare me for college.

The last year my brother and sister thought I should take some business courses. (Even until my brother died, they still hoped I'd come back there and go in business with them in their store.) They persuaded me to drop one of my classical English courses and take a course in business English, which I did the last year I was in high school. When I presented those credentials to the University of Minnesota, they wouldn't accept that fourth year of English because it was business English. They told me (that was about six weeks before I entered) that there wasn't time enough to get credit in English through any source. My answer was that there were twenty-four hours in a day and eighteen of them I could use to study, and that I'd come with the credit, and I did, with a 91 grade. I had to take a special examination to get credit, so I had to go out and get a private tutor. I got the English teacher out of the high school to outline this course for me. I had the tutor two hours a day for five or six weeks, paid her for it, took my examination (it was given by the school principal) and got my credit in English to present to Minnesota.

Fry: That might have been better than you would have done in ordinary high school.

Isaac: It might have been better than high school, because English was a little hard for me in school.

Fry: What subjects did you find easy and interesting?

Isaac: History. And the preliminary math I liked, the earlier math, ordinary arithmetic and stuff.

Fry: Did you like botany especially?

Isaac: I liked some phases of it. But the highly technical





Isaac: phases of it and the Latin names were too difficult for me. But I knew every plant that grew in our neighborhood. I might not know its technical name, but I could recognize a plant, and know that I knew it, like a mother knows her kids by their first names. And I knew every bird and every animal -- every bird as far as I could see it flip a wing, or hear a note, I'd know what that bird was. But I didn't know their scientific names.

Fry: When you lived on the farm, did you go hiking a lot in the woods?

Isaac: Always. On the way home I'd cut off of the road and go out the fence row and through a big woods or something. I was always getting home a little late because I took a side trip somewhere. And we had mill ponds there where I'd go down to fish and trap muskrats. That's how I earned some of my spending money when I was a boy.

Fry: Oh, really?

Isaac: I trapped minks and muskrats, coons and foxes. And skunks. On a hunting trip to northern Michigan I caught a beaver and shot a timber wolf.

Fry: Who would you sell them to?

Isaac: Local fur dealers. Local fur buyers would come around. They were worse than the auctioneers. They were all skinflints. They'd beat you down to nothing if they could do it. They were that kind of buyer.

Fry: You had to know how much it was worth, then.

Isaac: You had to know how much your hide was worth if you got any money for it. The first thing they'd do would be pick it up and say, "Where'd you pick up this old rat?" That kind of stuff. But I soon learned



Isaac: what my skins were worth. They'd better make me a pretty good offer or I'd forget them right quick.

Fry: So even though you were a little boy you learned to talk up to them?

Isaac: I learned. And that's how I got interested in furs and my brother's store.

Fry: You had to work in your brother's store to work your way through several of the upper grades and high school?

Isaac: Yes.

Fry: Was this because they charged tuition at high school, or because you were living away from home?

Isaac: I was living away from home. It was three miles out to our farm and in Wisconsin you don't walk three miles in the winter. The snow is two, three, or even four feet deep and temperatures get down to twenty-five below zero. So in the fall I moved into town and stayed with my brother and sister.

Fry: This was one of your oldest brothers?

Isaac: Yes. He was a bachelor, and my older sister was an old maid. They kept house there in town and had this store. I first opened the store in the morning and swept out, and after school I delivered bundles, and then a year or two later I got to working in the fur department. Occasionally I'd wait on a customer, that sort of thing.

Fry: So that started your career in the department store business. This lasted you through high school?

Isaac: Through high school, yes. But -- almost two years after high school I stayed there in the store.



Fry: Did you say you went when you were eleven years old?

Isaac: I moved to town in 1903 and attended grade school there for a few years, then high school -- it had grades eight through twelve. I graduated from high school in 1912.

In the Wilderness for a Brother's Health

Isaac: After I got through with high school I lost two years in the store and two additional years in northern Michigan, between high school and college. My brother got smashed up in a railroad wreck outside of Buffalo.

Fry: Right after you graduated from high school?

Isaac: Just about at that time. And that was an economically severe time. There was a pre-war depression, pre-World War I. My brother was having pretty tough going in his store and then he got smashed up in this wreck. He got bumped on the back of the head. He had what has since been diagnosed as brain shock, but they didn't know what to call it. Nobody knew about it until the days of airplane and auto wrecks and that sort of thing. He would stand up and if he closed his eyes he'd tip right over. He would get terrific headaches, to the point of being unconscious almost. When he got into this wreck he had a slight concussion of the brain. He got bumped in the back of his head. He was in a berth, and felt the brakes setting or something, and he raised up, and then his head hit the back of the bunk when it crashed. And when I found him two days later, in a hospital, he was in a darkened room. He couldn't stand the light and he couldn't see. It was three weeks before I could bring him home, from Cleveland to Fond du Lac. He had friends in Cleveland so they took him there instead of to Buffalo.



Fry: Why were you the brother who went after him?

Isaac: I don't know. We were very close. He was sort of like a second father to me. When something happened he always sent for me. That was the size of it.

Fry: You had a chance to repay him for all he had done for you, then. What was his name?

Isaac: Albert E. Isaac. Just yesterday I found a letter here with his letterhead on it. He had a garment and fur shop. When I first moved to town he was working for another store and then finally went in business for himself in this garment and fur shop. He burned out once and built a new store and started again. Then he went broke once but went back at it again, and it ended up with him and my sister in a smaller store with just high-grade ladies' furs and clothing in it. That's where they were when they wanted me to come in and join them and handle the furs. But I couldn't see it.

Fry: Tell us now how you took care of him. You got him back home?

Isaac: I brought him home in a sleeper, in the train. The specialists in Chicago told me that if my brother was to live (he had with this slight concussion a complete nervous breakdown, and he got thinner and weaker all the time), he'd have to get away from his business and get off where it was quiet, and where he would have care and good food.

So we went to northern Michigan, to a friend. We rented a cabin across the lake from the town of Michigame, Michigan. The only way you could get to the cabin was by boat. So we went in by boat and stayed there two years.

Fry: According to a letter that you wrote to Dean Walter





Fry: McCulloch when he was writing up your biographical sketch, you said you had an Old Town canoe. And that was your means of transportation for getting food and everything else?

Isaac: Yes, except that we had a small motor boat part of the time and in the late fall and early spring we crossed the lake on the ice and brought supplies in on a sled. I still had the canoe when I came out here to the Northwest. I had it up on the Okanogan River and on Lake Chelan in northern Washington, and I brought it down here on the Columbia and on the Tualatan River out here. Then I took it down to my cabin at Devil's Lake, and three years ago somebody stole it.

Fry: What exactly is an "Old Town" canoe?

Isaac: Old Town was one of the famous early-day cedar canoes. This was a beautiful canoe. It had mahogany decks and gun'ls and it was a select grade, and a special one. My brother and I just lived in it. It was like it was just part of us.

Fry: Did you buy it especially for this?

Isaac: Yes. And had it shipped from Old Town, Maine, to Fond du Lac. Then we took it north with us. That was the famous canoe of the early days, the Old Town canoe. Then Morris was another good early-day canoe. The Old Town is still made, but the Morris factory burned and went out of business when the motors came in. Old Town was the famous old American canoe; the Peterborough was the famous Canadian canoe. They're built of cedar, very thin cedar with a canvas cover, and enameled and smooth, just like an eggshell.

Fry: Were you far enough back in the woods that you had to supply your own food?

Isaac: We were three miles from town by lake, and about



Isaac: eight miles to walk if you went around the end of the lake by trail. But no one ever came in there any other way but by boat. We stayed the first summer and into the fall until the lake was frozen enough so we could go to town on the ice. We went home over winter. I had an operation for appendicitis and in the spring as quick as I could manipulate again (about 3 months) we went back. We went back in on the ice before the ice left the lake in the spring and stayed there that following summer. My brother went in weighing 116 pounds and came out weighing 160.

Fry: So you came out again, then, at the end of the summer?

Isaac: At the end of the second summer. And I went right from there to the University of Minnesota to school at St. Paul.

Fry: This is interesting. It really did cure your brother, is that right?

Isaac: Oh, yes. As soon as he left the woods he went back into business. He lived twenty-five of the most vigorous years of his life after he got out of there.

Fry: How old was he when this happened?

Isaac: I was about twenty and he was about thirty-six or eight.

Fry: What did he do in the forest? Was he able to pitch in and help?

Isaac: At first he was quite feeble and had to take it easy, but later he became almost as strong as me. We used to hunt together and fish together. He'd help clean the fish. I'd have some trouble getting him to wipe dishes, but we managed. (Laughter) Cooking and getting the food and the wood and the fuel and



Isaac: doing the repairs on the boats, cabin and boathouse, and that sort of stuff kept us quite busy. The second year we bought this cabin and lot on the lake. It was in the center of a vast area of eastern white pine cutover land that belonged mostly to the Cleveland Cliff Iron Company. The young white pine was just beginning to come out through the aspen, birch and maple. Then in the fall I did some trapping, too. I got quite a few furs up there. I caught the only beaver that I ever caught in my life and also a few minks. That was some of the money that I used to pay my tuition when I started school.

### Choosing Forestry

Isaac: It was a toss-up as to whether I should go to Michigan's or to Minnesota's forestry college; I had both of the catalogues. Wisconsin had no forestry college. (They did have one, but gave it up about that time and they never have had one since.)

I went over to see Dean E. G. Cheyney at Minnesota. He was a real character. He could speak French as well as he could speak English, and he had a flair for dramatics. He also had a real sense of humor. I talked to him a little while and he said, "Well, my boy, what are you looking for, anyway?"

And I said, "Well, I'm trying to find something that'll take me as far from ladies' furnishings as I can get."

He said, "You have two choices: you can take forestry or chloroform." (Laughter)

And I said, "I'll take forestry."

He said, "All right. Sign up."



Fry: This experience in the woods had left you feeling pretty well qualified for forestry?

Isaac: Yes. I had a tremendous advantage over the other kids that came to school. We'd never start a project or anything but what they'd push me up as chief of it. I knew how to handle myself and what to do. It was a tremendous advantage.

Fry: Was there a lot of work out in the woods in the School of Forestry?

Isaac: We had one of two summers in the woods at Itasca Park. Then we had to do what they called senior woods work that we took at the Cloquet Experimental Forest, where we had to go to work for a firm or logging company in the woods during the fall. Incidentally, you might have met Hubert Persons at Berkeley.

Fry: No, I haven't.

Isaac: He lives over in the Walnut Creek area now. He's retired from the Forest Service. He and I took our woods work together. And we got credit for the quarter for woods work. We had to come out and write the story of the operation and all about it, and how it was done and the different parts of it and what our particular work there was -- that sort of thing. We surveyed and cut out a swamp road to be iced for team and sleigh hauling. They'd lay out this road and then ice it and haul out the big loads of logs on the ice. We ran the line and swamped out that road with water; that was our work for the camp during the quarter that Persons and I were there together.

#### Professors at the University of Minnesota

Fry: What professors do you especially remember as contributing





Fry: to your career?

Isaac: J. H. Allison is still alive and still back there with Dean Frank Kaufert in Minnesota. Allison's retired now, though, but he has an office up there in the forestry building.

Fry: What did he teach?

Isaac: He handled that work in the woods: forest surveying and cruising, and forest surveying.

E. G. Cheyney was Dean of Forestry College and taught "General Forestry."

J. P. Wentling was the silviculture professor.

Fry: What was it about these two men that you liked? Was it their courses or their personalities?

Isaac: Mostly their personalities. I don't remember too much about their courses. But Wentling was a very definitely an outdoor man. He was a big man, and when he went out with students he would take the rough going, the bad just the same as any of the rest of us.

Allison was pretty much the same type. When we finished work at this camp on the St. Louis River above Cloquet, we hiked from the St. Louis on the railroad junction over to -- I think it was to Virginia City. It was forty-four miles on the Vermillion Highway, across the northern part of Minnesota, and it was 41° below zero when we hiked there. As I remember it was a long, cold day.

Fry: This was the Weyerhaeuser camp near Cloquet?

Isaac: Yes! After we left the camp (number twenty-seven),



Isaac: we wanted to visit a big mill at Virginia City. It was a famous mill up there. We hiked that distance and Prof. Allison hiked that with us. We were getting within sight of the place when I looked at him and I saw white spots coming on his face. His cheeks were freezing. I had a pair (that dates back to my fur business) of otter-skin mitts that were just like magic. Your face could be freezing, and you'd run that fur over your face and your face'd be warm in a minute. It was just like magic; that fur on your face would just cut the cold, it seemed it'd take it right away. I told Allison he'd have to stop and thaw out his face and he said, "I'd rather freeze my face than my hands."

I said, "You trade mitts with me and we'll get in a huddle and thaw you out." We got close together, the three of us, and he held this fur up to his face until the color came back in his cheeks. Then he put on my mittens and I put on his.

Fry: And he didn't experience any damage?

Isaac: No, none at all. He held those mitts up to his face until we got to town.

Fry: I was wondering about the curriculum at Minnesota at that time and what you now think of it.

Isaac: Well, it was surprisingly good, I thought. We had one course in wood technology, and a special wood technology prof, J. P. Wentling. We had courses in entomology under Prof. Sam Graham, and we had a course in forest pathology (that was the pathological diseases) which provided my first job in forestry -- fighting white pine blister rust. Then we had our silviculture classes, general forestry, mathematics, and as I look back at it now it seemed like that was a pretty well-rounded-out course. We had all of the vital elements



Isaac: that you bump into in technical forestry in the field. It worked out pretty well. When I came out here and started on a national forest I didn't find a job that I was afraid to tackle. So it was good for me, I think.

Fry: Did you have a lot of humanities or social studies?

Isaac: No, not that I recall, at least they were not identified by those names.

Fry: You didn't get to follow up your interest in history?

Isaac: No. I recall we had a division of forest products, where they specialized in wood pulp and paper making. I didn't take that course, but they had a special prof for that. They taught the various phases of paper making and pulping.

Fry: Did you start right in, then, in forestry when you were a freshman?

Isaac: Yes.

Fry: And went right through the whole four years, then?

Isaac: Right through the whole four years, plus a year in the U.S. Army Air Corps. It started in the middle of my junior year (third). And I took the three summer camps that were required, also.

#### World War One Interlude: The Tenth Engineers (Forestry)

Fry: Somewhere along in here you might tell about your interlude.

Isaac: That was in the middle of my junior year of college. Everybody in my class in the forestry college enlisted. And by the end of the year we were all gone, there was



Isaac: nobody left. I tried for the Tenth Engineers, the Forestry regiment, but I got down there too late. They weren't taking any more enlistments until the Twentieth, and that would be eight or ten months, they said. But they said they had another place for me since I had studies in timber structure and wood technology.

They were having difficulty with timber inspection out here in the West. They were having trouble with the "Wobblies." The IWW's in the camps were sabotaging airplane wingbeam production. They sent me out here, alone, to Fort Vancouver barracks Washington. I was later joined by twenty-four other students from forestry colleges all over the United States. We went to a school of wingbeam inspection for five or six weeks. And then they made a wingbeam inspector out of me. And I didn't see a gun or an airplane until after the war. I was right over here at Fort Vancouver barracks.

Fry: You were inspecting the beams after they had been produced?

Isaac: They would send in the big cants, the half-logs or the full-logs; and they'd cut them up in the cut-up plant and cut them down to size and then they'd send that big long timber back to us and we'd inspect it and mark it for sizes. Whatever was to be cut out of it we'd mark on it and send it back to the resaws, and they'd cut it and send it back to us and we'd inspect it again and chuck it into the cars for shipment. I had to sign sixteen carbons for every carload that went out. I never will forget it. I had to sign for the various agencies in the government. Most of it was shipped to Italy and to France. Some to England -- that's the time they were making the planes over there. But I remember signing all of those seventeen inspection certificates for every carload I inspected.

Fry: This was about 1918?





Isaac: That was 1918. I got out of there just in time to go back for the 1919 Spring quarter in Minnesota.

Fry: In the World War I work, were you there with any friends, or were you kind of alone?

Isaac: I started alone but soon found myself with a whole bunch of forestry college students from all over America. Whenever they got hold of a forester that had training in wood technology or timber structure, they sent him in for this airplane wingbeam inspection. My army pal was a Syracuse University graduate. His name was Carl Morressey. He still lives back there in New York at Shinneatlis Lake. He and I, when we got out of the Army (we got our discharge here in Portland) took one suitcase and a handbag and started around the United States. We took a boat down to San Francisco. Then took an automobile trip with a paving inspector all over California visiting forest areas. Then we went right on south. We visited every forest area wherever we went.

Fry: Were you thinking in terms of jobs after you got out? Or were you just interested?

Isaac: Both. And getting information, getting experience. We'd read about these forests and the other places (forest regions) but I had a year and a half of school left to finish, and I thought this was a good chance to see them. We still had our uniforms on and I had a brother Frank living in Shreveport, Louisiana, so we went down into Texas and on across to my brother Frank's place. Carl had a brother in Atlanta and we went on over to his place. Then he went from there back to New York and I went on to Fond du lac, Wisconsin.

Fry: So you saw all the forests, then, except maybe the New England ones?

Isaac: I visited all the forests on my way home. I already



Isaac: knew the New England forests pretty well; they were very similar to the forests of Wisconsin, the same species and everything else, so I didn't worry any about that. And I'd been down there before, with my brother Albert. I saw those forests when I went to get him when he was hurt.

Experiences at Weyerhaeuser Lumber Camp

Fry: Now, on the chronology I have that in the fall of 1919 you went to Weyerhaeuser.

Isaac: Yes.

Fry: Was that before or after you went to the Army?

Isaac: That was after the Army.

Fry: Was that the beginning of your senior year?

Isaac: I had half of my junior year left and all of my senior year to finish. And it isn't exactly clear whether it was the last quarter of my junior year or the first quarter of my senior year that I spent there at the Weyerhaeuser camp. I spent two summers at Itasca Park and at the Cloquet Experimental Forest. That's the Minnesota summer camp of the Forestry School.

Fry: What do you think about the camps as an education, now as you look back on it?

Isaac: Well, it was a great experience. And I had the time of my life up there. I was just happy and at home; I liked the fellows I was with and there were lots of animals around and fish and everything else. I liked all that sort of thing.

Fry: Were you able to continue your trapping there, too?



Isaac: Oh, no, no.

Fry: You were too busy.

Isaac: I did shoot three deer at the Weyerhaeuser camp and surprised everybody around me. The lumberjacks, they used to kid us a little bit. Persons and I, we were college kids, and lumberjacks those days were real old hill-billy lumberjacks. They'd come in in the fall and stay there 'til Christmas with one change of clothes, and lived in the bunkhouse with two hundred men and double-deck bunks two feet apart. And a little room or space on one end of the building that the grindstones were in, and the big stove where they'd sit around at night a little while. The rest of the time they were in bed. They used to kid us a little because we were college kids.

They said to us when we started out hunting (we took a weekend off to hunt over Thanksgiving), "Now be careful you don't get lost. It's pretty damn cold for us to come out there and hunt for you."

I said, "We won't need you to help hunt for us, but we might need you to help carry in the game." Oh, they got a big bang out of that, they just about died laughing.

Well, I'd spent those two years hunting in the north with my brother. We got out there and the first day I got a big deer, not too far from camp. We got that out all right, got it up to the railroad and got a little hand car out there and got it in. The next day we went way over into a cutover area and it was full of these little potholes that would be willow and cedar swamp, and a ridge around one side. It was almost noon and we hadn't seen anything. Finally I noticed a lot of tracks along the bottom of this ridge and I told Persons to get over on the ridge on the other side. I went a little ways and a



Isaac: bunch of deer jumped up and started going off through those willows and I started shooting from the top of the hill. I was standing in the snow right up to here knee-level. I couldn't tell if I was hitting them or not, but I kept on shooting everytime I saw a deer. Persons came running around on the ridge and he began hollering and says, "You got one over here." And he said, "You got any more?"

I said, "I don't know if I have or not." I went on down into the swamp and got on the tracks and followed them and found I had two more of them dead down in the swamp. We had to go back to camp and get two lumberjacks that had a hunting license to come out and take one of our deer in.

But that shut the lumberjacks up in a hurry. They were pretty good fellows after that.

Fry: Respectful after that?

Isaac: Yes. And they found out that we weren't just city kids, or ivory tower botanists.

But, this Persons, I never will forget him. His brother had inherited a gun from his father, and he didn't know how to work it. We sat up a whole night trying to put it together. It was taken apart and the pieces were all pulled out of it. I finally got it figured out about four o'clock in the morning. We started off and the second day he was over on a ridge. I saw a track go in the swamp and followed it and I run a deer right out in front of him. The darn deer turned around -- a big buck -- and just stood right there and looked at him, and I said, "For God's sake, shoot, Persons!"

He was standing there aiming and the deer finally trotted off. I ran over there and said, "What's the matter?"





Isaac: He said, "This damn gun wouldn't fire."

I grabbed it and pulled it open and threw the shell out. The shell had misfired, and instead of pulling it out he just kept pulling the trigger. He never did get a deer. He took one of mine and we went down to school and took the deer to the fraternity house. They had big venison feeds down there for a few days. But it was quite an experience.

Fry: Did you belong to a fraternity there?

Isaac: Yes, the name was Tau Phi Delta, the professional forestry society at Minnesota. And there's also a chapter of the same fraternity at the University of Washington at Seattle, Washington and at Oregon State University at Corvallis, Oregon. At the time we brought the deer to the house, the house was being run by the Forestry Club but it was just in the process of being converted into the forestry fraternity -- the Tau Phi Delta.



## EARLY CAREER IN THE U.S. FOREST SERVICE

Junior Forester on the Okanagan [Chelan]

- Isaac: When I graduated I got an appointment on the Okanagan National Forest as what they called a junior forester at that time. It had been called "forest assistant."
- Fry: Did you ask to come west?
- Isaac: Oh, yes. I took my Civil Service Examination for Junior Forester. When they said, "Will you work in your home state? Will you work in Alaska? Where do you prefer to work?" I just wrote diagonally across the paper, "Northwest or nothing," and sent it in. And I got about three offers here in the Northwest. Two in the Indian Service.
- Fry: What were your reasons for this?
- Isaac: My chief reasons were that I had seen the Northwest forests. I knew what the fir region was like. I had worked here in the spruce mill during World War I and run around in the forest a little and I wanted to get back into that kind of a forest country. And the other reason is now here in the kitchen. I had met Alberta out here, when I was out here in the army.
- Fry: Oh, here in Oregon?
- Isaac: Yes. We became very good friends when I had a year and a half of school left. I didn't want to jeopardize anybody's life until I got through with that, so when I got through, she was still single and out here waiting. And I was hearing from her right along. I came out as fast as I could get out here. We were married 2½ years later, in November of 1922, and she came with me to Okanagan to live.



Fry: You didn't really rush into marriage, even then.

Isaac: No, I didn't. I wouldn't get married until I had a solid job and could take care of a wife. After I finished school I worked six months and had all my debts paid. You may guess that I had to borrow some money before I finished school. After I had my school debts paid off, I worked another year and had \$1000. Then I went out and I bought a ring and a car and I was broke again. I worked another year and I had another \$1000, and I got married and I haven't had \$1000 since. (Laughter) That was my procedure. I wouldn't ask a girl to share my life until I could take care of her. That was the way I felt about it. Everybody did in those days. It's different now. Times have changed.

Fry: There was a lot more insecurity in the world, then, I guess.

Isaac: Yes, there was. You either had a job or you didn't. And if you didn't have a job you didn't eat. I didn't want somebody dependent on me that I couldn't support, so I waited until I got my feet on the ground.

When I first went there it was the Okanagan National Forest. While I was there it was renamed the Chelan National Forest. And about the time I left they got tired of that name and renamed it back to Okanagan National Forest as it is today.

Fry: There was a lot of protest over renaming it Chelan?

Isaac: Very vigorous protest. Because that's a romantic country, that Okanagan country. It was back off of the railroad and the river back in the back country. There were a lot of miners, timbermen, stockmen and such, barons in that country and the livestock barons started their herds from stock that was obtained in various questionable ways.



Fry: Questionable?

Isaac: A lot of them got their beginning with stolen stock, there was no doubt about that. It was pretty rough and wild country in there in the early days up in there. Then the railroad came in. It came about the year or two before I got there. Until that time there was no transportation into that country except a wagon road. And it's a hundred miles north of Wenatchee. When the water was high they went up the Columbia and Okanagan River by boat.

Fry: What were your duties as the young assistant forester?

Isaac: In the early days in the Forest Service, the rangers and the men in charge were all local non-technically-trained foresters. They had grown up on the job, you might say, and were cowboys, most of them -- cowpunchers and ranchers. The only technical man on the forest was the Forest Supervisor, P. T. Harris. He was a well-known character. Everybody knew him.

Fry: What was his position?

Isaac: He was the Forest Supervisor of the Okanagan National Forest. He was a Yale graduate from Maine originally. A very high type of New Englander. Very fine man, but very slow and very deliberate. I'd go in to ask him a simple question he could answer yes or no, but I'd stand there until the perspiration ran from my armpits down to my belt before he'd say yes or no.

Fry: You mean there'd be a complete silence?

Isaac: Yes. Lots of people would call up and ask him a question and hang up the receiver thinking he was gone.

He was just like Abraham Lincoln in many ways, great long face and mop of sandy hair sticking up on





Isaac: his head. And he was the soul of honor and he was well technically trained, too. He had a good cultural background, a really high-grade man, but very peculiar. Most people couldn't get along with him and had a heck of a time up there because they'd get nervous waiting for him to say yes or no. He always had to fill his pipe before he'd answer you for anything, no matter what it was. He'd take out a plug of Edgeworth and carve off a little with his jackknife, and hold it a while and look at you, then he'd grind it up with his thumb and pack it down in his pipe and he wouldn't say one word. That's the way he operated. There were many fellows who would jump right up in his office and run out. They wouldn't wait for him, they'd get tired of waiting. They get nervous, you know.

When I came it was a strange situation. I'd used about my last dollar to get up there. I had gotten a letter saying that I had an appointment. Alberta was out here, as I told you, so I came on to Portland first and went up to the Regional U.S. Forest Service office and visited with the men there and got acquainted. I sent a letter on to Harris saying that I'd be a couple of days late. When I got to Wenatchee it was 110° in the shade, but no shade. Then I went up on that shortline railroad, with coal heat and the windows all open, on the fifth of July. The train was full of Fourth of July celebraters going back home -- kids, families, food and flies all over the train. And the further I went up the valley the hotter it got and there was not a tree in sight -- nothing but sand and sagebrush and desert. I got into this little town about 6:30 or 7:00 on the train, and the sidewalks were paths with four inches of dust and sand on them. And the streets were dirt with six inches of dust. I talked to a fellow there, I think in front of one of the cigar stores. (He looked like he was quite an important individual, later turned out to be the mayor.) I said, "Why the hell don't you fellows sprinkle these streets?"



Isaac: He said, "We can't, we sold our sprinkler to Omak." (That's the next town.) (Laughter) I never will forget that. But that's what he actually told me. He said, "We haven't got a new sprinkler yet."

I first got a room in a hotel. All they had was an inside room and it was so hot that the wall was hot to your hand if you'd feel of it.

Fry: Just absorbed all the sun's heat.

Isaac: Yes.

I found out where the Supervisor lived and I went up to this Supervisor's house. It was a low sprawling cabin all run over with vine. The porch in front had a gravel floor, no wood on the floor, just gravel floor in front of his door. He had an ordinary door with a great big brass knocker on it that looked like something entirely foreign. It was so heavy I was afraid to let go of it for fear it would knock the door down. (Laughter) I let it flop a time or two, and this great big man came to the door, stood there and looked down at me. Never said a word.

I said, "Are you Phil Harris?"

"Yip," he says. Well I about jumped out of my skin at the "Yip."

I said, "Supervisor of the forest here?"

And he said, "Yes."

I said, "Well, I'm Isaac and I'm signed up here as your forest assistant."

"Well, if I hadn't got your letter saying you were going to be three days late I wouldn't have known you were comin'."



Isaac: I said, "My God, that's a hot situation. I about spent my last dollar to come up here. It's no joke to me. If you got nothing for me to do up here, what the hell did they send me up here for?"

"Well," he says, "we got lots of work to do up here, but nothing very technical that might interest a technical forester."

I said, "Have you got anything for me to do?"

"Yes, we got lots of ordinary work to do," he said.

I said, "Well where are your trees? I haven't seen one for the last hundred miles."

"Oh, out yonder back of the hills there's lots of them."

So I said, "All right, that's all I want to know. If you've got some trees and something to do why I'll be happy."

He said, "Come up to the office in the morning."

I went up to the office in the morning. Here was a brand new stenographer, a Swedish girl, just out of business college, bashful and clumsy. They had a forest clerk there that was a complete introvert. He never talked about anything or said anything he didn't have to say. I came in and told them who I was. They said "Harris'll be down pretty soon, have a chair."

Pretty soon, Harris came in and he said, "This is Willard Steiner, the clerk, and this is Esther Johnson our new stenographer. These are the files." He said, "You can start looking at them and get familiar with things." And he went in his room and I didn't see him again for a whole day. I walked



Isaac: around there. I'd pull open one file and I'd see "Special Use Permits." Special Use Permit didn't mean anything to me. I'd pull it out and I'd take a look at it and I'd try to understand it.

I'd pull open another drawer: "S-22 sales." An S-22 sale happened to be the classification of a sale where you sold small lots of timber to ranchers for their own use. It was a special classification at a low price. But I didn't know that. I didn't know an S-22 sale from an S-66 sale.

I pulled open another drawer and I'd find Grazing Allotments. That didn't mean anything to me either. I just went around there from day to day like that until I pretty near went crazy, until one afternoon an assistant supervisor came in, Glen Mitchell, he was a regular fellow. He took me by the arm and showed me a map of the forest and told me what was going on.

Two or three days later they sent me out to put a new telephone instrument in a lookout station and I was off. And everything went from there on. I spent four of the best years of my life on that forest, I think. I never struck a job that I wasn't able to handle with reasonable satisfaction. I was the only technical man on the forest outside of the supervisor.

I had to rerun all the homestead entry surveys. I also had to make the timber sale reconnaissance maps and make the topographic maps and the timber surveys and then write up the timber sale reports. One of the jobs assigned to me was to go in and set all the fire-finders on the lookout stations on a true north, by the North Star Observation, you know. I really had to move some of those mountains a mile to get them to line up. There were six lookout stations on the forest at that time. That first job I had was





Isaac: was her duty to do it because of her superior intelligence. About the first month I was there they invited me up to the house for dinner one night. I had just had a battle with a little fire, where I worked all night and wore the skin all off my hands. Phil (the Supervisor) laughed at me a little and he said, "You've got to learn that you can't do all these things yourself. You've got to get somebody to help you."

She turned around to me and she said, "Leo, have you had any fire fighting experience?"

And I said, "No, not a lot; I fought some fires in Minnesota, and some fires on the farm where we cleared land and that sort of thing."

She said, "Which means not any?"

And I said, "No. Which means very little, just exactly as I told you." But she was that kind of an individual. She didn't know what to say without hurting somebody. But she figured that she had this superior mind and she had to tell everybody just how things ought to be.

Fry: Did she run the forest, too?

Isaac: When she could, but he kept her out, pretty much. He kept her out as much as he could. Wherever she could get a hand in she did, she did run it. And it didn't work too well because right next door to where I lived there was this Deputy Supervisor Mitchell living. He had grown up with the forest and had been there all this time, and this technical man was brought in, as Supervisor, over him. Mitchell's wife wouldn't accept that at all. She said, "My husband's supposed to be Supervisor. He knows the ropes around here. And not Harris. My husband should be the Supervisor." That's the attitude she took and she was very vocal



Isaac: about it. She didn't hesitate at all to say it.

So toward fall we had the annual forest ranger meeting. The rangers would all come in to Okanagan, and usually bring their wives along. This ranger meeting was to go on for a week, and Mrs. Harris decided it would be nice to have a big party for the rangers on the last night. So she went down and engaged a little parish hall in the Episcopal church there. She came to our house to see Alberta about helping out with the party. Alberta said, "Well, I'll do whatever you have for me. Just let me know.

She said, "Mrs. Mitchell is right next door. In a couple of days come over with her and we'll talk it over."

So in a couple of days Alberta went over to offer her services, but they couldn't get Mrs. Mitchell to help. That night her husband, the Deputy Supervisor, walked over to our house and he said, "God, I don't know, the women are in an awful tussle here. Emma won't touch it. She won't take any hand in this party at all."

So, on the day for the big party I saw Glenn Mitchell and he said, "You know, I'd give anything if I could get Emma down to that dinner tonight."

I said, "Well, I'll try." So, I had this Buick roadster. I drove up in front of the house with the car pointing in the opposite direction, away from town. I raced the motor a little and honked the horn, and Emma came out. She said, "What do you want?"

I said, "I'd like to show you something." I was fooling around under the dash and I said, "Get in here. I want to show you something." She got up in the seat and I just reached across and I took ahold of the door and shut it, let in the clutch and started



Isaac: off.

She said, "Where are you going?"

I said, "Just for a little ride." I drove up around two blocks and turned right around and headed back to town, downtown. And I said, "I'm going to the party and you're going along." She wanted to jump out of the car and I wouldn't let her. And I drove right up to the front of the door and stopped at this little parish hall. Here was the Supervisor's wife and everybody. They greeted her with open arms. She got out of that car with the most sour face that you ever saw on a human individual. But she went in and she stayed around.

The rangers started coming over to the dinner toward four or five o'clock. Mrs. Mitchell would meet them at the door and she'd say, "You ought to have better sense than to come on time for a dinner if Mrs. Harris is getting it." So they turned around and left, two or three of them turned around and went back to the hotel. Mrs. Harris came down. She'd roasted the fish at home and brought it from home, beautiful big salmon all roasted and stuffed. She said, "Where are the people?"

I said, "They were here, but they went back over to the hotel."

She said, "We will send Ranger Frank Burge over after them." Her husband (Harris) was over there at the hotel, too. Burge left but he didn't come back. Finally she came to me and said, "Can you go over and round up those people?"

So I went over there, and I found one of the rangers sitting there in the lobby dead drunk. He was a renegade anyway, recognized as such. I said, "Where's Harris?"



Isaac: "He's upstairs, talkin' to Ranger Pierpont. He's in bed sick with the flu." And he really was sick. Upstairs I found Harris talking to Pierpont about bridges instead of coming home to supper. I said, "Phil, your wife's waiting dinner for you."

He (the Supervisor) comes downstairs and he says, "You ride with me; and Burge (another ranger), you take Tyler over." (Tyler was the drunk fellow.) So Burge got Tyler in his car and went. Harris had an old, open Dodge touring car with the top down. (He'd had it several years and it was quite a relic.) We had piled in the back of that car a whole lot of forest equipment, packsacks, bedrolls, record books, camp kits and everything else in the back of this car. We had a song written, a verse written for each ranger. We were going to pile on that stuff and come in and sing this verse for each ranger.

We started down the main street, Harris driving, just a-steppin' on it in that old Dodge. Right down in the main corner of the town there was a boulder (marker) in the center of the street: a huge granite boulder. There was another fellow right ahead of us in another car driving up the street. He swung right around in front of Harris without signalling. And Harris tried to dodge him and he hit that big center rock. Both doors of that old Dodge flew open and just spewed all that equipment out into the street. I remember it like it was yesterday. There was one of those Kellogg portable telephones that we had inherited from the army, a square box about one foot square. And it turned over four or five rolls over and over and hit against the curbing and rang, "Ting-a-ling." (Laughter) I got up and shut the doors and started loading the stuff back in the Dodge. Harris went around and took a look and pulled the fender up out of the tire and said, "The old Dodge is just about where you can't hurt her much." We loaded the stuff on and went on over to the party. By that time all the rangers were there and we sat down to dinner.





Isaac: Oh, a few more things happened. We had sung our song to the rangers and all that, and Harris got up and said, "Now, the boys have sung a song for you fellows and you haven't had a chance to prepare anything. Each one of you can tell us a story, a funny story from your district. So one after another they got up and they told something funny. Most of us had heard their stories before but that made it just as good. Then it came this Tyler's time to get up and tell his story. (The Forest Supervisor's wife was very straight-laced and stiff-necked and just very proper.) This Tyler got up and told a darn rotten story.

Fry: You mean slightly obscene?

Isaac: Oh, yes. And it just broke up the whole party. Everybody folded up and started picking up the stuff and went home. (Laughter)

Fry: Did you have any more annual ranger parties after that?

Isaac: Not that year. But they were more carefully guarded after that. But gee whiz, that was the limit.

Fry: It sounds like you had some real problems with what modern business would call interpersonal relations.

Isaac: Oh, yes, we had plenty of them.

#### Investigating Homestead Claims

Fry: Did you have to check out homestead claims as part of your job?

Isaac: Homestead entry surveys. A man could file on a forest homestead inside of the forest boundary on any piece of land that he claimed was capable of making a



Isaac: living for him. There was some land that could be cleared.

Fry: For farming?

Isaac: Yes, and another purpose that clearing could be done for was for a pasture. Then they were required to move on that land and build a cabin and to live at least six months of the year for three years in that cabin on the land. Then somebody had to come back and run the boundaries and see if the house was on the land and if they had the required amount of the land cleared (they had to clear such a percentage of it). And you had to inquire if they had lived on it the right length of time and all that.

I remember one particular incident that was just really one for the story books. This old bachelor Frenchman -- named Armadus Ritchey -- there's a lot of stories about him up there. He lived in this little cabin on Loup Loup Creek. He was about to prove up on his claim, so I came in and I found a section corner, to start with and started rerunning his line. There was a notch in the Canyon Wall and his house was in that little nick and just outside of his line. So here this poor old fellow had been living just off of his land; his cabin wasn't on the land. I knew that he, of course, couldn't prove up on it. I also knew that the old fellow probably wouldn't live another three years (the required time) because he was that far gone. And I knew it'd just kill him if I told him that land wasn't going to be his, now, until he'd live on it.

So I stopped at this corner and I said, "I've got a telephone in my car that I've got to take up to the lookout station." (This was on a Monday.) And I said, "It will take me about till Thursday to get through with the telephone job. Then I will come up here on Thursday to finish running this survey. I'm awful sorry your house isn't on your own land



Isaac: because I've got to mark the house where I find it when I get here Thursday.

Well, he said, "What I do?"

I said, "Joe Coleman down at the mill has got a good chain block." I took him down to the mill and said to Joe, "This fellow needs the use of a chain block and a rope for a few days." Then I took the old fellow and the chain block back to his cabin. I came back there on Friday morning and set my compass over on the corner and looked down the line and his cabin (it was on runners anyway) was just barely inside the line. The line would just go by the house. And I said, "For God sakes, Ritchie, while you're at it, why didn't you give it a good pull and be sure you're inside the line?"

He straightened up and he says, "The goddamn rope, she break."

I didn't say a word. I just marked the house on the map where it was when I returned and said nothing about it and Ritchey got his homestead.

Fry: Did you run into any of those now-classic examples of homesteads which were really taken out for the timber on them and which sometimes were not actually operated by the homesteader?

Isaac: No, on the Chelan I didn't. There were several homesteads there where all of us thought the timber on it wasn't worth much more than the land. But there was usually a little place where they could at least have a garden and maybe enough to raise a little grain or hay and a place to pasture some stock. They had the privilege of running a limited number of stock on the forest under a free use permit. (I think it was seven head or something like that.) Usually there was a show that a man could make a skimpy living there on those northern



Isaac: Washington homesteads. Up there the timber was light, ten to twelve thousand board feet to the acre; down here northern Oregon there's ten to twelve thousand board feet in one tree. But the stands up there were not dense and the trees were not too large. I don't think there were many crooked deals like that on the Chelan or Okanagan Forest. I didn't come across any in my work.

I came across several where the timber was worth more than the land. But you couldn't say that they took it for the timber itself, because timber wasn't very valuable up there at the time. It was two or three dollars a thousand at most.

#### Timber Sales

Isaac: I recall very definitely about the first four or five timber sale agreements that I worked up, surveyed the land and calculated the amount of timber on it and got hauling costs to see how much it'd take to get the stuff out, and what the average mill-run price was, and then subtract it out and see what balance was left for stumpage. Every darn one I figured up, always came out with a minus value for the stumpage. I'd send in my report and they'd send up a contract with a minimum stumpage price written on it and the fellow would buy it anyway, \$2.50 a thousand, regardless of what my report showed. I just couldn't understand it and it made me awful damn mad to go through all that agony to write up that timber sale report and appraisal and then have them just stick on the minimum price and the fellow would buy it and go ahead.

They had a timber sale meeting in the fall and they had a few bigshots from the Portland office up there. They were goin' over one after another of these sales. They'd look at my report and they'd say, "Isaac didn't find a value on that." I sat there





Isaac: listening until about the last sale discussion and I finally exploded. I said, "You fellows have got a queer system up here. I don't see what the hell you send me up here for anyway. I went out there and made an honest appraisal on everyone of those sales, and all you do is stick down the minimum price and pay no attention to my appraisal.

"Well," they said, "these men want that timber and they'll buy it. We can't sell it for any less than the minimum price. And if we don't sell it to them they'll contact every damned politician in this whole northern part of the state and write clear to Washington. So all we can do is let them buy it."

Fry: In other words, Leo, you worked up and figured out the appraised value, which was lower than the Forest Service could sell the timber for?

Isaac: Yes; I always came out with less than the minimum. They had a minimum price set.

Fry: Yes, and by the time that you subtracted the costs of logging from the stumpage value, the price came out to less than the minimum.

Isaac: It was less than the minimum every time.

Fry: But the Forest Service sold it at minimum price set by regulation.

Isaac: Just stuck the minimum price on the contract and the fellow bought it. About seven out of nine operators went broke on it.

Fry: It was your duty, wasn't it, to talk to the men who bought this?

Isaac: Sure, I told them.

Fry: You tried to talk them out of this?



Isaac: Yes. I told them that's the least the Service can sell it for. "Well we can make a go of it, we'll give it a try," they would say, and they would buy it anyway and go on just the same. I suppose they made a little money off of it, but not very much. They made a living while they were going broke.

Fry: But you weren't swamped with timber sales, either, I gather.

Isaac: No, no. We only had about six or seven on the forest, and they were all small -- two or three million board feet each.

Fry: For the whole time you were there?

Isaac: Yes, four years. No, I guess we had a little more than that. We had about three a year, or four. And then they would continue on into the next year. It'd take one about three or four years to wind up a sale.

Fry: I see. What use was being made of these?

Isaac: All of the lumber went for box shooks and irrigation (905) flume lumber. That was the big tragedy. They cut the prime logs out of the forest, a clear pine log and chop it up into box shooks. Clear lumber and all. About the time I left the forest, Byles Coleman Company, of Omak, Washington came in and started a sash and door factory, and for the first time that high grade pine began to come in for a better type of use. They made doors and framing and interior finish and really good high grade useful lumber and they used it. Since that time, better use has been made of the good lumber, and they're now cutting the lower grades of the lumber to make their box shooks out of. A box end isn't hurt if it has two or three knots in it. But this beautiful clear pine, selected logs, would all go right into the box shcok mill before the sash and door factory came in.



Fry: Was this western yellow pine?

Isaac: Then called western yellow. The name changed since I was there to Ponderosa pine.

Fry: Can you give us any of your observations about what private companies were doing on their own lands, or private timber operators were doing outside the national forests?

Isaac: There were practically none up there on the Chelan forest at the time.

Fry: Or around it on private land?

Isaac: The land outside the national forest boundary consisted of stock farms, and some apple orchards where they could get water for irrigation. There was one, Gamble's Mill, down at Chelan that had some private land, and he was virtually clearcutting on it. He had a local market for building material, flume lumber, box shocks, and such stuff. He got along pretty well there. Then he bought some more from the Forest and kept his mill going. But on the national forests we did a selective cutting in pine, because it lends itself to a kind of cutting. You can cut your biggest and your ripest trees, and there's always new ones coming. There's always young growth right in the forest. But on the private land then they usually clear cut it, cutting everything that they can they make a log out of and they they burn the slash. They didn't pay much attention to reforestation. They didn't value their lands too highly.

Fry: What did this do to the land? Did you notice a lot of erosion?

Isaac: No, there was very little erosion up there. Once in a while there'd be a kind of a soil breakout, and a kind of a ditch would come out through a canyon.



Isaac: But there was so little rain in there that there was very little erosion in that dry country east of the Cascades. Once in a while when they'd have a cloud-burst and get heavy rain -- it happens once in a while in that eastern country -- and it would wash out a canyon and rip things up a bit. But on the whole there was not a lot of erosion on the areas. They piled the brush and we usually burned it in the fall or winter, so there wasn't much slash around when we got through with a timber sale. It worked pretty well.

#### Range Management

Fry: I guess you must've had some duties in range management.

Isaac: I did. The entire area, clear to the summit of the Cascades, that is now proposed for a national park, was at that time all allotted to cattle, sheep and horse grazing. We had a regular map prepared and each owner had his grazing allotment. They had every acre of that country above the river bottoms taken up with cattle and sheep allotments. The national forest committees, and all the fellows that are now writing the big reports on the area never once mentioned that use that once was made of that land, or that might come again. You may live to see a future demand for that land as population increases.

Fry: For cattle and sheep?

Isaac: Yes, for cattle and sheep, but I hope not. All the high country, the back country, was sheep range. Next down the line (in elevation) was the cattle range, and the lower end of the cattle range and the low land was the horse range. That's the way they divided it up, roughly. But sometimes they overlapped and fought over it, and then they got into trouble.





Fry: And they were raising horses?

Isaac: Yes: they had horses for themselves, their own pack strings and stuff. And some of them raised horses to sell, saddle horses mostly. There was some team farming over there. But there were mostly saddle horses in that country. When I was there a few small bands of wild horses still roamed the hills. They had a time living over winter but managed somehow. Early settlers just moved away and left them -- they were usually poor quality stock. One Englishman left some high grade riding stock, but it was soon picked up by the cowboys.

Fry: Did you have the usual problems about protests that grazing allotments were too small?

Isaac: Oh, my God, they fought like mad up there if you tried to cut down their grazing allotment. If a man had an allotment for, say, 2,000 sheep, two bands of 1,000 each, and his range showed he was overgrazing it and couldn't support that much, and you'd try to get him to cut down to a band and a half, he would contact every legislator and every judge in that part of the country and clear to Washington, D.C., and swear that we were discriminating against him. If he could show us that that land would support his flock, he'd rent it for ten years in advance if we wanted him to. But not if our records showed that each year the range was being more depleted, and more depleted, and more depleted with the good grazing species of grass disappearing from the forage and being replaced by annual weeds. But it made no difference, they'd fight for it anyhow. They hung on until grazing no longer paid, then they'd quit. When they had to pay \$400 a month for a shepherd and had to haul out canned peaches and fresh eggs, for him to eat and have an air bed for him to sleep on, why it didn't pay to run sheep in the high country. It was cheaper for them to stay down in the valley and feed



Isaac: them on irrigated pastures and crops.

Fry: Did this change happen while you were there?

Isaac: No, it was beginning to happen as I left there, and it has happened since. There's only a few bands left on that whole Okanagan forest now, and they're on the better ranges, where the rancher is living right below at the lower elevations and he can reach them easily. But they used to come in there, ship their sheep in from way down in Yakima, ship them in by train and then drive them up over the sheep driveway, forty to seventy-five miles back into the mountains to their range, to the summer range. But that's pretty well a thing of the past now.

Fry: Who were the shepherders?

Isaac: Local ranchers that lived out in the flat country and such help as they could hire. There was a whole ring of ranchers right around Okanagan. Around River-side there was two or three big ranchers. Down at Waterville there was another one and several in the Methow (River) Valley. And around Yakima there was a big circle of ranchers that had what they called "home ranches" there. They'd bring the sheep out of the mountains and market half of them. They would market the lambs and take the ewe back to the home ranch to keep them over the winter. In the spring they came out with their new herd again.

Fry: So they did their own herding, the owners did?

Isaac: Yes. Well, they hired herders if they could get them. But it got so toward the last they couldn't get them anymore. They couldn't get men to stay and camp with the herd and live out there. But when I was there they had mostly Basque shepherders from Spain or Portugal. They would go into the mountains with the sheep in the spring and stay there until fall. A



Isaac: packer would bring food into them. They'd live in there with two or three dogs and follow the sheep right along.

Fry: Were the ranchers people who had migrated west recently?

Isaac: Oh, some of them were brand new, some of them were the second generation of old-timers that came in with their stolen flocks, as I told you, in the early days, and got established, and all ages in between.

Fry: Long before your time?

Isaac: Yes, got a homestead and were old-timers in there. But some were brand new and started on new places. They come in with a little money and buy a little place and put in an application for a range on the national forest and start out.

Frank Lenzie, a Grazing Examiner in the U.S. Forest Service at Wenatchee, Washington quit the Service and went into the sheep business over at Yakima. At the time he got a fairly good salary in the Forest Service, and his wife worked also. She was a clerk in the Forest Service office at Wenatchee. Then the Depression came on and he went broke and lost everything. The next thing I heard, he was feeding pigs in Alaska at one of the army camps, getting the table food. He said it was the best pig food any pigs ever got. He worked there a year or two and made a little stake and came back and bought another "spread" in eastern Washington. (A "spread" is an established stock ranch.) His wife continued to work in the office in Wenatchee for the Forest office, then he got an appointment back in the Forest Service as E. N. Kavanagh's assistant in grazing. From that he went into the Indian Service, as Chief Forester for the Indian Service and he worked several years as Chief Forester for the Indian Service traveling all over the United States. But his wife kept working,



Isaac: and she kept buying this used up, overgrazed, tax-delinquent land around Patterson, Washington. As fast as they got that land they fenced it -- they finally had fifty miles of fence. They rotated their grazing on it, and would let the grass go to seed every four or five years so that the range would have a chance to reseed and get the good grazing grass back on the ground. We were trying to do it that way in the Forest Service but everybody was fighting us. Frank Lenzie goes out on his own and does it, and in just a little while he had a beautiful ranch up there at Patterson, Washington. He quit the Service entirely and went to ranching. He converted half of his land to wheat land, and devoted the other half to sheep and cattle. But he got rid of the sheep entirely when it got so hard to get herders and went all to cattle and wheat and did very well at it. One day about three years ago he came to see me and he had a suitcase full of money, hundred dollar bills, twenty dollar bills, five dollar bills, everything. I said, "My God did you rob a bank or something?"

He said, "No. I sold some of my cattle." And he added, "This will strike you funny, but I want to give this money away. I want to give most of it to some charitable organizations." He had some hospital he was going to give it to and some Eskimos he was helping to educate and some orphanage his wife Ethel was going to give to. He gave a thousand dollars to some Camp Fire Girls near Spokane. Then he left and said he'd get in touch with me again and talk some more about it.

They don't know how much money he sold the cattle for. He got paid in cash and he was giving that money away in cash. Maybe he'd record it after he gave it away. Last summer when we went to Canada we stopped to see him at Spokane; we went up to the golf club to dinner with him and his wife.





Isaac: I said to Frank, "Why don't you give the money to your kids and get them set up? They've got some children to educate."

"Aw, God, they're all taken care of already," he said "They got more money than they know what to do with." He had 36,000 acres blocked up in a sold block over there at Patterson, Washington of this one-time tax-delinquent land that they said was used up, and no good, and worn out. The next thing I knew I got a check for \$500. He said, "Put this to some good cause. I'd like to see it go to some college or somewhere to help worthy forestry or range students." So I got in touch with McCullogh at Corvallis, and Nagle at Washington State, at Pullman, Washington and Marckworth at the University of Washington at Seattle. I got their propositions for endowment and so forth. They could set it up in an endowment to help worthy students in range management, who would know where their money was coming from, and would have a chance to see what someone else had done on grazing land. It would keep his name (Frank Lenzie) before the people who are interested. Then I wrote Nagle at Pullman and told him to get in touch with this fellow directly. I told Frank the way to get rid of some of his money was to set up an endowment over at Washington State College at Pullman, as "the Frank and Ethel Lenzie Endowment", to aid worthy students in forest and range management. I got a little note from Frank, that said, "Looks like the arrangement is working out and everything is going to be all right. I'm grateful to you," and so forth. He said, "I sold the lower half of my ranch to the Irrigation Service. It's under or below the ditch, and I got \$890,000 for it. They've just paid me \$250,000 of it."

He got \$890,000 for the lower half of this so-called worthless range land that he had bought up! It was amusing to me; it's an interesting but true story, because here he was on a forest in the beginning



Isaac: trying his level best to get the stockmen to treat land that way. But no, they just couldn't do it. They had to get the last bite of grass off it right now, and t'hell with tomorrow. That was the attitude. But this man walks right out and demonstrates it on his own land and gets crazy rich on it. I don't know what he's going to do now. He's eighty-one years old now. And his wife is pretty near as old as he is, but she's frisky. I think she's huskier than he is; he's pretty frail.

Fry: When you were handling some grazing management on the Okanagan, did you find that one of the big obstacles to this was that the political pressure was just too enormous?

Isaac: It was terrific. These grazing men had plenty of money as a rule, and they would fight any reduction of stock that we tried to put over to improve the range, or any closing of an area to allow it to reseed. But that corrected itself all at once, when the cost of running sheep in the back country got too expensive, it corrected itself right now. They don't have that problem any more. But the grazing pressure has pretty much disappeared. They are raising their stock now in the valleys and feeding them with irrigated pastures, where they can raise ten times as much on an acre as they could under normal dryland conditions. I think there are just about as many sheep produced now as there were then, but they're raising them all on their valley ranches and on irrigated pastures.

Fry: Smaller areas?

Isaac: Smaller areas, higher production.

Now we have the problem with the timber operators. They want to cut the timber faster than we think it ought to be cut. And they're working every kind of shennanigan, with great lobbyists going back to Washington. They're trying to force us to put this



Isaac: remaining national forest timber on the market faster than we think it ought to go, and faster than it needs to go.



## PACIFIC NORTHWEST FOREST EXPERIMENT STATION -- EARLY WORK

Arrival at the Wind River Experimental Forest

Fry: How did your job evolve at the Experiment Station?

Isaac: Before I came west, the Director of the Wind River Experimental Forest was a Minnesota graduate, and he had come back there to get his doctor's degree while I was at Minnesota, and I got to know him there at Minnesota. His name was J. V. Hofmann. He was the fellow who had done the "Seed Storage in the Duff"\* thing. Right from the beginning he insisted that I should come out and go into forest research. He arranged to have me come out as his assistant at Wind River. But a week or two before I got to come out here I got a telegram from him that his appropriation had been taken away and that he wouldn't have an assistant and I'd have to accept one of the offers from the national forests. That's when I went to the Chelan Forest. I accepted that because it was in the Northwest, where I wanted to go. I was scheduled to go into research to start with.

He knew the profs back there and he thought that would be better for me. Then at the first opportunity for expanded research work they brought me down as field officer there at Wind River. It was then a sad affair. Hofmann was one of these dashing, plunging sort of fellows. If he wanted to do something, he'd go ahead and do it whether he had money enough in his appropriation or not.

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\*Hofmann, J.V.; "Natural Reproduction From Seed Stored in the Forest Floor," Journal of Agricultural Research, Vol. XI, No. 1, Washington, D.C., Oct. 1, 1917.





Isaac: Even if he built a house, he'd build it so-and-so and pay for it out of his own pocket if he had to, or get the money from somewhere else.

He figured the government owed him a lot for both time and money spent in that manner. He got into some kind of a jangle over an expense account. They had told him that it'd have to be corrected. He had been charged with something on the order of taking his wife on a trip with him and charging the full cost of the room to the government instead of one-half of the cost as required. He claimed he had made up the difference on the meals. But they told him to correct it and he refused to do it, he was that stubborn. He thought he drew enough water to get away with it -- which of course can't be done. When you violate a regulation and it's called to your attention and they give you a chance to correct it, you better do it quick because they can't back water once it's reported. So he was given a six months disciplinary furlough. And he resigned.

While all of this was going on they were trying to get the Clarke-McNary bill passed (to increase research appropriations) and Hofmann was working hard on it. No action was taken about the charges against Hofmann for more than a year and he thought it was dropped or forgotten. But strangely enough immediately after the bill passed the charge against Hofmann came back to life and Hofmann was given the six month disciplinary furlough by Bill Greeley, who was then the U.S. Chief Forester.

I was called down from Okanagan as a field assistant to gather up the loose ends of what Hofmann was leaving at Wind River. And Munger was then chief of Silviculture at the U.S. Forest Service in Portland, Oregon and automatically in charge of Wind River Station. I was between two fires because there was very bitter feeling between Munger and Hofmann.



Fry: I see. Hofmann was still there when you arrived?

Isaac: Yes, he was still there, and we lived for six weeks with him in the same house. We told him not to hurry, but we didn't know it was going to last that long. They stayed from May until the third of July, his wife and his boy (Julian George). This was after he was out of the Service.

Fry: And you had how many children?

Isaac: One, at that time. That whole move was an amusing incident. Hofmann resigned May 1, 1924, and I arrived about May 7. Hofmann was still living in the house I was supposed to move into. He wanted to stay a little while until he heard about his new job, but he didn't hear and he didn't move out. Well, he moved out and left on July third and the next morning, Munger and his family arrived for a visit and to see how things were going. It may have been an accident but it seemed like awfully good timing.

Fry: Hofmann finally went east. Were you still good friends?

Isaac: Yes, to start with. He went east and he became a forestry professor at Mount Alto forestry school, but I forget the exact name of the school. It was run by Pennsylvania State Forest Service.

Mr. Munger was made director of the new enlarged experiment station about the same time. But it was in 1924, when the enlarged experiment stations were formed.

Fry: Up to that time, it's my understanding that research hadn't been very secure in the Forest Service.

Isaac: No, it wasn't. It was just a kind of an orphan all the way along. That was why Hofmann's money got cut off on him. Hofmann got into some battles with



Isaac: Munger and some of the other foresters and they punished him by pinching his spare cash off.

Fry: When Hofmann wanted to have you as his assistant?

Isaac: Yes.

Fry: I see.

Isaac: They pinched off his spare money for expenses, for assistants and that sort of thing. So Hofmann was working alone when I came, except for a clerk. Then Hofmann left about eight weeks later.

Fry: He was at the nursery?

Isaac: No. The nursery and the Experiment Station were separate institutions but worked together. Hofmann was at the Experiment Station. It was located right there at the nursery, right there in that immediate vicinity. Coming into the Station, the first three houses along the street were ours (Experiment Station), then the office, and then the next two houses were nursery houses.

Fry: It would be good to know who in the Northwest Region was pushing research, trying to get it more securely established.

Isaac: Dave Mason, Bill Greeley, the deans of the three forestry schools, West Coast Lumbermans Association, Western Forestry and Conservation Association and men from the big timber companies were the men who got behind the research movement. Senator McNary was the one big man; he put the bill in and got it passed.

Fry: We might add that he was the Senator from Oregon then.

Isaac: Yes, there's a whole record of that in Dave Mason's diary that you have deposited somewhere back there in the Forest History Society. They published part



Isaac: of it.

Fry: What about the people around you? For instance, when you were on the Chelan Forest, did you get any ideas there about how research was looked upon?

Isaac: We did some. Now and then you'd find a fellow with a technical bent that would be interested in research, James G. Eddy, Munger, Hanzlick, George Drake and several others in the Forest Service. And we on National Forests were all asked to do some little research project on the National Forest where we worked. I was going to plant pine on the Chelan, but I got taken away before the planting ever got started. We were each asked to take on some projects and work at them. "Minor projects," we used to call them in the big research program, and it was getting a little attention right along the line. There were always one or two fellows that were technically trained and interested in forest research. But the administration as such wasn't too enthusiastic about research. They seemed to think they were smart enough to get along without it and blocked it at every opportunity.

A lot of lumbermen out here were interested in research. They were Senator McNary's backers. They were active in it. George L. Drake, who became Simpson's general manager, was a former Forest Service man. He was interested in research. Several of the men of his caliber were drifting around the country here. (Incidentally, he's living at Rancho Bernardo now, outside San Diego. Had a letter from him not too long ago.)

Fry: So you went to Wind River. What were your first impressions?

Isaac: Well, my first impressions: the records were in very bad shape for they were not organized. The projects were not set up and filed properly. In fact most of the stuff was piled two feet high on one big open table.





Isaac: My first job was to sort out that material by projects as well as I could, and get some order out of the chaos.

Fry: These were records of what?

Isaac: Records of sample plots, correspondence and records of studies that had been made of various kinds, and arboretum records, records of seed studies, planting studies, thinning studies, fire studies -- all records of work done. Hofmann just piled stuff up and then dug it out when he got ready to use it. Most of the projects had a name and a place to put them, and they had file space. (They weren't limited like I am here.) That was one of my first jobs. I of course was interested in studies. I was interested in learning more about the forest about me, and how it grew, what made it tick, and why it wouldn't in some instances.

Fry: And you had wanted to get into research, then, ever since you got out of college?

Isaac: Ever since I got out of college and even before. I was scheduled to go into research when I first came west. It was an answer to a long-felt dream. And I got into it at the first opportunity. Actually, I had really enjoyed my work in forest administration. As I said, the first four years on the forest I never found a job I couldn't do well, or at least in a satisfactory manner. Then I got out of that and went into research and haven't done anything satisfactory since.

Fry: (Laughter) You can't say that because I see all of these awards on your walls to disprove it.

Isaac: It isn't good enough to satisfy me. There's always more that could've been done if I was a better man and had had more help. That's the feeling I have.

Fry: What was the first job that you had to tackle when



Fry: you entered research and came to Wind River Experimental Forest?

Isaac: The first job that I had to tackle was to put the arboretum in shape.

Fry: The Wind River Arboretum?

Isaac: Yes. The Wind River Arboretum was set up to test, in the Wind River climate, trees from other parts of the world. This man Hofmann got the wild idea, in spite of the opposition of everybody else around him, to move the arboretum out into the open, cutover land. And he proceeded to do just that.

Fry: All the trees in it?

Isaac: He took part of each group and moved them out in this pasture lot of cutover land and planted them out there in widely spread groups or spots. His reasoning was that they should be out there and compete with the other native vegetation in order to show what they would do. But that wasn't the purpose of the arboretum at all: they had been put in at Wind River where they should get some care. And being species from other places, they wouldn't grow as well as the native species and about everybody knew it. Those that he had put out there in the pasture were rapidly dying and being choked out. My first job was to move them back into the arboretum as best I could.

Fry: Were you fairly successful at that?

Isaac: Only so-so. We got some of all of the species moved back, and in some of the groups we got all of the living trees moved back. If some trees were too large to move, we had to leave them. Or if they were dead or too far gone we had to leave them. But those that we could move we did move. It was an interesting experience to me; I learned quite a little about tree moving. I remember the sickly spruce we moved in;



Isaac: some of them made hardly any growth at all for ten or twelve years, just struggling along and staying alive, and finally they caught on and went. And some of the trees never did, never got over the shock of that late moving. Some of the groups we practically destroyed by that moving. But we moved them anyway.

Robert Marshall, Forest Assistant

Isaac: On that first job I had an assistant up there -- the famous Robert Marshall, the one who pioneered in Forest Service recreation. He's the son of Marshall from the law firm of Guggenheim, Untermeyer, and Marshall, in New York. Marshall Hall at Syracuse is dedicated to his father. He came out and he worked the first summer for me. And he always referred to that as his one glorious summer, I suppose because I was very patient with him. He was a very odd chap.

Fry: Why was he there for just a summer?

Isaac: He wasn't through school. He was just working for the summer. That was the summer of 1924.

He had lots of political influence. That had a lot to do with why he was there (laughter) and why he got any other job he wanted later.

When Munger and Clapp and Munns came up there to visit Wind River and Marshall was around there, why he spent most of his time running backwards in front of them snapping their pictures, and picking stuff up out of their hands and carrying it for them, and that sort of thing. And all they talked about was this great boy Marshall.

When they got ready to go I said, "Are any of you going to ask me what kind of work he does, and do you want to see some of his records?" They said,



Isaac: no, they didn't think so. But they were just very greatly interested in him because of his political influence. I said that was the case. There wasn't any doubt about it. His father was a very good friend of Franklin D. Roosevelt.

Bob worked the summer here and had a good time, he did a lot of work. But he was very queer, very odd. He broke practically every instrument and tool that I gave him to work with. He told me that he just couldn't handle tools or anything. He said that he chopped wood one whole summer to learn to use an ax, chopped wood without pay just to learn to use an ax. You'll find in his writings, in his book that he wrote about Alaska, that he grabbed an ax and accidentally cut a runner half in two on his dog sled when they were way back in the mountains. The guide was ready to shoot him. But he just couldn't handle tools. It was a natural failure of his. He was a very strange individual.

I recall that I had a little Damascus ax, it was a beautiful little tool that I'd had since boyhood. It was an expensive ax. I kept the blade just so (I've still got the ax, by the way). We'd come to these thickets of vine maple that'd be crowding out a little Douglas fir seedling, and Bob Marshall would take an ax and walk up to the little vine maple and hit it at right angles -- and his ax would bound off. He would about belt his head off but he'd never chop the tree off. I'd walk right in and put a little tension on the tree and give it a clip with my little ax and cut it off with a single blow. I could flop those vine maples over one after another. He'd say, "Now you gotta show me how to do that." I'd put the ax in his hand and show him how to bend a vine maple over and get a little tension on it and chop it off with one little clip from his ax. He wanted to learn, he was a good fellow, really, but he didn't know how to do it naturally. And it'd tickle him to





Isaac: death if I'd be happy with him and tell him how to do it. He'd do it then as well as he could. But you'd die to see him, a forester, hitting at right angles at a round, hardwood stick, instead of making an angle slash cut into it.

Fry: We are mixed up here on my chronology, because my impression is that Robert Marshall came to you during the Roosevelt administration. Was it before that?

Isaac: This was when Roosevelt was not yet in the national administration as I recall. It was the summer of 1924. Just before Roosevelt became governor of New York, and when he was a power in Democratic politics. Later when Roosevelt was President, Marshall was a very good friend of Tugwell, you know, who was one of the "brain-trusters." He didn't call him Tugwell; his name was just "Tug" to Marshall.

Fry: That makes sense then.

Isaac: Later in the summer of 1924 we were examining a line of sample plots stretched across the Wind River Valley; that was cutover and burned over land from green timber to green timber. We were recording the reproduction that came in there after the fire. There were three parallel lines of plots across the valley. This beautiful (Wind River) stream went right down through the middle of the valley. Down at the lower end of the area was the Camp Eight dam. A beautiful curtain of water came out over chute logs and dropped down into a great pool. About every five minutes a powerful steelhead trout as long as your arm would come right up out of that pool of white water, and jump through the air and land on that curtain of water, trying to get up over. Sometimes they would make it and sometimes they wouldn't. We were working there and it was midsummer and hot -- one hundred-degree August temperature. The brakefern was in the fruiting stage and shedding a brown pollen. Just choke you to death working in it. I used to work this



Isaac: trip out so we'd go up one side and come down the other line of plots to make it to the creek for lunch at noon. And I'd always run him over by car to this Camp Eight bridge and we'd sit there in the shade of the bridge and watch that beautiful waterfall, and the fish jumping out, and also feel the spray. A delightful spot to eat lunch. About the third day he looked over at me and he said, "And why do we come down here to eat?"

And I said, "My God, man, doesn't this mean anything to you, that beautiful waterfall there and the powerful fish coming up out of that white water and landing on that curtain of water -- struggling to get up to the spawning ground? Doesn't this coolness refresh you?" I said, "Where would you eat?"

"Oh, out there on the sample plots, I suppose."

I said, "Out there in the fern and dust and dirt and sun? No shade even?"

"Well, I hadn't given it much thought," he said. "I guess I like it here."

Well, after he left here and went to the Priest River Experimental Forest in Montana (where he worked for a while) he wrote back to me a month or two later and said, "And what were those fish, again, that we saw up there at the dam on Wind River? I've been thinking more about those things since you talked to me about them."

But that was how much interest he had in wildlife at that stage in his life. He'd leave the station and he would walk, on a Saturday or a Sunday, forty miles or more in a day, up these mountain trails, back over, around, through the hills and back out. And he'd come down at night and he'd say, "I went up here and over there and then I crossed around here to that



Isaac: point (on a map) and I came through this area and then I came down through this creek and on home."

I used to look at him in amazement and say, "Either you're just an awful damn liar or you ran half of the say," because I knew he couldn't make it walking.

Isaac: "Well," he said, and laughed a little, "I always run down hill."

And then I'd ask him what he saw on the way, and he wouldn't remember anything; just "trees," and that's all. He didn't know what he saw. He was just interested in walking. And if he hadn't walked forty miles that day he'd come out after supper and walk up and down the road until he got his forty miles walked in the day. He was a fanatic, but along with it an awful nice fellow, and a good fellow, a willing fellow. But awfully queer, and you had to have an awful lot of patience to work with him.

Fry: Did you have very many political appointees foisted off on you?

Isaac: No, only now and then. But you would never dare mention that a job was a politically-motivated appointment. You'd have been canned without any ceremony if the word got back to Washington. He was a nice fellow and he was very much interested in all phases of forestry but particularly in forest recreation. Later on he did walk out and demand a job wherever he wanted it, and he'd usually get it. He went back there to Washington where this man Kenney (he's still alive back there) was in charge of the Indian Service. He was one of the great men in the early days of forestry. (Kenney is past ninety years old, is retired and early in 1968 remarried.) Well, Marshall just pushed old Kenney right out of his job, and took his place as head of the Indian Service. And old Kenney went off on the sidelines on some CCC



Isaac: work or something, and Marshall was put in charge.

Isaac's First Douglas Fir Work: Seed Flight

Isaac: The next job was to examine six groups of sample plots that were known as the Douglas fir heredity study.

Fry: This had been begun by whom?

Isaac: This had been started in 1912 by Munger and Charles J. Kraebel and Bob H. Weidmann, and Ed Hanzlick, and Harry Gisburn. I think Kraebel is still alive, down in Berkeley, California. They dreamed up this study, and wherever these different fellows were working they collected seed and sent it in to Wind River from thirteen different locations in the Douglas fir region. J. V. Hofmann came to Wind River about 1914 and took charge of the station and this study. Hofmann thrashed the seed out, kept the lots separate and planted them in separate nursery beds, tested them in the nursery, and then when they were a year or two years old they were taken out and put into nine different parts of the Douglas fir region.

Fry: Not necessarily related to the region from which they came?

Isaac: No. The purpose was to test out seeds from different sources in one location and climate. So the tests at Wind River would have seeds from all different locations and the tests at Mt. Hood would have the same seeds. And also, the tests up on the Stillaguamish River (Snoqualmie National Forest) would have the same, and Hebo Mountain (on the Siuslaw National Forest) would have the same seed. Well, it was the four year period instead of the five year period for those trees to be examined. But we found those plantations so





- Isaac: badly overgrown with native wild stock that several of them had to have the native volunteer trees cut out at once to save the planted stock. So that first year Marshall and I visited three of these plantations and cut out the competing vegetation. That's one of the jobs that Bob helped me to do.
- Fry: This was your first contact, then, with Douglas fir?
- Isaac: Yes, the first season's work. I had just visited before. I used to come over here to the Douglas fir region from Okanagan a couple of times a year. This is a story they like to tell on me: When I first came to the Northwest I'd come over here about every six months or so and spend my vacation here in Portland. I'd hang around the Regional Office or go up to Wind River and get acquainted with the forests and people during the day. My girl friend (now my wife) worked with the telephone company and she was busy during the day. Nights I'd go to see her, and then stay around here and visit in the daytime. And they thought it was real good of me to be enough interested in forestry to come over and spend my vacation over here, and get acquainted with the work and the people. They didn't know anything about this other business (my girl friend) at all. (Laughter)
- Fry: Your wife-to-be.
- Isaac: Yes. And I didn't bother to tell them. But a lot of them thought that was quite good for me to have that much interest. I thought it was pretty good, too.
- Fry: But you also rubbed up against Douglas fir management problems, things like that, in the daytime.
- Isaac: Yes, yes. And around the Regional Office and elsewhere I learned a lot. I learned about the men and the office and the operation and how things went in the Forest Service and how people felt, and incidentally, I met some of the industry people. I'd get to a few



Isaac: of the Society of American Foresters meetings and so forth. It worked out just right all the way around.

Fry: You got the girl and also a little education in what later became your specialty.

Isaac: Yes.

Fry: What did you do following the examination of the sample plots in the Douglas fir heredity study?

Isaac: Following that, I was given the assignment to test the validity of the seed storage in the duff theory, by Hofmann.

Fry: As I understand it, Hofmann's theory had been that seed lived for several years in the duff before it began sprouting. Is that right?

Isaac: Yes. He arrived at that conclusion because he could not determine what the source of seed was when he found these seedlings long distances from green timber, out on an open burn. He did not know the distance of seed flight and nobody else knew the extreme flight of seed either at that time. That's how he arrived at that conclusion, by determining the age of seedlings on the burn. It was then nine or ten years old, the Yacolt burn near the Experimental Station. It burned in 1902 and he made his studies in 1911 and '12.

Fry: These studies were made for the Forest Service, is that right?

Isaac: Yes, at Wind River, and the adjacent burns. (Poor fellow died last year in Florida.)

Fry: Leo, before you got started on your study on this life of seed, how did it come about that they wanted the study redone?

Isaac: It came about because the areas cutover were not



Isaac: reforesting. There were vast areas that were practically treeless in the Douglas fir region. And the foresters said, "If there's seed storage in the duff, new growth ought to come up and it isn't coming." The volume of nonstocked land was building up fast, faster than they were cutting almost. It was not all restocking. It only restocked after good seed years, and then in a more or less limited manner and too slow. That's why they questioned the theory. There were a lot of people who questioned it right in the beginning.

Fry: Who questioned it?

Isaac: Munger was one of them. He was one of the most careful of the early observers. And Weidmann (he was then moved to the Northern Rocky Mountain states) questioned it. And some of the college professors in the forestry schools questioned the seed storage in the duff theory. Ed Hanzlick, I think, also. You'll find his name mentioned frequently in connection with Northwest early forest history. Simultaneously with my check of this seed storage in the duff, I proceeded with a test of the distance of natural seed flight from either seed trees or standing timber or seed released from a kite. I tested that seed flight in three ways.

First I collected the seed carefully, dried it in the sun and hand thrashed it to keep the wings attached to the seed. Then I raised the seed with a kite over flat snow fields and released it at given heights. I had my fish line (string) tied to the lid of the oatmeal carton that I used to carry the seed up with. And when the one hundred fifty foot marker showed up on the string I would pull the string and trip it (or if I wanted a height of two hundred feet I got it that way) and the wind would carry that seed off and deposit it on the snow. I would follow with my measuring frame and measure the density of fall and the pattern. I made any number of these



Isaac: tests for several days on the juniper flats in eastern Oregon.

Fry: You were measuring wind velocity, too, I guess.

Isaac: Yes, I measured wind velocity on the ground surface with an anemometer and aloft with an air meter attached to the kite. So I got both the surface and high up wind velocity. Then I went another step, and the next year located bodies of green timber and set seed traps out from the edge of timber at one hundred foot intervals for a half mile. In the fall when seed fall began I collected seed every two weeks from those traps to get a record of the amount and distance of the natural seed fall from a native stand. After that, we checked the amount of reproduction that we got from that seedfall on that cutover land. I had a measure of the seedfall and a measure of the reproduction that resulted from it, you see. There was none of that information available for any of these species at that time anywhere in the world.

Fry: How did this method of research and your research design differ from those used by Hofmann?

Isaac: Hofmann didn't make any conclusive study; he just assumed that these seedlings coming in on that 1902 burn eleven years after the fire came from seeds stored in the duff. He got that idea from some viable wheat seeds that had been taken out of a tomb somewhere in Germany several hundred years after they were stored there. That's where he got the idea that seed lived several years in the soil. He attempted to test it, and about 1914 put seed in the soil the same as I did in later years. You'll find that study mentioned in this book, Natural Reproduction of Douglas Fir, by J. V. Hofmann (USDA Bulletin 1200).\*

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\*J.V. Hofmann, "Natural Reproduction from Seed Stored in the Forest Floor," Journal of Agricultural Research, Volume 11, number 1, Washington D.C., October 1, 1917.





Isaac: He got practically no germination after the first season, then gave up his test. He explains the results away because he said the seed cages were disturbed by rodents and air was let in, and consequently the seeds didn't germinate. There was no basis for that conclusion, but he just explained away his failure in that manner. And that duff storage theory was used as his thesis for his doctor's degree at the University of Minnesota -- which is an interesting story in itself.

Fry: He carried this on where? At Wind River?

Isaac: Yes, at Wind River he made the field studies and then took the data and went back to school in Minnesota and presented it for his doctor's thesis.

Fry: So when you set about, then, to check Hofmann's thesis, you did it in two ways. First by conducting the seed germination tests, then by measuring the seed flight patterns?

Isaac: Yes. For the germination tests I put the seed in the forest soil, and took a portion of it up at yearly intervals for germination tests, one, two, and three years in succession. We had a rodent-proof container that kept squirrels out, too. There was a coarse screen on the top and a fine screen inside, from which the little containers were made and in which the seed itself was buried. I placed the seed just at the surface, or just under the surface, at one inch below the surface, and at two inches below the surface.

Each year I took one of those containers up and tested the seed for germination in the greenhouse. And when, after the second year, I got no more germination I continued the germination tests and I repeated the whole study. But this time I included not only Douglas fir but all our Northwest species (western red cedar, western hemlock, western white pine,



Isaac: ponderosa pine, sitka spruce, noble fir and Portorford cedar), which I was not expected to work on. (I was expected to work in just fir.) But I took the whole slate and tested them all. I repeated the germination tests three times before I published anything on it, to be doubly sure, because I didn't want to hurt Hofmann, for one thing. And I didn't want to destroy an established theory if it had any foundation of fact in it. So I was doubly careful in holding off until I made the test three successive times over a period of about eight or nine years.

Fry: And the seeds never did germinate from duff storage?

Isaac: They germinated normally the first season after seed fall, as you would expect a seed to do. But I got almost nothing beyond that. Oh, a little scattering here and there. A seed would fall into a place where it would get extra protection in some manner.

But I did find that seeds would live more than one year in the ripe cones, on a tree, if the tree was killed by a flash fire and the cone was scorched, but did not get hot enough for the heat to penetrate that green cone and kill the seed. They still ripened in the cone and fell later, like happened on the Tillamook burn that occurred in August, 1933.

Fry: So on a burn you could have regeneration from seed in the green cones --

Isaac: -- that were on the tree at the time and ripened later and shed their seed the season after or rather the fall after the burn. But that does not occur often and not much reproduction comes from it.

I also found that western white pine seed did live over more than one year. We found it first in the nursery that the white pine seedbeds would get germination the second year and even some in the third year. This is because the white pine seed has a hard



- Isaac: shell. There are lots of seeds that have a very hard shell, like the berry seeds and the cherry seeds. They often have to go through the digestive tract of a bird before they'll germinate, or get a similar treatment in handling with roughing. But most tree seed is not that rugged. At least our common tree seeds are not that rugged. One year is about all they can stand of exposure to the elements in the forest floor. They either have an abortive germination (sprout and die), or they decay right in place. I found decayed or spoiled seed right in those containers that I took out for germination tests. There was no doubting it whatever.
- Fry: So that statistically, then, most of them went ahead and germinated in the first year or decayed in place.
- Isaac: You'll find all of those records in that bulletin of mine, The Reproductive Habits of Douglas Fir, you know, that big brown one.
- Fry: Let's note that your article appeared in the Journal of Forestry.\*
- Isaac: It was when I started making these seed studies that Hofmann cut me off the list. I never heard from him again, he never answered my mail or never even called me when he came out here to visit.
- Fry: What was the response from others when you published your report on the life of the Douglas fir seed in the forest floor?\*\*\*

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\*Leo A. Isaac, "Life of the Douglas Fir Seed in the Forest Floor," Journal of Forestry, Vol. 33, No. 1, January, 1935.

\*\*Life of Douglas Fir Seed when Stored in Soil or Duff," Progress Report Number Three, summarizing to date the seed storage in the soil studies started in 1925, 1928 and 1930. U.S. Department of Agriculture, Forest Service. Typed manuscript.

Reprinted in Journal of Forestry, Vol. 33, No. 1, January, 1935.



Isaac: There were many that suspected it. The proof was in the land that was not really coming back to forest. It had been cut and burned as Hofmann prescribed, and often reburned. But the reproduction didn't spontaneously come in over these larger areas, where they were beyond the flight of seed.

Sometimes seed is carried great distances by the wind. When you strike a rising air current, a convection, over a warm slope in a fall afternoon, the rising air current will be faster than the rate of seed fall. Seeds fall around three miles an hour. Often these rising air currents are going up -- I had the record of one at eleven miles an hour, an upward draft. (It's the theory that gliders glide into what they call "air fountains" and they carry them up.) Sometimes seed is released under those conditions. It isn't often, but it is, and then that seed will go phenomenal long distances, but the further it goes the thinner it spreads, and the less effective it is. We found in our work in the Service that a quarter mile, under average conditions, was the greatest distance that you could expect seed in effective amounts to disseminate from a stand of green timber. That's what we used as our standard in the Forest Service timber sale policy. In a forty-acre tract, a quarter mile (1200 feet to 1350 feet distance) was the distance of natural seedfall that was effective from seed trees. Some went unbelievable distances, but not great quantities of it.

Fry: I wondered if you had any response from industry men or other people inside the Forest Service that indicated that either they felt your study had been a great contribution or that Hofmann was still right.

Isaac: Some of them still think that Hofmann is right. They see seedlings coming in two to ten years after the burn and they don't know the distance of seed flight. And they still think that Hofmann's theory of seed





Isaac: storage in the duff is right.

Fry: Who still buys this?

Isaac: Loggers and the small timber operators. But the older men that know the country, and that look at these cutover lands that were idle for a generation or more and are not restocking, are well aware that seed wasn't in the soil.

Fry: Did you encounter any opposition or doubt on the part of anyone else in the Experiment Station?

Isaac: Not in the Experiment Station proper. Every fellow is too busy in his own work to dabble very much in the other fellow's field. Phil Briegleb was in growth studies and Dick McArdle was in fire studies. Simpson was in fire studies. Kolbe was in ponderosa pine studies. It's true I was always joshing Kolbe, like a funny letter I wrote back to the girl in Kolbe's office. Kolbe and I were very close friends and worked in adjoining offices; I used to kid him about his small trees over in the pine region. I said in that letter that I woke up the next morning on the train riding through Kolbe's forest and from the train window I could look out over the top of the trees, they were so small. I wondered how he could find the logs when they got lost in the tall grass. I was just having some fun with Kolbe; we were very close friends and still are.

Fry: Leo, I'm curious about how you people within the Experiment Station set up methods of investigation and research design. For instance, your use of a seed-bearing kite to measure how far seed could blow seemed pretty ingenious to me, and I wondered how you arrived at that plan.

Isaac: First, to select our studies, we had an industry-wide and service-wide committee that would meet once a year and determine what should be studied. The industry



Isaac: people would tell us what they thought needed study and other foresters would tell us what they thought needed study, and our own chiefs from Washington would put in their word. We would then boil down these suggestions and certain projects would get assigned to certain people that could handle them.

Then it was pretty much up to the men out on the job to work out the designs of their experiment, which they would do: make an outline or a working plan and then have it approved by the chiefs higher up. As a rule the men in the field knew better how to do it than those higher up that were running the show. And they'd usually give the men in the field quite a bit of liberty and freedom to go ahead and work out their own designs.

We did lots of that stuff that was original on the part of the investigators. I couldn't find a kite anywhere and I couldn't buy one so I had to make one. Well, I had worked in sitka spruce in the air corps of World War I and I knew about the strength and lightness of the sitka spruce wood. I got a piece of spruce and I made my struts and frame for my kite with that. Then I just built the whole thing. It's literally a box kite with wings. I haven't seen a kite like it before or since.

Fry: It sounds marvelous. You don't still have it, do you?

Isaac: It is somewhere around Wind River. I went to find it two weeks ago Sunday at Wind River. I had stored it in the attic of the office up there, that six-foot kite. There are lots of pictures of it in the file at the Experiment Station. It had black wings. It stood as tall as I did.

Fry: What did you cover it with, newspaper?

Isaac: No, no. God no. (Laughter) Newspaper! I got light



Isaac: balloon silk sailcloth and stabilized and covered it. I tested it out of course before I made the tests with seed. For a flight, I attached an oatmeal carton (I saved them from the kitchen) bottom-side-up and tied the cover on with a thin, light thread. I then tied my fish line onto that (because the fishline was stronger), then suspended the carton bottom-side-up under the kite. When it got to the required height I would pull the trip line and it would pull the cover off the carton and release its payload of seed. The seed would drift like a little cloud across the sky and gradually come to the ground (snow field). As the seed began dropping, the heaviest ones'd drop first, then the lighter ones, and the chaff'd go way out to the end of the line. I recorded the distance as far as I could find some seed by putting a frame down on the snow and counting the number of seed inside the frame. I knew the size of the frame. It checked out with amazing accuracy, the density of seed fall in the frame in comparison to the total number of seed that was released. I got a regular survey, a pattern of seed fall on the snow.

Fry: And the density checked out with the total amount of seed released?

Isaac: Yes, with the total amount of seed released in comparison to the area. If I took four feet out of one hundred, it would give me a four percent sample. Every hundred feet I would stop and measure a four-foot strip across the line of seed flight with this frame. I'd go another hundred feet out from the point of release and measure another four-foot strip across to get another four percent sample. I'd count up those seeds picked up. I had the seeds all counted in the boxes, and four percent of the seed in a box would just figure out to be about the total number of seeds picked up in the squares in the snow. It checked with surprising accuracy because I could see all the seed on the fresh snow.



Fry: . Where was this?

Isaac: Most of it was done on Maupin Flats, up in eastern Oregon, near the town of Maupin. It's just on the east side of the mountains; it's pine country.

Fry: East side of the Cascades.

Isaac: Yes. It's just over the hump beyond Mount Hood. You go on up over Mount Hood and on into that eastern Oregon country.

Fry: Sounds like you had to learn how to wear snowshoes or did you know how?

Isaac: We had both skis and snow shoes and we knew how to use them, but we didn't have to use them, because snow wasn't that deep. That's a low rainfall country over there. As a friendly gesture we invited a British Columbia forester to come down there and help, but the going was too tough. He couldn't take it; he caved in on us and we had to bring him out and put him in the hospital here in Portland -- R. H. Westveld took him out; his name was Pickford. He went to pieces.

Fry: Did you have to camp out in the snow?

Isaac: No, we went to live at a ranch house where one of our fellows knew the rancher. The second day after we got there the snow came and we couldn't get out. This young rancher had a beast of a wife and some small kids. (He invited us to stay because she wanted the money for our room and board.) He had built a new house and didn't have it finished. It was lathed on the inside but they hadn't gotten it plastered. And the only stove he had was a coal stove.

We had to cut the juniper wood into small blocks to get it in the stove, little chunks of wood. And





Isaac: one of us had to sit up all night to keep the fire going to keep from freezing to death. The teakettle used to freeze solid on the cookstove in the kitchen and the milk cans'd freeze up on us in the living room. About the second day a real eastern Oregon blizzard hit us and it got down to about thirty-six degrees below zero while we were there. About the second week the Canadian couldn't take it. He was older than the rest of us and had some sort of nervous disorders. It was wise for him not to stay. We had to send a man out with him and bring him down to Portland and put him in the hospital. It was a couple of months or more before he could go back to Canada. It was a little tough, all right. You hit a lot of that in the early days, but you got used to it.

Fry: Were you flying your kite, then, under pretty rough conditions?

Isaac: We stayed inside when it was extremely cold. But yes, it was a little rough, but that was part of the game in those early days. We didn't mind going on a trip alone. You didn't have to have a second man with you, and that sort of thing, as they do on every job now. When you had something to do you went and did it. Didn't matter what it was or where it was. And nobody looked after you or asked any questions.

Fry: Do you think you had a selective factor in the personnel of the Forest Service -- that men who joined it knew it was going to be rough?

Isaac: I wouldn't say men were asked to do unreasonable or particularly dangerous jobs, but occasionally some turned out that way. It was up to them to decide; they knew what they were expected to do. They never asked any questions, they just lived that way. Often when I was young in the Forest Service I wouldn't hunt or fish with anybody because I couldn't ask them to go where I wanted to go or stay where I



Isaac: wanted to stay. And I wouldn't shy at staying where I wanted to be to start the next morning, and that sort of thing. So I used to work and hunt alone a lot for that reason. It was risky and it was kind of foolish, particularly after I was married and had some obligations, but I soon got over it and got more careful. When you're young you don't think too much about the risks, you know. (Laughter) You've got a job to do, you do it. We lived that way on a job. And all those first years of examining those sample plots in the back country and on the cutover areas, I went alone and nobody knew where I was or what I was doing until I would come out at night.

Anecdotes: Adventures with Occupational Hazards

Fry: Did you ever have any dangerous scrapes?

Isaac: Yes, a few times. Once an embankment gave with me and I slid down a railroad bank about eighty or ninety feet and landed on a pile of rocks. It was an hour before I could move. I was just like paralyzed. I couldn't get my pack and various things I had with me. Finally I got turned over and crawled out to the railroad track where I had parked the speeder. I had caution enough to turn that speeder around before I went in there and put a stick under the wheel so when I pulled the stick out it would start by coasting. I managed to crawl back to that speeder and got on the speeder and coasted nine miles down into town, Brinnon, Washington.

Another time at Wind River I got caught in a blizzard. I went up in December to see sample plots on the snow. I had planned to walk in four miles, sow some sample plots, then stay there overnight in an old logging camp, then go on four miles further the next day and seed some more sample plots. I was



Isaac: testing seeding by placing the seed on the snow to see what it would bring. I got to this old camp the first night and got my plot seeded, and went to look for a place to stay in the old buildings. To my surprise I found the Forest Service had cleaned up that camp in the fall and burned all the buildings. All I could find was one or two half-burned shacks left there, with the windows out of them, and everything else gone. And I was wet to my hips. It had been snowing since noon and now it had started snowing again and I was already wading in three feet of snow. I couldn't wear the snowshoes or skis I had because I just had toestraps on them and they wouldn't stay on my feet. So I ended up by carrying them on my back and wallowing through the snow. I tried to build a fire in one of the half-burned shacks, but the minute I stopped moving, my legs tied up in knots with cramps. So I decided to keep going and strike out for help. I was frightened. I thought, "If my legs tie up here with cramps, I'll never get out." So I headed out what we called the Summer Homesite Road along Trapper Creek that went over to Government Mineral Springs Hotel, about two miles, a mile through the cutover and about a mile and a quarter through heavy timber, in this deep snow. I started at dusk, just four o'clock to go over to that camp. I could either get to the hotel where there was a winter watchman, or I could break into a summer home and stay until morning. It took me until eleven o'clock to go those two miles and get to that hotel. When I got there I was so exhausted that my throat was swollen shut and I couldn't talk or eat when I arrived. What did me up more than anything else was the timber and brush just covered with heavy, heavy wet snow like it often is in this west side. The vine maples that were fifteen, twenty feet high were all mashed right down over the road. Their trunks and limbs are just like spring steel; the vine maple is hard and tough and you crawl under and over and just fight your way



Isaac: through. The small trees and brush were right across the road, and a one-half ton of snow would shake off and come down onto me. It'd sometimes take me a half hour to get my skis out and to get my packsack out, and get out on top and start again, from just the snow falling off the trees. I suddenly spied the light of the hotel over across the creek. The creek was a roaring torrent of snow and ice water, just a roaring torrent. I knew it was too deep and too swift to wade; I knew I just couldn't make it. So I followed the creek and I found an eighteen-inch tree that had fallen across the creek with the top about twenty feet in the air on the other side, a hundred feet away. With my packsack and my two skis I inched my way out on that tree over the roaring creek to the far side, dropped my skis one at a time in the snow but off to one side, then my packsack, and then let myself down and dropped in the snowbank. And I was then just a few hundred yards from the hotel. I got in there and found the old keeper, got warm and dry and later got some food. The next morning, I put on my skis and hiked out. But I never did get to the farther plots until spring, because the area was closed by now.

And again, nobody knew I was in there. I was on my own.

We went over the same road two weeks ago Sunday with my family. The same road and the same summer homes. It was a seventy-five room summer hotel, but it apparently burned down and never was replaced. Everything else is there. The forest is still there and the road, but now it has some memories added.

Fry: You never had any scrapes with wildlife?

Isaac: No. The only thing that ever attacked me in the forest was a field mouse.





Fry: (Laughter) Oh!

Isaac: That's really true. I was coming in off from a small fire in the high country and I got to an abandoned trappers cabin. It got dark on me, so I decided to stop. Some hunters had put some boughs down on the floor for a place to sleep and for a shelter. I got in there and lay down to sleep but I hardly got to sleep before a darn field mouse started burrowing into my hair; that darn thing woke me about five times between dark and midnight. Couple of times I shot at him with a pistol by flashlight. Dirt'd fly and the mouse'd fly with it and he'd scamper off someplace for a half hour, and then the little son-of-a-gun'd be back again. He was trying to make a nest in my hair. I suppose he had never seen a human being before. I finally got to sleep. Then suddenly, I had a sharp pain in my shoulder; I woke up and lit the flashlight and the mouse went scampering. My arms were bare -- I was sleeping with just an undershirt on -- and he had taken a bite right out of my shoulder. I suppose he thought it was a ham or something. That was the only thing that's ever attacked me in the wild. I've had cougars follow my trail for weeks at a time in the mountain back country. I'd go back over the trail the next day and see their footprints right there in the dust. I tried, but never even got to see one in all that time. That was up in the north country.

Fry: You mean up in northeastern Washington?

Isaac: Yes, near the Canadian border, when I was on the big fires on the national forests.

Fry: Was there any problem from cougars attacking anybody?

Isaac: Not for human danger. The only time a cougar really attacks a human being is when he's old and driven by hunger and can't catch wild game, or he's cornered or wounded.



Isaac: We have only one record of a cougar attacking a boy, that I know about personally. A boy came along walking down this road in the evening and the cougar was lying on an outcropping of rocks above the boy. He didn't jump on the boy from up there on the rocks, instead he jumped down in the road ahead of the boy and was running away from the boy. But the boy stopped, you could see by his tracks in the snow where he stopped with his legs wide apart, and turned around and started to run. And when he turned around and started to run, the cougar's tracks showed that the cat turned around and took after the boy from the rear. The cougar caught up to him and jumped him. He must've hit the boy with one paw on the back of the head and took a part of his scalp off the back of his head. It was lying there on the snow. Then he carried the boy off. They found him about five-hundred feet away on a rockslide where the cougar scratched leaves and rock down over the body. He'd eaten the insides out of the boy pretty much, part of one hip was gone. They got the cougar a few days later. He was so old his teeth were worn way down and most of his toenails were worn off. He apparently couldn't catch deer anymore, his natural food, and so he attacked the boy.

Fry: Where did this happen?

Isaac: The incident happened about 1925 at Oleama, Washington. The boy was an orphan about eleven years old and lived with an older sister who taught school nearby. I knew them both well.

I had another experience when I first landed there in Okanogan that just turned my stomach inside out. I'm kind of squeamish anyhow when anything concerns a child. I was boarding with the garage man in Okanogan. His name was Burt Thayer. He had a sister and a brother-in-law. He was a garage man and the other fellow was a rancher. He and his



Isaac: brother-in-law had an apple orchard and a packing shed on a bench just above Okanogan that they managed between them. The brother-in-law's little six-year old girl had been up at the apple orchard playing around. When I came home from the office she was crying bloody murder and yelling with pain. I said, "What's the matter?"

They said, "She says she's bitten by a rattlesnake, up in the apple orchard. She was running down on the field and came running and said she was bitten by a rattlesnake, but it doesn't look like a typical snake bite."

We took her to the doctor (Dr. Dewey) and he said it wasn't, that she'd run into a barbed wire or something like that, just a kind of small torn gash in the side of her leg. And they told us to bring her home and put hot applications on it. (The very worst thing they could do.) By eight o'clock the girl was lapsing into unconsciousness from time to time, and then yelling bloody murder when she was awake. Dark spots began to show up on her. We called the doctor back. He treated her for snakebite then, but it was too late and she died that night, squealed half the night and finally died.

That nearly drove me crazy. I developed a holy horror and bitterness against all snakes. But I didn't find them dangerous.

The country was full of rattlesnakes, too. Well, to tell you the truth, I felt sorry for those rattlesnakes because the darn fool things'd always rattle and tell you where they were and then you'd go and kill them.

Fry: But on the whole, there wasn't any special danger that people felt from wildlife in the woods?

Isaac: No. I spent months in the woods sleeping out, in



Isaac: way out-of-the-way places. A bear is a little dangerous -- if an old bear has cubs and she thinks she's protecting her young, or if she's wounded. I think sometimes grizzly bears get nasty, just like a bull that will turn on its master in the pasture lot. I think those wild animals get the same crazy urge now and then.

I only saw one that turned on me. This was when Ranger Fred Weymeyer was with me. That was a big, black diamond back rattler. He was forty-eight and a half inches long and as thick as my arm. He was along the rocky hillsides on Lake Chelan. When I closed up on him a little he turned and coiled right up and ready to strike. After I had tapped him on the head (I wanted to take him for his skin so I didn't want to bust his head or his hide), I took the leather thong off my briefcase and put it on a stick and put it on the snake's neck and carried him over my shoulder. I held it at an upward angle so that his tail wouldn't touch the ground, he was that long. When I got to the spring at the ditch camp I took this stick and I held it, or rather stuck it in the creek with the snake's head under water, thinking he'd drown there.

Fry: Oh, he wasn't dead yet?

Isaac: No, he wasn't dead yet. And I thought he would drown there in a little while. I had him in there for twenty or thirty minutes while we ate our lunch. Then I took him out and threw him to one side. I was going to skin him later.

He was still on the stick with the thong on his neck. The camp cat spotted us down there and came running from the cabin down to where we were eating by the spring.

She jumped right onto that snake without seeing it and that snake had come to life in the meantime.





Isaac: The snake gave one twist and the rattles started to go and that cat just went crazy. It bounded up in the air just like a rubber ball about three times and took off over the hills and out of sight and didn't come back until nearly evening. (Laughter)

I put the snake down in the creek and left him there for another three hours until he was dead, then I skinned him out. I filled the hide with sawdust, so it wouldn't mat and get baked together, and took it in and I threw it on an old army cot that was there under the window in the cabin where we were staying. The cat came back and just sat down and ate and then stretched himself out like that [stretch and yawn], went over toward that cot and hopped up on that cot to take a snooze (it had been in the habit of sleeping there in camp with the ditch men) -- and it landed again on that snake.

That cat acted just like you'd set off a bomb under it. It made one jump and landed right in the middle of this camp table, with all the stuff on it, and the second jump she went through the door into the storeroom in the back and started around that storeroom. It was filled with canned goods and all kinds of tinware, lanterns, etc. stacked up high. She was yelling bloody murder and going ninety miles an hour, half the time right around the wall on these things and tipping them over one after another. We finally got in and headed her off and steered her out the door. She went on up the hill and we never did see her again. I don't know whether she came back or not. But that cat was just deathly afraid of that big snake.

Fry: What did you do with that skin, Leo?

Isaac: I was going to make a belt out of it, but I never got to do it. I took it home and I put it out on the windowsill to dry in the sun and I got called to a fire.



Isaac: When you're called to a fire, everything drops and you go. About five days later, I came into my office and I smelled something, and here I found my snake all decayed out there on the windowsill, so I lost it.



## LATER STUDIES AT THE STATION

Space Testing

Isaac: My work, since I joined the Experiment Station in 1924, covered all phases of Douglas fir silviculture, but the bulk of my work was done in reforestation. I was sent to find out why regeneration occurred in some places and refused to occur in others -- and how to correct the situation. It went from seed studies to broadcast seeding and into planting.

We had several planting studies underway. Among the planting studies was this spacing test in Douglas fir, begun in 1925. [Showing report]\* It has become one of the most important showplaces we now have. This plantation from four-by-four to twelve-by-twelve foot spacing is now forty-two years old.

Fry: This is a study that started in 1925 at the Wind River Experiment Station?

Isaac: Yes. I managed the establishment of the plantation and planted many of the trees myself, and did the initial work on it for several years including replacement of dead trees, early remeasurement and preparation of early reports.

Fry: To see how trees would grow when spaced all the way from four-by-four feet to twelve-by-twelve feet apart?

Isaac: Yes. A logger can look at this record and tell at

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\*Eversole, Kenneth R., "Spacing Tests in a Douglas Fir Plantation," Forest Science, Volume 1, No. 1, March 1955.



Isaac: every five-year interval what he would have on similar land, in twenty years after planting -- how many six-inch trees and how many eight-inch trees, etc., etc. Also, what he would have in thirty years after planting and so on. It was planted in '25, so it is forty-two years old now.

Fry: This thing you just handed me is written by Kenneth R. Eversole.

Isaac: Well, his name is on it. He was one of our field assistants at Wind River at the time. Incidentally, Eversole and I took the field measurement and blocked out the report together, then he wrote it up and I completely rewrote it for publication. Meager took my name off and left Eversole's name on it. Eversole objected to taking my name off.

Fry: Eversole did?

Isaac: Yes, Eversole did. And he sort of corrected it later in the report: I think he mentions that I had charge of the project from its beginning.

Fry: Yes, he does, in a footnote.

Isaac: That was one of the first incidents in which George Meager deliberately took my name off from something that was going in to be printed, because, I suppose, he thought I had enough notoriety, and that too many people were calling for me around the Station as it was. He wanted to stop it if he could, I suppose as he was in charge of Forest Management at the Station.

Fry: You mean that you actually wrote this, or it was just compiled from your records?

Isaac: It was compiled from all records available (mine and others) including the current remeasurement just taken. Then we blocked the report out together, he





Isaac: wrote it up and I rewrote the whole thing for publication. Eversole was just a temporary field assistant that had just come to work in the Service. Eversole was a very fine fellow, but he was the field assistant, and up to that time had prepared nothing for publication and had nothing printed.

#### Partial Cutting Controversy

Fry: Chronologically, Leo, I have here that after your studies on seed flight and seed germination in the ground, the next ones you began were on partial cutting, in 1935 and 1936.

Isaac: Yes. I had this series of sample plots on partial cutting -- "selective logging," you would call it. That cutting was being done by the Forest Service under the policy established by Bert Kirkland in the Washington office, and by C. J. Buck, Regional Forester at Portland. All I did was to put in the plots and at five-year intervals measure the trees.

Fry: And these plots were cuttings that had not necessarily been done for research purposes?

Isaac: No, the cuttings were on timber sales on national forests, also some on private land where they were doing this kind of partial cutting.

Fry: Regular timber management cuttings.

Isaac: Yes. Regular timber management, but for my own information I would go in, in advance of cutting and tag several acres on a plot, tag every tree, and record its size, diameter, condition and everything else, and make a complete record of each individual tree. Then I would come back after cutting and record



- Isaac: the amount of damage done by cutting and falling. Then I would come back again after the logging operation was complete and record the windfall loss and the damage and that sort of thing.
- Fry: Maybe you'd better give us the background of Brandstrom and Kirkland and their work, since your studies on partial cutting eventually refuted their conclusions that this method was a good thing.
- Isaac: Cutting in Douglas fir became a pretty difficult thing to make pay during the beginning of the Depression. Loggers were going broke one after another. They were reaching out for some means of making their operations more profitable. And Brandstrom and Kirkland hit on the idea of harvesting only the best trees out of the crop and let the rest stand.
- Fry: They came to the research station with this project in mind?
- Isaac: Yes, they came with that in mind. They'd dreamed it up in smoke-filled offices at the University of Washington where they were both professors. They were hired from their jobs there and assigned to our station.
- Fry: By T. T. Munger, the Director of the Station?
- Isaac: No, they were hired by Ray Marsh in the Washington office, I am quite sure.
- Fry: He was head of Research in Washington at that time?
- Isaac: No, he was assistant to Earl Clapp, who was in charge of Research at the time. As a matter of fact, Munger opposed their coming, but they were assigned anyway and given more or less of a free hand. Then, of course, we took them in and worked with them. They put over the idea of individual tree selection in Douglas fir harvesting, and published those



Isaac: books.\*

Fry: We might add, too, that this was before hemlock became commercially valuable.

Isaac: Yes, they weren't using it much except for pulp now and then.

Fry: So these forests had Douglas fir, and that was all from the loggers' viewpoint.

Isaac: Sometimes all the cruisers recorded was the Douglas fir. They'd walk right through the hemlock and list only the Douglas firs. Hemlock was selling for fifty cents a thousand board feet and Douglas fir for three and a half dollars -- which is like giving it away now; it's fifty dollars or more per thousand board feet.

To get back to Kirkland and Brandstrom, they came out with this idea of taking out the high-value trees now and leaving the rest. That took on among the timber operators; they liked it because they'd end up with more money in their pocket right now. Particularly if they could put the practice over and also cut the national or state forests that way.

We in silviculture opposed it, and a good many of the men in the field opposed it. Walt Lund, as much as he dared to, working under Regional Forester C. J. Buck, opposed it, but there was bad blood between Munger and C. J. Buck because of their differences. And C. J. Buck used this opportunity to thwart Munger by putting selective logging into effect on

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\*Kirkland, Burt P., and Brandstrom, Axel J.F., Selective Timber Management in the Douglas Fir Region, published by the Charles Lathrop Pack Forestry Foundation for the U.S. Department of Agriculture, Forest Service, January, 1936.



Isaac: the national forests. He called himself "one hundred percent for selective logging."

Fry: Kirkland and Brandstrom justified this, didn't they, on the grounds that if you continuously went into a section of a forest and cut just the most mature trees and those which were most valuable at that time, others would grow up to take their place and --

Isaac: -- and in so many years you could go right back over the same area --

Fry: -- and cut again.

Isaac: Yes, but the fallacy in the contention was this: that the biggest trees were all old Douglas firs. In reality, three-fourths of the remaining stands were hemlocks and the true firs and cedars, which were small and scrubby. And in these stands where the biggest Douglas firs were four, five and six feet in diameter, the biggest hemlock in that stand would be only equal to about the poorest Douglas fir. So after a couple of cuts the firs would be gone, and then you had nothing but these secondary trees coming along. It's like using mares for milk stock on a dairy farm. They are just not the right animal. You couldn't produce good forests that way in the Douglas fir region. The fallacy of Kirkland's contention is that he shows so many trees moving up into this larger age class every few years. And all you had to do was to come back and cut them off. But actually, three-fourths of the trees left would never move up into that larger diameter class if you kept them a million years, because they are not that kind of a tree. Hemlock, cedar and true firs don't get that large. And that was what we pointed out to them, and they refused to recognize it.

Fry: You and Munger already knew that silviculturally this





Fry: wouldn't work?

Isaac: Sure! And we put it out in those written memorandums. You've got them in there somewhere\*

Fry: Yes. As I understand it, the 1936 Kirkland and Brandstrom report had a rather stormy path in getting out to the light of day.

Isaac: It was a stormy procedure, but it was published in spite of the opposition in January, 1936.

Fry: In other words, as I understand it, Dr. Munger didn't want it published.

Isaac: Not at all. He wrote a seventeen-point memorandum, showing where their bulletin had faulty conclusions, like the one that these trees would all move up to the larger diameter classes, when three-quarters of them never would move up. Several of us helped in the preparation of those opposition memos.

Fry: Apparently Ray Marsh in Washington went ahead and had it published.

Isaac: Yes, I understood that was the case.

Fry: Do you know what Clapp's attitude toward this was?

Isaac: It appeared rather passive. He liked the notoriety and the loggers liked it. And he went along with it.

But it's been my contention that Ray Marsh hired every crackpot that showed up on the horizon

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\*See appendix: typewritten memoranda, 1935, regarding manuscript on "Principles and Procedure of Forest Property Management in the Douglas Fir Region."



Isaac: in the Forest Service. There was a time when I could name about fifteen of them. But if a crackpot with a wild idea came along Marsh would see that he got hired somewhere and pushed along, regardless of what came out of it -- it didn't seem to bother Marsh at all. He was the champion of Bob Marshall and pushed him ahead as much as he could in the Service.

Fry: Have there been other research results that have been reversed by further studies, from these men that Marsh hired?

Isaac: In other parts of the Region, yes.

Fry: Who are they?

Isaac: I don't recall them right now. About thirty years have passed and a lot of that has faded from my mind. In fact I tried to forget it. But it was very vividly before me while this was going on. Here in our midst were two fellows with crackpot ideas. He got in touch with them and hired them in spite of opposition from the rest of the Service. Then C. J. Buck, the Regional Forester, got on the bandwagon mostly to spite Munger, we thought, and that's where a lot of information came out.

Munger was pretty sound in his silviculture. You've got to hand it to him, he has a good mind and he's a great enthusiast for forestry. He's sustained this interest. He hasn't dropped out of the picture like the others have since retirement.

Fry: Yes, he's quite active in conservation around Portland, too.

Isaac: I admire him a great deal for what he is, and what he knows, and what he did, but I admire him even more for the way he took care of his wife in her later years. He just waited on her hand and foot when she became an invalid.



Fry: To summarize, Ray Marsh in Washington was the one pushing the Kirkland and Brandstrom study?

Isaac: Yes.

Fry: And it came out over the head of Director Munger at this research station?

Isaac: Yes.

Fry: You had already started your research which would counter this, hadn't you, by the time their report was published?

Isaac: My work was going on at that time on various phases of Douglas fir silviculture and management under Munger. Munger was my boss.

Fry: Even before Kirkland and Brandstrom came?

Isaac: I had studies going but none directly on selective logging, because this practice didn't start on the national forests until Brandstrom and Kirkland came and advocated it.

Selective logging (as such) was done first by Tom Murray at Rainier, Washington. He was a mill man and Axel Brandstrom was his logging engineer. That was before he came to the Forest Experiment Station. Tom Murray called himself the father of selective logging in this region. (That was his title for himself.) Brandstrom went in and marked his timber and told him what to take out. The background of that is that Murray was going broke at clear cutting and taking everything out. But leaving the poorer valued stands and taking out only the select trees put him back on his feet and paid more money at the present moment but reduced the quality of the stand. It had a little merit in that a lot of this poorer stuff wasn't destroyed and could be



Isaac: used later. But it should not have been presented as a successful silvicultural operation or system.

Fry: It would not sustain a forest.

Isaac: No, it would not sustain a high-value forest.

Fry: With continuous production.

Isaac: You would eventually and gradually eliminate the Douglas fir from the stand entirely, and end up with all the inferior species (hemlock and true firs). And that's what the plots indicated when successive cuts were made on the national forests. At the time, the big trees were all old Douglas firs.

Fry: When were your cutting plots put in?

Isaac: From 1933 to 1937. I don't know the exact dates, but this period will cover it. And they were put in on national forest sales and on some private timber operations. I had some plots on Crown Zellerbach land and some on Weyerhaeuser, and at various other places where they tried partial cutting. I carried most of the plots on for a period of fifteen years, with occasional five-year reports that showed losses and growth and everything else. It indicated at the end of ten years that at the current growth rate, if there was no further loss, it would take at least twenty years more to regain what had already been lost and bring that forest back to the condition it was in when they cut it, the losses were so great. The losses were much greater than the growth rate on these areas. That showed up on these sample plots.

Fry: At the same time weren't you doing something to show the value of seeds and seedlings which could grow without heavy shade over them?

Isaac: Yes. The reproduction studies were going on simultaneously





Isaac: during the same period of time, on other plots where cutting was more complete.

Fry: So you took results from both of these sources to draw your conclusions?

Isaac: Yes.

There's one thing that you honestly shouldn't forget in this discussion. That is this: the so-called selective logging was a Depression measure. And many of the existing mills couldn't afford to operate if they were forced to take all of the timber out, the poor grade stuff with the good. That would close these mills down and put many more men out of work. That was a big factor that put selective logging over. But they carried it further than that: they made it a policy and put it to work on the national forests where they didn't have to cut in that manner. That's where the real harm came in.

Fry: Along about this time there was also the National Recovery Act in 1934 and Article Ten of the Lumber Code. Did they also adopt partial cutting as a practice?

Isaac: No, they didn't. They were more in line with the national forest clear-cutting. And they were beginning to get into group selection. I forget the details of Article Ten, but it was regulations imposed on the timber operators by themselves. It was a remarkable development.

Fry: Yes, the operators drew them up, and that was why I thought it probably included partial cutting.

Isaac: It may have some partial cutting in it. I don't know. But in general, not, it was broader than that. It was distinctive because it was regulations imposed



Isaac: upon themselves, by the industry. It was distinctive for that reason. I know George Drake had a big hand in it. He was with Simpson Logging Company. And also Clyde Martin, who was Weyerhaeuser's man at the time.

Fry: Your study came out in 1956, titled "Place of Partial Cutting in Old Growth Stands of the Douglas-Fir Region."\*

Isaac: That's right, the year I retired.

Fry: Two decades after you put in the plots. In other words, at first you just had memoranda which you wrote on the Kirkland and Brandstrom study and on your own studies of cutting made according to their plans.

Isaac: Yes. And they used my preliminary studies in Clapp's Annual Report of the U.S. Forester and in other early decisions to stop this movement toward "selective logging." They used my preliminary tables.

Fry: By 1956 then, the policy in the Forest Service for partial cutting had been abandoned.

Isaac: Practically. It was still used experimentally, still used in the fringe types. When you get out near the edge of the Douglas fir region, where the other species like pine begin coming in quite commonly, the forests are not so dense, and there are young trees of Douglas fir and other species under the stand. But in a stand of west coast Douglas fir you can look for a whole solid summer and you can't find one Douglas fir seedling over a year old in an old growth stand. They just can't get started in this shady, wet site. But when you get east of

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\*Isaac, Leo, The Place of Partial Cutting in Old Growth Stands of the Douglas-Fir Region, Research Paper No. 16, U.S. Department of Agriculture, Forest Service, Pacific Northwest Forest and Range Experiment Station. Portland, Oregon, March, 1956, 48 pp. pamphlet.



- Isaac: the mountains and around the fringe types where the stands are less dense, they are drier and the sun is more intense; Douglas fir needs some shade and will reproduce there. And you will find some small Douglas firs in with the small ponderosa pines.
- Fry: And that is why block cutting is good silvicultural practice?
- Isaac: Douglas fir stands on the west side of the Cascades in Washington and Oregon, where it reaches its maximum growth, are too dense to permit Douglas fir to become established under the dense canopy. Out in the fringes of the type, where stands are less dense, some reproduction does become established under the stand. These stands will permit some measure of partial cutting, and some shade is desirable in those conditions because of the heat and the intensity of the sun.
- But in the Douglas fir region proper, the stands should have complete exposure, or complete destruction of the old forest in order to start good healthy young stands. The seedling does enjoy some shade in its first couple of years, like a little weed or brush shade, or something of that sort.
- Fry: The native shrubs?
- Isaac: The native shrubs and the native weeds furnish some shade, and the seedlings in most instances all die if they don't have some shade, particularly on the hot flats and on the south exposures. (On the north exposures they can take it, but elsewhere they can't.) But once established, Douglas fir makes its best growth and development in full sunlight in even-age stands.
- Fry: When the hemlock starts coming up what happens to the Douglas fir?



- Isaac: In a so-called even-aged Douglas fir stand there is often a spread of ten years or more in the age of the trees. Most trees are likely to be about the same age, but some may have come in early and some continue to come in later to fill the openings or thin places in the stand until you have a full crown. It is sort of a filtering in process. Douglas firs fall out of the stand gradually also, but at a much slower rate than they come in. In the average even-age stand of Douglas fir a little hemlock sometimes comes in along with the Douglas fir in the beginning. But more of it keeps coming as time passes; it comes as an understory tree. In a mature forest of Douglas fir, you will have some hemlocks that are the same age as that fir forest.
- Fry: And the hemlocks grow well in the shade of the Douglas fir.
- Isaac: Yes, fairly well. And you will have some hemlocks in the lower age classes, clear down to year-old seedlings, but you will have no seedlings of Douglas fir in there. Then as the Douglas firs mature and die and fall out of the stand, the hemlocks continue to come in and to grow. But they never reach the proportions of development that the fir forest will on the same ground. I describe it this way, roughly: the best hemlock in a mixed stand is about equal to the poorest of the Douglas fir. That's the best way to describe it. If the smallest Douglas fir in a mixed stand is two feet, that will be about the maximum size of the biggest hemlock in the stand.
- Fry: When you say best, you mean --
- Isaac: -- biggest and best developed.
- Fry: As this became known, how were you able to disseminate the information? Did you make speeches?
- Isaac: We made speeches. And it was published in the Journal





Isaac: of Forestry and the West Coast Lumberman, and the Timberman, and various other periodicals and newspapers. I had something over a hundred publications of various kinds.

Fry: On this theme?

Isaac: Yes, some on this theme but more on silviculture in general. And a few major publications, such as those bulletins there on my desk.

Fry: Aside from the small timber owners and loggers who may not ever see the Journal of Forestry, or read these things, did you have any people who felt that these things weren't true?

Isaac: Yes, there were always some draggers. They didn't want to know differently, they wanted to log the other way and no one is so blind as they who will not see. They wanted to keep on with the method that would put the most money in their pockets right now. And they wanted to do that particularly when they were not cutting on their own land, but when they were cutting on national forest land. If we let them continue selective cutting, we would be left holding the sack with the inferior forests on public land. That's why it was not opposed by big industry. They didn't mind if they could selectively cut our national forests. They liked to do that and they wanted to do that. They did, however, in the process, save some of that defective timber for posterity. But it was not enough to be worth depleting vast areas of their better trees.

Fry: How did the men in the research station like Munger?

Isaac: I didn't feel that there was much love lost between them. He was a pretty hard taskmaster. Anything that wouldn't further his cause, he wouldn't push ahead.



Fry: What was his cause? You mean his own professional reputation and his position in the Service?

Isaac: Yes. McArdle worked for him, and he quit the Station.

Fry: McArdle did?

Isaac: Yes. And went to work as dean of the University of Idaho forestry college. Walt Meyers, now at Yale, quit the Station and went to the University of Washington.

Fry: That is a step up --

Isaac: Sure.

Fry: And professional advancement.

Isaac: But Munger wouldn't push for them to be advanced at the Station. I've seen letters that he's written back to Munns and Marsh in Washington. They couldn't promote me unless they cut down on some other project because they wouldn't have money enough. But somehow there was always money enough for his raise to go through, and money for other stuff that he wanted to promote. He did that with all of them. Many of the other fellows quit. Walt Meyers quit and went to the University of Washington to teach. Westfeld quit and went back to Kansas or somewhere to teach. Kolbe quit and went to work for Western Pine. Gael Simson, Harold Rapraeger, George Flannigan, Roy Carlson and many others transferred to other jobs.

Fry: Of course, the Thirties was a pretty rugged time.

Isaac: I know it was, but most of them felt he wouldn't do what he could do for them.

Fry: You feel that he didn't push promotions?

Isaac: No, he didn't. He just pushed getting out material



Isaac: and getting work done, regardless of how much the men got paid for it. That doesn't go very well with the men in the lower brackets.

Fry: He is not a talker, especially. I wondered if he had any problems from not communicating with his men.

Isaac: He had a very big problem. He was rather bold and ruthless in his actions, but he couldn't sit down with his men and talk with them in a genial manner. He had to dictate or nothing. He'd go off in a corner and make up his mind whether it was right or wrong, and then push it through just because he was in the upper bracket where he could get away with it. He was in pretty strong with Clapp. For a time it seemed nobody but a Yale man could get anywhere out in this country, in the Forest Service, but that gradually disappeared before I arrived out here. That had been true. He and Clapp were both Yale men, in the same class I think. And Marsh, too, I believe. And a whole lot of others.

Fry: So it formed a little fraternity?

Isaac: Yes. They had a name for it, the Robin Hoods, or something like that. (Laughter) They had an ironclad organization that specified that only the Yale men should be pushed ahead.

Fry: Oh, you mean this was quite conscious and verbal?

Isaac: Yes. I suppose it would be hard to prove, but I was told that the organization provided that only the Yale men were to be put into the better jobs, and that sort of thing. Finally they had a meeting and they themselves dissolved this organization. They recognized that it was unfair and undemocratic and destructive and was beginning to hurt the whole organization. That's something that not very many people know about.



- Fry: Who else was involved in this?
- Isaac: Purely Yale men, I understood.
- Fry: And then who decided to dissolve it?
- Isaac: The members themselves. They recognized that too many people knew about it.
- Fry: Along about when?
- Isaac: That must have come in the middle Twenties or earlier. But that's the real story. Bob Marshall was the first one to discuss it with me, but many others mentioned it later. But most of that activity had ceased and disappeared by the time I came into research work in 1924.
- Fry: Yes, I guess that I had heard from another forester who was a Michigan graduate that this was a clique. But I didn't realize that it was so formally organized.
- Isaac: It held sway for a number of years. The Yale men held high posts all along the line, everywhere.

#### Species Improvement Studies

- Fry: I have a note here that there was another study you did, the study of seed source and climatic suitability of trees.
- Isaac: I think that would refer to a continuation of the early (1912) Douglas fir seed study, and later to my study that resulted in Better Douglas Fir Forests from Better Seed.\* That book gives the complete

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\*Isaac, Leo A., Better Douglas Fir Forests From Better Seed, University of Washington Press, Seattle, 1949. An Agnes H. Anderson Research Publication. 64 pp. Pamphlet.





Isaac: climate of the region, and lists the factors that are important to tree growth in a great table. That was used all over Europe for selecting American tree seed. The seed zones that Manning Seed Company and others used were all based on that. I made their early seed maps for them. This book was the result of an effort to bring together all of the available information on the importance of getting better seed to produce better forests in our natural stands. The significant things about this bulletin are, first, a bringing together under one cover of the various important bits of information that were available, now, and the significance of this information in timber production in the Northwest.

The second thing is that the book contains a weather chart for the different U.S. Weather Bureau stations west of the Cascade summit in the two states, listing the weather elements that are significant to tree growth: temperature, frost free period, precipitation during the growing season -- and that sort of thing. Each weather station has a number, and the number is shown on the attached maps. These same maps have superimposed on them the forest site maps of the region. So you can tell if a given weather station is in a good site or a poor site. And Europeans or anyone else can use this chart to match their climate and tell where on these maps seed for their plantations should be collected. They can ask for seed from Olympia or from Mount Rainier, or from a 5,000 foot elevation, or 2,000 foot elevation. Whatever they need, they can find it on these maps and in this table.

Fry: From whatever area matches --

Isaac: Yes, matches their climate and other site conditions. In the book I point out the necessity for getting the best seed that we could find in wild stands, and the necessity to get it from good stands. We had good stands and we had poor stands, sometimes on



Isaac: similar sites.

Fry: Did this add information on how to distinguish better seed, or was it a sort of plea for using better seed?

Isaac: Both; it was a plea for using better seed, but it pointed out how to identify a better tree. I believe the book itself has some pictures of the better trees -- such as Figure Ten.

Fry: The trees which would make better parents?

Isaac: Yes. At a later date I had a publication that gave the regular designs of the trees and told what angles the limbs should have and all of that sort of information.\*

Fry: How did you know what tree would make a better parent, unless you grew the seed from it and saw what was produced?

Isaac: From what we could learn from foreign literature on genetics and from what we could learn by watching good and bad trees grow before our eyes, we did the best we could. I knew what the climate and soil of a locality should produce. And when I found a stand that was far above what one normally would expect to find there, I had reason to believe that it was a very good strain, if not a superior strain.

For instance, in the Wind River Valley. (That's called Wind River because in the afternoon the wind

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\*Research Note #122, "Tentative guides for the selection of plus trees and superior stands in Douglas-fir." Pacific Northwest Forest Experiment Station, U.S. Department of Agriculture, Forest Service, October, 1955.



Isaac: from the east side of the Cascade Mountains blows down the stream and sucks down that canyon -- it's as regular as the sun coming up.) Right around our nursery the fir is not up to what we figure that valley ought to produce in that climate in that soil. We also find pockets in there that are much better. Our conclusion is that that poor grade stand migrated in from east of the mountains, where growth is slower and the trees are shorter, and poor grade forest gradually became established in that valley with the passing of one tree generation after generation, and century after century, for all time past.

Fry: Natural selection favored the poorer grade.

Isaac: Natural selection in that valley appeared to produce poorer stands. We have brought in seeds from good stands not very far away and planted the seedlings there in the valley, and they appear to be doing much better than the seedlings from local seeds. It's an example of what can happen.

You can go up near Olympia, Washington, and go out on the sand plains toward Fort Lewis, and you can find Douglas fir and ponderosa pine trees that look like pincushions. They aren't the beautiful, straight, boled, dense stands with small crowns that make a beautiful forest. They are just scrubby, poor growth. It's because for generations on end they have lived there in that more or less sterile soil and become gradually replaced by slower growing stock, until that becomes an inherent condition for them. We took that seed of the ponderosa pine from those sand plains and planted it down at Wind River on a plantation. (We have seeds of Ponderosa pine from all over the pine region -- from way east to the Black Hills, north to Canada and south to Mexico. We've got them planted side by side in plots at Wind River, right near that spacing test plantation. I put that plantation in, by the way, also. We had



Isaac: another one like that at Corvallis, two or three of them east of the mountains, and in some other places.)

At Wind River, where we brought this seed from the Olympia sand plains and planted it down here in this better climate and better soil, the form of these trees were just like the parent trees up near Olympia. They grew like a pincushion with limbs clear to the ground and with rough, crooked boles. And right beside them, trees from a better strain in the Willamette Valley grew twice as fast in height and had clean boles and straight trunks, side by side in these sample areas. You can look at them.

Fry: All of this was going on, then, at the same time you were doing the sample plots on partial cutting in Douglas fir.

Isaac: Yes, I worked part of the year on one, and part of the year on the other. We kept field diaries so at the end of the year we could apportion our work on the plots we'd done our work on. We started out with a working plan, with our projects listed, and estimated how many days should go on each, and tried to balance it in a way. That's why the two linked together. And while the sample plots were getting their ten and fifteen year examinations on partial cutting, this other work was going on.

Fry: I have a note here that in 1944 you were promoted to "silviculturalist" from assistant silviculturalist at the Research Station, then in 1946 you went to the University of Washington for a year to complete the tree improvement work. Why did you go to Washington for this?

Isaac: The need for tree improvement was apparent to thinking foresters. We were still using general seed from natural wild stands and not selecting our tree seed like scientists were doing with oats





Isaac: and wheat and apples, and that sort of thing. And it became apparent to many of us that we could improve our stands by getting better seed. Along with that came the war, and the after-war situation where our regular appropriations had been reduced. When we came to step back into line from war work, the temporary funds that had been advanced for recovery were cut off and it left us a bit short of funds at our Station. We lost several of our better men at that time. Don Matthews was one of them that we didn't have money enough to keep, and Ernest Kolbe was another one. (He was transferred to California because our Station was short of funds.) And I was offered this fellowship by the University of Washington to come up there and choose a subject and study it for a year and publish it. My bulletin was Bulletin Number One for the University of Washington in a program continued in some measure. It relieved our tight money situation and gave me a chance to get started on my "Better Seed" program.

Fry: Professors Gordon D. Marckworth and Bror Grondal instigated your fellowship?

Isaac: Bror Grondal was a products man, also he was a good friend of mine and he realized the importance of this work. He had something to do with the handling of Agnes Healy Anderson Fellowship money. Marckworth was Dean of the School of Forestry at that time.

Fry: So you went there, then, on the Agnes Healy Anderson funds?

Isaac: Yes. Marckworth and Grondal came down to the Station in Portland. Hall called me into his office and he said, "We got a couple of robbers down here." (Like Hall talks, he's got a very good line, you know.) He said, "Leo, these fellows want to take you away from me."

I said, "I'm never known to be a quitter, but



Isaac: I'd like to hear the details."

He said, "Well, we are a little short of money. We've lost a couple of men now. We just don't want to lose you for future work."

I said, "Well, I've never been a quitter on any good cause. If I'm really needed here I won't consider anything else, because this has become my lifetime work; I'm involved in long-time studies. But," I said, "we're short of funds, and my work is not pressing now: the plots are established and they'll be examined from year to year. And I think I could be spared long enough to do this job."

He said, "That's a deal. If you'll come back here in six months, finish your work when you get here, why that's all right with me."

I said, "It's got to be nine months, at least; the full term. It'll take that long to gather up what I can find and put it in shape for publication." Then I used a month or two of my annual leave to wind it up, and I got that in shape for publication in that length of time.

Fry: Did you teach any classes there?

Isaac: No, no. Strictly research. Then I made a trip around the United States and visited various people in that field of work. The genetics station at Placerville, California, was my first stop. Bob Wideman was there and several others. I forget who was at Berkeley at the time; as I recall Palmer, Wrighter and Charles Kroebel were there. Duncan Dunning was working in the pine silviculture at Berkeley and he quit in a huff. He was a pine silviculturalist. He wrote very little and left a great mass of material unpublished. I visited Phil Wakely at the Southern Forest Experiment Station at New Orleans. I also visited someone at Tulane University,



Isaac: and then I went on to Washington, D.C. and spent some time there with Schreiner and that bunch out at Beltsville outside of Washington, D.C. Then I went up to Yonkers, New York, to the Boyd Thompson Institute and on to Yale and to Syracuse and met the men that I knew there, and came on to Minnesota, and then on back home.

I then went to work writing my book. I brought a pack of references and things with me. My aim was to gather together what information there was on the possibility of improving our forest trees and our forest stands, and what concrete evidence there was now available for tree improvement. That's now included in Better Douglas Fir Forests from Better Seed. Here's a badly dilapidated copy of it.

Fry: What did you find out about tree improvement in other types over the United States? Were they able to improve other types at that time?

Isaac: They were, they were starting at it. The genetics station at Placerville was already established for the improvement of pines. We also had improved poplars. Later, in 1953, I visited Syrack C. Larsen in Denmark and others in Europe who were improving other species. A fellow by the name of Wright was doing work in Minnesota, Mergen at Yale, and Schreiner was working in Washington and various other places. I forget the men at the moment, but there were several of them at work everywhere. I was trying to get them stirred up here in this Northwest country.

#### Attempts to Start Genetic Projects

Isaac: I was still smarting under the sting of Munger going to California with Eddy and getting a genetic station established down there in pine, using Douglas fir money.



Fry: This was Mr. Eddy's money?

Isaac: Yes.

Fry: You mean Munger traveled with Eddy?

Isaac: He went with James G. Eddy to California and they together called on Luther Burbank. Luther Burbank persuaded them at \$25.00 a piece, for each 15 minute interview, to buy the land in the pine type and put a study in ponderosa pine that Eddy himself knew very little about. But Burbank was a fast enough talker to do it. And they established the Eddy Tree Breeding Station [Forest Genetics Institute] at Placerville, California.

Austin was his first man. He was a pomologist or something like that -- a fruit or a berry propagator. Then gradually they hired foresters, and then gradually it was taken over by the U.S. government during the Depression. Eddy's son, Garrett Eddy, with the Port Blakeley Timber Company up in Washington, has been one of our important cooperators. He is still interested in forest improvement.

My bulletin, published in 1949 began to stir up interest here in forest genetics studies, and eventually, I was negotiating with Jack Duffield to come to Portland. He's probably the foremost technical forest geneticist in the United States. And he's a real student. He later went to North Carolina.

Fry: Raleigh?

Isaac: I'm not sure if he's at Raleigh or not, but he's back there at one of the schools. I was planning on getting him to come up here and head a genetics station. About that time, Bill Greeley came down here from Seattle and asked for a conference with me.





Isaac: (He had been Chief of the Forest Service in the Twenties and at this time was semi-retired from the Executive Secretary position of the West Coast Lumberman's Association.) I asked him to come to the Station, and he said, "No, I want to talk to you privately. I want you to come over to my hotel."

I went over to the Multnomah Hotel and spent the better part of two days with him. He said, "The industry is ready to back you on a tree improvement program at the Station, and put up some money."

Greeley said that at that time he was on the Board of Control of the Ford Foundation and he could assure us assistance from the Ford Foundation if we would set up this genetics unit in our Station here, under the direction of a Board of Directors that would be made up of the deans of the colleges and some of the leading men in the timber industry that were going to put up money. He said, "I want to know what you think about it."

I said, "Well, I'll write a memorandum on it and put it up to the management and see what happens." I wrote the memorandum, but the Station wouldn't go for it. They said, "We don't want the industry telling us what to do." They were not in a very cooperative mood at that time, and nothing ever came of this offer.

Our director said, "We don't want timber interests dictating to us."

Fry: Who was head of the station then?

Isaac: I think it was Steve Wycoff. Steve Wycoff came here from Blister Rust Control in Montana; he was Director of the Station here for a number of years before he went to California as Director.



Isaac: The industry was going to back this financially, and they were going to support legislation here to establish a Station. But nothing ever came out of that interview of Greeley's with me. I prepared a memorandum and turned it in, and they just looked with a cold fishy eye on it and let it ride. Nothing ever came out of it. When I didn't make any further moves to get Duffield moved up here, he quit the genetics station at Placerville and went to teach at the University of Washington.

That was a year or two after I finished my report at the University of Washington. He taught there one year around 1947, and he developed a plan for forest genetics research at the University of Washington. Industry was going to provide the physical plant, the field stations, and whatever they needed in the way of support. And the University was going to manage the administration of it. That plan was presented to the meeting that was held at the University. In the evening, after that meeting was done, these timbermen went downtown and called up Duffield and asked him to come down to the hotel. Industry told him, "We want to do this job ourselves." (They had already established this Greeley Nursery at Nisqually and were producing trees there.) "We want to take your plan and put it into effect."

Fry: Without the University?

Isaac: Yes. They said, "If you'll come to work for us, we'll put you in charge of this research program and put you in charge of the nursery down at Nisqually, and we will give you a free hand. That's the only way we'll go ahead with this plan." And they lifted that plan right out of the hands of the University of Washington, and took him down there to head up the nursery and the genetics program for the Industrial Forestry and Conservation Association. And for a couple of years, Marckworth, the Dean of the College, and Duffield were not on friendly speaking terms. There was bitter, bitter feeling there. At the time, Bill Greeley himself had no



Isaac: knowledge of what was going on. He was semi-retired. I was kind of glad that I had stayed completely out of it.

A genetics program like that was what I was trying to get set up in our Station, and they looked at it with a cold fishy eye down here, so it got started up there.

Fry: Was there any particular reason why industry wanted to do this without the University of Washington?

Isaac: No, not that I know of, except that everybody was trying to make a showing for themselves, and they figured that they would be bound by academic restrictions of one kind and another under University control, and they wouldn't have the same freedom as if they were running the show themselves. There was a lot of jealousy among foresters and there were a lot of real stubborn individualists in the upper brackets in those days.

Fry: Of the industry?

Isaac: Timber industry, yes.

Fry: Which companies were heading this up?

Isaac: The Industrial Forestry Association, also Weyerhaeuser was a big mover in it. And St. Paul and Tacoma Lumber Company was mixed up in it. I don't know to what extent Simpson was. But I think Garrett Eddy was in it, also. I don't know who else. But that's the way the pot boiled.

They set up the genetics station at the Nisqually Nursery, where it is still housed. They are still carrying on some work in setting up tree-seed orchards, from selected trees and that sort of thing.



Fry: Are you familiar with their work?

Isaac: Yes.

Fry: What's your idea of it?

Isaac: I think they are making progress. They've got several seed orchards established; but they haven't done too careful a job of it. For example, after I came back from Turkey, I went down with Duffield to plant a seed orchard for one of the big companies down here out of Corvallis. They were planting up an old ranch, right in a rather narrow canyon, with the hills on both sides covered with fir of questionable quality, and the pollen from those hillsides would just blow right across that seed orchard. It was down in this little valley. They had no control strips around it or anything else. I said to him, "Aren't you going to put something around here to shield this from the pollen drifting in? A border of cottonwood, or of other species?" Oh, no, they didn't think enough pollen would get in to make any difference.

I don't know whatever happened to the seed orchard, if it's still going or not. I think they were putting the seed orchard in for the Willamette Valley Lumber Company. I forget what it was for. But I know I planted trees for a day there just for the relaxation I got out of it.

Fry: Busman's holiday.

Isaac: (Laughter) But they are making progress and they are keeping going. That is now supported by the Industrial Forestry Association under Hagenstein.

Duffield felt too restricted there. He wanted to get back into the academic field. So he went back to North Carolina as a teacher, and he has a genetics program underway there. A lot of the





Isaac: spirit in the movement left with Duffield. He is, I think, one of the really big men in forest genetics in America. Mergen at Yale is another one, currently. Mergen is a foreigner, he's a Dane. He was trained with Syrach Larssen in Denmark.

Fry: The general pattern and emphasis of your work has been what?

Isaac: Reforestation in the Douglas fir region. I dipped some into the other types and the other species by making seed tests, life of seed in the soil and that. But my general work was in the Douglas fir region. By Douglas fir region, I mean the west side of Washington and Oregon, where it reaches its maximum growth and development. I started first in nursery studies and seed studies, and then drifted into natural regeneration -- why some areas reforested and others refused to regenerate. And from that we drifted into thinning and stand improvements; then into individual tree improvement, genetics and the selecting of the best of our native stands. That's about where we were until we moved into second growth cutting and the cutting methods for old growth stands.

#### Second Growth Committee

Fry: Then that ended your work at Washington University. Along about this time, second-growth forests began to be a thing that all of the companies had to deal with.

Isaac: They were gradually getting into it. Young trees were getting big enough to cut, and the old forests were getting cut back and back, and back, and all companies had diminishing amounts of it left.

Fry: Questions of management began to come up.



Isaac: So we established what Hall called his second growth committee, which is correct. And we had the two colleges (Oregon State and Washington).

Fry: This was when Hall was director of the Research Station?

Isaac: Yes, this committee was made up of men from two forestry colleges, the technical men from the big companies, and the two states also had men on this committee.

Fry: You mean the state division of forestry in both states?

Isaac: Yes, in both states. We put the committee together at the Experiment Station, but the industrial foresters and some others objected to calling it a Forest Experiment Station committee.

Colonel Greeley and others had conceived this idea and came down here and agreed that that's the way it should be done. But when the committee got a hold of it, our friend McCulloch and some of the industrial foresters got in a little clique and they decided they weren't going to permit us to have it as an Experiment Station committee. It started out exactly like the "pull out" on the University of Washington at Seattle, but Hall got out this agreement with Colonel Greeley, and it was settled that it should be a second growth committee of the Forest Experiment Station. Hagenstein could tell you very well about both deals. We divided up the work among the various experts that were available. I had the part on reforestation and regeneration, and I think it also included planting. I don't know. Someone else had charge of growth and someone else had charge of thinning studies. And someone else had charge of other phases of it. I forget. And we put out a large mimeographed bulletin on second



Isaac: growth management.\* It told about managing for poles and for piling and all this and that. It came out as a book from the Experiment Station, a rather large publication. I have a copy of it here.

Fry: This was a kind of a Bible, then, for second growth management?

Isaac: Yes, it was the beginning of the second growth study. Then it was rewritten later in a more simplified form in a little booklet called "Your Trees, a Crop." Your man Walker from down at Berkeley rewrote it for us. He was joint editor for our Station and for the Berkeley station for a number of years. This was for popular consumption.

Fry: Was it widely read and used?

Isaac: Oh, yes, yes. It was reprinted and we ran out of copies a dozen times, I think. It was widely used. It gave simplified methods of making measurements and doing things. It had a lot of cartoons in it using a little humor along with the facts to carry it along, and make the average timber operator read it. It got over pretty good.

Fry: Did you get a lot of questions from timber owners and operators?

Isaac: Yes, yes.

Fry: Were they usually calling you at the Station to ask you things?

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\*"Management of Second Growth Forests in the Douglas-Fir Region." Pacific Northwest Forest and Range Experiment Station, Portland, Oregon, Dec. 1947.



Isaac: They would come in to see me, and we'd sit down. They'd say, "We have some questions to ask."

My standard answer was, "I'll try. I've been fooling around here a long time and I've got a lot of information. I'll just do the best I can, but I won't promise anything." And I'd usually be able to satisfy them pretty well.

#### Problems Updating Genetics Book

Fry: Let's move on to discuss your book, Reproductive Habits of Douglas Fir,\* which the Pack Foundation backed in 1942.

Isaac: The thing to remember is that most of the work that I have done is, in a measure, summarized in that publication.

Fry: That's your 1943 publication?

Isaac: Yes. That's the one that's been out of print for years and foresters have been calling for it. I'm trying to get some way to get it published, and I will one of these days. This one is the one that they wouldn't print the second time.

It was my masterpiece, and it didn't get printed the second time.

Fry: You rewrote it, you told me, and then went on your FAO assignment?

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\*Isaac, Leo A., Reproductive Habits of Douglas-Fir, Charles Lathrop Pack Forestry Foundation, Washington, D.C., 1943, published for the U.S. Forest Service, 107 pp. Pamphlet.





- Isaac: Yes, on my FAO assignment to Turkey for two and a half years. And it has, in fact, never yet been typed from my rough draft. My rough draft was left there in the file untouched for over six months after I left for Turkey. Then, when Meagher was asked by Eyers from Washington to do something with it he turned it over to this other young fellow that didn't know much about the subject and had him revise it. And he revised it until it didn't mean anything. He was a young forester, assigned to the Olympia office.
- Fry: He did a pretty good job of writing, but didn't have the experience to know exactly what you were saying?
- Isaac: He didn't know what it all meant and he didn't get the meaning into his writing that was there in the bulletin, and he cut out entirely some of the most significant stuff in there. It wasn't satisfactory to me or to any of the reviewers when it came back. George Meagher, of our Experiment Station here, had given him that assignment and had promised him a joint authorship without consulting me at all or even telling me about it. The revision was nearly completed and ready to go when I came back from Turkey. When nobody would accept the revision, Meagher threw up his hands and he said, "We'll reprint that just as it is."
- Fry: Your 1943 edition, with footnotes, was what Meagher wanted?
- Isaac: Yes; I tried to put in some footnotes to bring it up to date. But you couldn't begin to put in enough footnotes to bring it up to date, the whole thing had to be changed. You just couldn't add thirteen years of work and bring it up to date with footnotes. I wrote a complete memorandum showing him what had to be changed, and what it had to be changed to -- page after page of it. And he wouldn't listen to



Isaac: it. He said, you've drawn on the works of others and so forth, and somebody else is going to want to do this one of these days and half of it'll be published, and that kind of stuff, you know. He just made all kinds of excuses, and just balked. That's all, he just balked on it. And you couldn't move him at all.

Fry: You said this whole thing was started, this revised edition was started because of the demand from industry for an updated version.

Isaac: Sure. And the revision was again brought up. Even after I came back from Turkey they demanded it in our Experiment Station advisory committee meetings. And Briegleb came to me and he said, "Can't you get this thing underway?"

I said, "Only if you can get some sense into that Division Chief of yours, because he won't go along with it."

Fry: This was when Briegleb was director?

Isaac: Yes. George said for me to come in and talk to him. I came in and talked to him, but he was just the same as he was before, he wasn't changed at all. I wouldn't agree to publish it with twelve years of additional work laying there not used. Particularly since it was all written up. He wouldn't go along with it, and there it sits. Briegleb says, "What can I do? I can't fire him. And I can't force him to do what he doesn't want to do because it'll make an awful stink. So we ought to try to see if we can't work it out some way." And that's where it sits.

Meager has got a pull somewhere back in Washington. I think it's Ostrum in the Silviculture Office that he's a pet of, but I don't know.

Fry: That's why Briegleb said he couldn't fire him?



Isaac: I suppose so.

Fry: I wonder why Briegleb couldn't just have him transferred.

Isaac: Well, he's transferred about everybody else out of there, but Meagher sits right there. It got to a point where the people in the field just wouldn't work with him at all. They just told Briegleb out and out that they just wouldn't have anything to do with Meagher.

Fry: When did Meagher come back to the Station?

Isaac: He came six months or so before I went to Turkey.





At Forest History Society luncheon in Portland, Oregon Isaac chats with forester Dave Mason and interviewer Fry, August 16, 1968.





## CONSULTING WORK ABROAD

Trouble Shooting in Europe

- Fry: When you were called to Germany, I understand you attended the Forestry Congress of Western European Nations in 1953.
- Isaac: I want to make it clear that I was not sent as the American representative to the Congress, but rather, I was invited as an observer, and was asked to advise with the European Foresters there at the Congress and in European countries after the meeting, as to the use of American tree seed in European forests.
- Fry: So you must have used this: Better Douglas-Fir Forests From Better Seed.
- Isaac: I used this information, and I did have this map; I had it all published and with me. It outlines a system of collecting seed, and how near you must get to the same climate in order to get successful reforestation. It is patterned mostly after the Swedish system. Trees will survive in almost any climate, but if you are going to produce a worthwhile, paying forest, you've got to get the best seed for a given site to make a success of it.
- Fry: Was it this book that provided the incentive for the German government to ask you to come over?
- Isaac: Yes. I suppose so, plus a little personal friendship. I was kind of elated over that because as near as I could tell I was the first American forester who was brought over by the European countries, where the American taxpayer didn't have to pay through the nose. They paid my way over there. And I was kind of proud of that fact. And they



Isaac: also paid my way around Europe. They had a trip all laid out for me in their trouble areas. I went through all the European countries that way, clear up into Sweden, Norway, Denmark, Holland, Belgium, France and Italy.

Fry: We have your report, don't we, on that trip?

Isaac: Yes.

Fry: I wonder if you could tell us where you were when you first got this invitation, how it all began.

Isaac: Just after World War II to just prior to 1953 there was a very large number of foreign foresters visiting this country -- students, professors, government foresters, private foresters, etc. Many of them came to see my work in tree seed and reforestation, and many of them came to my home and I knew them well. Among these were the foresters who were in charge of this Forest Congress at Stuttgart, Germany. I received many letters inviting me to come over, and some requests were sent to the Forest Service requesting that I be sent over, but nothing happened until just before the meeting, when suddenly I got an official notice from the Congress inviting me and stating that I could pick up my transportation at the United Air Lines office. Then there was a grand scramble to get my clearance from the Forest Service, the necessary shots, transportation for my wife to match mine, and other last minute preparations.

Then we were off, first to Washington, D.C. (Forest Service), then to Stuttgart, Germany, and the Forest Congress.

Fry: Did you ever confer with individual foresters?

Isaac: Yes.

Fry: In each country?



Isaac: Yes.

Fry: What kind of problems did you observe in your reforestation work in Europe?

Isaac: Planting the trees too densely in the stands, and it was a costly error because the seedlings were expensive. They were planting them a meter and a quarter apart, which is about four feet. And four-foot planting with Douglas fir means that at least half of these planted trees would die and fall out of the stand before they would reach a size suitable to use. That was a terrific waste because the cost was carried from the very first day of the planting, and the interest would accumulate on that cost.

Before I left for home a good many of them in Germany and elsewhere were planting at wider spacing or at least considering it. In just the one trip I think I convinced them. I had my spacing test plantation literature which would show them what they would have in five years, in ten years, in fifteen years, and in twenty years. And I handed them these little folders where they could read right off the paper what spacing they had to plant to attain a growth that would at least be usable for fuel. And that's what they aimed at, a good many of them.

I thought that over-planting was the biggest error that I came across in European forestry. They took that attitude that they had to plant them thick in order to make the lower limbs fall off and clean the boles and produce a better type of forest.

Fry: Higher grade wood.

Isaac: It was much cheaper to let them grow twenty years and cut the bottom limbs off; their trees would be twice as big in diameter. The wood would be



Isaac: on a bigger bole all the way around, and in forty years they'd have twice as much as they would by letting nature take its course.

Another misconception that a good many of them had was that you had to plant them thick in order to get lots of height growth. That wasn't true at all. A six-inch tree with an eight-by-eight spacing would be taller than a tree on a four-by-four spacing of the same age. Close planting didn't make them grow taller. It made them grow taller for a given diameter of tree. But that tree -- if you took a four-inch tree in a thick plantation, it might be thirty feet high. But that same tree in an eight-by-eight-spacing would be eight inches in diameter instead of four, and probably several feet taller. Dense stands were not as tall in our measured plantations.

Fry: Germany was the main country where they were crowding?

Isaac: No, they were all crowding some. France and Belgium also. Even in Holland and Denmark, but their utilization was much closer there. They cut out the little whips and used them for fodder, and for firewood to cook their meals. Utilization was closer. But they were gradually coming to the wider spacing.

Fry: How long were you over there?

Isaac: I was there three months. I spent most of one month in Germany, then I went to the other five countries over there: Sweden, Norway, Denmark, Holland, and Belgium. Then I cut back and went over through Switzerland, and down through Italy, and back into France, and then over to the British Isles. To some of those other countries I went pretty much on my own just to study the forests and see what they were doing, and to meet the different people.





Fry: Did France not participate in this conference?

Isaac: They were there, yes. But England was not.

Fry: Oh?

Isaac: England did not participate. They had some observers there but they did not participate.

Fry: For any special reason?

Isaac: Yes, it was bitterness over the war. They wouldn't come to Germany and participate.

Fry: There weren't any Iron Curtain countries represented, were there?

Isaac: All the Iron Curtain countries were represented. Austria, East Germany, Czechoslovakia, all of those countries had observers there.

Fry: What did you detect as their major problems with American seed in forestry?

Isaac: It was the same difficulty, getting the wrong seed for a given site. By the wrong seed, I meant seed from the wrong climatic zone and the wrong atmospheric conditions. A humid coast climate tree wouldn't grow in a high mountain dry climate; and vice versa, a dry climate tree wouldn't grow good down here. That's true in this country as well as over there. The Douglas that we brought over from eastern Oregon died in the Wind River experimental Arboretum; in fourteen years they were all dead. Lodgepole pine was the same way. But the native Douglas fir just over the fence, and almost touching them, were growing beautifully. The Lodgepole pine that grew there in the valley were growing beautifully in the Arboretum. But the pines brought over from Baker were dead and dying. The same way with the western larch. And so in Europe, the chief cause was not properly matching the climate



Isaac: and the soil of the seed source with that of the planting site.

Fry: In all of this enormous amount of data that you have amassed here, do you have conclusions that represent work that you did on the ground by your observations in plots and so forth?

Isaac: Primarily, yes.

Fry: Were you ever able to go into the biophysical or biochemical properties of these different species of Douglas-fir that cause them not to live?

Isaac: No, we just stopped at what you could observe in the reaction of the plant itself on the ground. Our new laboratory at Corvallis may go into that phase.

Fry: So what you have done is set up a lot of guidelines here that will keep researchers busy for a long time.

Isaac: Probably. For example there is the wooly aphid, which is a needle aphid that affects the new growth on conifers, particularly on Douglas-fir. When we brought the Douglas-fir over here from eastern Oregon and planted it at our Wind River Arboretum, that wooly aphid was three times as bad on those imported trees that we brought over here as it was on our native trees. It's present everywhere on our native trees, but not enough to hurt them. They grow in spite of it. But it was heavy enough on these imported Douglas-firs to help a great deal in killing them out. When these trees were brought over here from the dry climate into this humid climate, that aphid infestation grew a great deal faster and was more deadly to these trees here than it was over east of the mountains. Humans sometimes react in a similar manner; take for example our American Indians. When we took them out of the teepee and put them into houses they died of



Isaac: tuberculosis.

Fry: Do you know if a lot of follow-up research is going on in any of this, for more basic research?

Isaac: More basic research is being carried from this work into the big laboratories that are being built. This big new lab we have at Oregon State in Corvallis -- you should find out about that when you go down there. I say they are jumping too far ahead. They aren't carrying it on and tying the two together, and they are picking out these different things and studying them by themselves. It's going to be an awful job to bring those back and put them together.

Fry: You have the comprehensive picture here in your book which enables people to intelligently manage forests.

Isaac: Yes.

Fry: And the why's and wherefore's of this phenomenon that you laid out here are going to have to be documented in lots of Ph.D. theses and -- (laughter)

Isaac: Bill Greeley summed it up for me. I believe he's got it in a foreword in that bulletin or something regarding it. He said, "Leo, in your studies, each study is a building block in our silvicultural system. When you get enough of the building blocks we'll build a structure out of them, and that structure will be our foundation for silviculture. They'll be the building blocks in our silviculture for the Douglas fir region. You just keep right on piling them up and we'll keep right on using them." It was that kind of encouragement that kept me going all through the years. Regional Forester Watts used to say to me, "Leo, how do you keep up your interests?"

And I used to say, "How the hell can I lose it



Isaac: when every step I go I see more that there is, that we don't know, and we need to learn." And I've been at it my whole lifetime.

Fry: When you were in Germany in 1953 what did you leave at the Station here for those three months? Or was this your summer vacation?

Isaac: It was my vacation plus a leave of absence for travel. I did this: I did the official work primarily on my leave of absence. And when I took a sashay with my wife to see something special, I would take two or three days of annual leave. And I sandwiched them right in.

#### To Turkey With FAO

Fry: Then, in October of 1956, October 1, you retired. Is your retirement at the average age, or did you retire early?

Isaac: A little late. We could retire at sixty, but I retired at sixty-four.

Fry: You chose that particular time to retire because of the additional retirement benefits that came into effect October first.

Isaac: Yes.

Fry: And also, I guess, because of this FAO trip?

Isaac: That was the prime reason. They wanted me in June. But this change wouldn't take effect until October, and I needed that much time to finish my writing, anyway. So I asked to stay on. FAO wouldn't let me go. They said, "All right, if you've got to stay that long, we'll wait for you." And they held my appointment open until October 2. I worked





Isaac: here on the first and went to work for them on the second of October. It was very nice, and they were very considerate. It was a real bonanza for me. If you go to work for the government after you retire they deduct your government salary from your pension. And they balance the two up. But if you go to work for someone on the outside, you can collect your pension as well as the outside pay. And you see, going to work for the United Nations I was working for a foreign corporation, so I got my full "foreign" pay and my full retirement.

Fry: And that's how you brought back all these beautiful Persian rugs.

Isaac: That's part of it. And not only that, it made this possible.

Fry: Your house.

Isaac: My full retirement stayed right here in the bank all the while, into the bank every month. I let it stay there. Mom and I didn't try to keep up with the Joneses with cocktail parties and that sort of thing in Turkey. We got a nice respectable apartment and lived a normal life and had a lot of fun and saw all of the European Mediterranean countries. We did enough entertaining to repay obligations, get to know a lot of people, and learn about the way of life around us.

Fry: But you avoided "high living."

Isaac: That's right.

I went first to Rome for a week for some indoctrination, and then went from there on over to Turkey.

Fry: How did you get this appointment?

Isaac: FAO sent a notice to the Forest Service that they



Isaac: needed a forester to go to Turkey and some of the other Mediterranean countries to assist in reforestation. I saw the notice and I just wrote on the sheet, "Interested, believe I can do the job," and signed my name and passed it on and forgot it. It went around in the Service and pretty soon our chief of personnel, Sandvig, came back from Washington, D.C. and I met him in the hallway. He said, "Leo, you're on top of the totem pole back there in Washington."

I said, "What are you talking about?"

He said, "You applied for that position in the Mediterranean, didn't you? You're on the top of the list of applicants. I don't see why you shouldn't get it."

I said, "Can't do any more than hope, but I haven't heard." And I didn't hear anything. And I still didn't hear anything, and it was getting close to the time to go. Then they called long distance and said, "I have your LA [letter of authorization] here to make the European trip." I didn't know what an "LA" meant. They were talking by letters back there instead of English.

So I said, "What the hell is an LA?"

And he said, "Your letter of authorization to go to Europe."

I said, "Good, send it along."

He said, "Do you think you can still get in the three weeks of inoculations?"

I said, "We already have them."

Fry: This was just like your German trip?



Isaac: Yes, pretty much the same. This other one came through more on schedule. But I went back there and got my passport, and went on through. Then I got an FAO passport, which is something quite different than the other one.

They'd told me to pick up my passport when I got to Washington. But I landed in Washington on October 2 or 3, one of those blistering hot fall days that they have once in a while in Washington, and in the office was one man sitting behind eleven desks, there for the afternoon. I said, "I came to get my passport."

He said, "I don't think I can hunt that out for you because I'm here alone, and everybody else is gone."

I said, "What's the matter?"

Well, he said, "There's a ruling here that if the temperature gets above ninety and the humidity is above a certain point, they don't have to work, and they have all gone home."

I said, "My plane leaves at nine in the morning and I've got to have that passport. I don't care how I get it or where, but I can't leave without a passport, and I can't get another reservation at this late date." I said, "Who is your chief?"

And he told me, and I went to the telephone and I called him up and I said, "I'm in a very tight place and I couldn't think of anyone else to help me. I've got to have my passport by eight-thirty in the morning [thumping table for emphasis] in order to make this plane connection, I have my reservation and my ticket bought and everything, and I've got to have it. I wonder what you can do for me."



Isaac: He said, "You come to the office in the morning at eight-thirty -- and you keep your taxi, don't let it get away from you, right outside the door, and I'll have somebody there with that passport to put in your hands." And he did. It was really remarkable to get that sort of a connection.

Fry: Was your wife with you?

Isaac: Yes. Both times she was with me. We had a grand time over there. I wouldn't have stayed the two years in Turkey, I don't think, if it wasn't for her.

Fry: Do you have anything written about your Turkey experience?

Isaac: Oh, yes, there are several things. I got a whole bulletin on it.\* I wrote a complete field handbook of Reforestation for Turkey, starting with collection and handling of seed, nursery practice for Turkey, and field planting for Turkey -- in the simplest form that their people could use.

Here, these are the bulletins I was going to give you.

Fry: This Corvallis bulletin is "Leo Isaac on Silviculture." That's your lectures, which you did later after you came back from Turkey.

Isaac: There's a nice foreword by McCulloch in there. Now here is the bulletin I wrote for Turkey. By a quick look at the table of contents you can see what it consists of.

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\*Isaac, Leo A., Report to the Government of Turkey on Reforestation, Bulletin #932, Food and Agriculture Organization Administration, United Nations, Rome, 1958.





Fry: "Improved Reforestation Practice, Extension Work, Large vs. Small Nurseries, Selection of Areas for Reforestation, Forest Improvement from Better Seed (you have to get that in), Conclusions, Nursery and Tree Planting Manual, and appendices on figures and photographs."

Isaac: I drew all the designs for the apparatus and everything else in the bulletin.

Fry: This is a one-man operation, you mean.

Isaac: Yes. Except for the editing and typing by my wife. And I got the pictures, and the planting methods and the tools. I thought that was a pretty good contribution to make looking at the bulletin. And here's the planting methods, and there's the tools that I had for them. This is the packing of the trees. Here's a little portable tree-packing device, to pack the individual tree (with roots in soil) in a case like a one-quart milk carton. It's made out of building paper that disintegrates in a year. The roots can go right out through it and you could plant the tree right in the field without disturbing the roots in severe sites. You could make the little packing device out of an apple crate and tack it on a bench any place and it'd work. It was simple for them. You had to make things simple for the Turks because they were not scientifically or technically inclined.

Here's a more complicated planting device [showing picture]. I drew all those things for the bulletin.

Fry: Did you do your own photography, too?

Isaac: Yes. These apparatus I drew right up out of my head, then made them. There's your portable cone kilns. There are the seed beds and the whole thing. I got all the bulletins from American forestry



Isaac: that I knew about that I could get my hands on, and used them as guides for the preparation of this. It's a complete field handbook on collection and handling of seed, nursery practice for Turkey, and field planting for Turkey. That's what I did for them. This is the only copy that I have left, and I can't give it up.

Fry: We'll refer to it here.

Isaac: I'm sure you can get it.

Fry: Yes. Now, Leo, who were the people that you found you could work most effectively with in Turkey?

Isaac: The young Turkish forestry students that had been sent to this country and had spent a year or two in the forestry colleges around the United States; they had been picked out from college students and sent to America. Once back in Turkey, they were the most amiable group to work with. They were sent over here a year or two before I went over there, and my work was really half done when I got there because these students were there and anxious to get started and needed something to support their contentions. Their bosses wouldn't believe them if they told them a seed bed should be put in a certain way unless they could show them something like a book.

          Their big bosses would say, "Shut up and go do it like your father did. We don't want to disturb the routine. We are getting our monthly stipend and you are, too. Let's go on like that." That was the attitude of the old Turk. The Moslem religion teaches that the oldest member of the family should be the boss and do the deciding, and they still abide by it, particularly when they get in power enough to put it over.

          When these young fellows try to do something



Isaac: different, in the modern way, if they agitated too much they'd send them out to dig ditches. By the time I got there they had run half of these young fellows out of the government service, by denying them the privilege to put in effect what they had learned. They were there and anxious to learn. They were very helpful, and made my work possible.

When I came there the Turks were celebrating their hundredth anniversary of technical forestry, and they had nine hundred forestry graduates from their technical forestry school, and no forestry practice under way at all, except a little semblance in rare instances of it. I didn't find one written paragraph of instructions for reforestation. Not one written paragraph. So I immediately started collecting material to get that information together and kept working right at it. When I didn't have it done at the end of a year, they said, "You've got to stay another year."

Fry: The Turkish government requested it, you mean?

Isaac: Yes. And the head of silviculture there.

Fry: And FAO?

Isaac: Yes, and the FAO also requested it. And so I stayed another year, and then they wanted me to stay still another year, but I said I had enough: "My job is finished." And I arranged for them to translate the FAO report into Turkish.

Fry: Did you feel that you ever got anywhere with the older establishment? The men who were in power?

Isaac: Not too much with the old-timers. But they couldn't stop the movement because these young fellows now had something to back them up, and here and there better practice was getting into effect. They had one pine nursery (Dursenbey) that would be a credit



Isaac: to any nursery in this country -- it would be acceptable -- and they were doing a good job. But their biggest nursery, a hundred miles away, was costing a hundred times as much to produce an established seedling, and they paid no attention to it whatever, no attention whatever. The seedlings were dying, whole beds at a time -- so they'd put 'em in next year again, and go right on.

Fry: Why was it costing so much?

Isaac: The trees were all dying, and when transplanted, they weren't growing. I found out that the land had been cultivated for a thousand years and had never been fertilized. They were watering with highly alkaline water that I think contained potassium, or something like that, and the trees were dying.

I came there and I found three graduate foresters sitting in this stone block house in the center of the nursery with store clothes on and low shoes and a flower garden all around the nursery. Lots of people taking care of the flowers, but nobody working in the nursery. And I said, "They tell me the trees are dying in your nursery."

They said, "Yes, the men say they are dying."

I said, "What are they dying from?"

"We don't know. We think 'damping off' and a disease of seedlings"

I said, "Have you been out to look at it?"

They said, "No." Sitting right in the middle of the nursery! They had a cup of tea on their desks, and a few folders, blanks with places to check off their names, this and that, and a newspaper.

And always a stooge sitting there at their





Isaac: door waiting on them. All day, sitting there, asleep half of the time, bring them a cup of coffee, bring them a glass of water. If they didn't want the water they'd throw it out the window, or throw it on the floor. "Go and get a form for me," for something. Just sitting there all the time. But he was a political stooge that was being given work and a little stipend. So it all went by the board.

I said, "How about your nursery?" You say you think your trees are dying of damping off?"

"Yes."

Well, I said, "Those trees are standing up straight, dead, and brown. Damping off is a fungus that works in the top layer of the soil. And it cuts the seedling off right at the soil level and the seedlings tumble over when they die of damping off. This must be something on the roots." I said "Have you looked at the roots?"

"No, we haven't looked at the roots."

"Well," I said, "get me a shovel." They blew a whistle like a referee at a ball game. Stooges came crawling up out of the weeds from around the place, and came strutting up there and standing up stiff at attention. They barked something at them in Turkish and one ran off and came back with a shovel. I took ahold of the shovel to dig up a seedling, and the Turk wouldn't let go of the shovel. He hung on to it, and I pulled him all over the seed bed. And I said, "What's the matter with this man, why won't he let me have that shovel?"

"Oh, you're not supposed to dig up the seedlings. That is the men's work; you're not supposed to do that, in your position."



Isaac:           And I said, "Hell, they don't know how to dig up the seedlings. I'm going to dig them up myself." And I would get down and take up a spadeful of these young seedlings, get my hand under it and shake the dirt loose from the roots and lift them out carefully so not to trip the root hairs off. I said, "Now, let him dig up a bunch." He'd dig up a big chunk, take hold of a big tree and strip it out of soil and he'd have three or four streamers for roots with all the bark and fine roots stripped off, all the root hairs gone. You never could make that kind of a seedling grow, you know. I showed them how to lift those seedlings so they could transplant them and they could grow. But they thought it was terrible that I should get down there on my knees in that dirt.

I brought them all into a school the third or fourth week I was in Turkey. I got the planting foremen and the reforestation foremen from all over Turkey, eighteen of them, into this best nursery, at Dursenbey, Turkey, to go through the motions of nursery practice. After I worked an hour or so with them through an interpreter, I called them together and I said, "How many of you men have actually planted a tree with your own hands?" And only one man out of the eighteen had ever planted a tree with his own hands. And he was a forester that had been over here to the United States and the students up at the University of Washington had taken him over on the Easter vacation out on the Olympic National Forest to plant trees for spending money. He nearly died he had to work so hard over there, but he had planted some trees with his own hands. They were all very certain before I got through that school that I could see that they weren't afraid to get their hands dirty. (Laughter) I thought I had accomplished something. (Laughter)

Fry:            These were the foremen on the private forests around?



Isaac: No, official government foresters with a college education, that had never planted a tree with their own hands. I was talking to another fellow there in the agricultural field, who was a livestock specialist from Corvallis -- MacKenzie his name was, very fine man. He said, "Why, I had young graduate foresters from their veterinary institute here. They really didn't know which end of an animal to tie the rope on to. Had never touched an animal with their hands in their lives." They thought it was degrading for them to stoop down to do the actual work.

Fry: Did you get to do any work with the school of forestry there?

Isaac: Not very much. The old chief of silviculture was a member of the old school. He taught highly technical stuff that never got into use out in the field at all, never anywhere. At no place in Turkey could you see anything that he taught that had been put into practice. He was the lord high master, and he didn't want anybody to come in and tell him how to run their schools or anything else. He was a distant relative, of some sort, to Menderez, who was the prime minister. That chief was the opposition; his word was law wherever he walked into the field. But as quick as his back was turned they would turn around and start doing stuff the way I taught them how to do it.

He came out to me one time when I was out at this good nursery and he said, "Do you mean to tell me that you're coming over here and trying to tell our boys how to plant trees?"

I said, "No, I don't. I mean to tell your boys how we in America plant trees in the best manner that we know how to do it, and for the least money. And if that's better than yours, that's up to you and them to decide, but that's what I'm here for." But



Isaac: he was pretty hostile. And every chance he had to block anything that I was doing he would do it.

I saw areas in Turkey where they had taken crews of men and had gone out into the forest where he was putting his brand of forestry into effect. They would cut down trees, carry the logs by hand and pile them up into nice little piles in the forest, and cut off all the limbs and trim up the tree, making everything pretty, with no real benefit to the forest whatever, just a lot of work for nothing. They were peeling all of the logs when they were taking them out of the forest, and measuring with a pair of calipers on the big end and the small end of the log and figuring out the total cubic contents. What they were getting for it and using it for bore no relation to what they were doing at all. But they had to go through all this procedure wherever his influence touched. That's the way they were running things over there.

Fry: Had you been forewarned about this man before you went?

Isaac: Only just a little. FAO had hired a Swede to take on this job, and he went over there and worked three months and he threw up his hands. They had to let him go; he just walked off of the job, said it was impossible.

Fry: And you knew about that?

Isaac: Yes. But I didn't know to what extent it had gone on until after I got there. They didn't tell me about that. They couldn't do anything with the Swede at all, and he gave up in despair and left. It was from him that I got some of my first tips. I had the report on this one big nursery where the trees were dying, where they were producing, I think, 120 million trees a year according to the record. And I said to them, "For heaven sakes, where are you planting that many trees in Turkey?"





Isaac: "Oh, we aren't planting that many. That is the full capacity of that nursery." And that's what they were reporting to the Grand National Assembly. "But," they said, "it is only half developed now."

And I said, "What happens to that developed part of the nursery?"

"We're losing some of the trees."

And then I looked at this Swede's report. He said, "When I was there they probably had twenty million seedlings coming up in the nursery, but it looked as though they were all dying."

So I went out there and looked. I looked first at their seed beds then at the transplant beds. The seedlings in the seed beds were over half dead. And in the transplant beds they were three-quarters dead. I dug the trees up and from appearances they never had started to grow at all. They had clipped off the tips of the roots, and stripped the fine roots off the rest of the root system.

Fry: Did you travel much in the Middle East?

Isaac: Earlier in the year we went on a vacation to visit other Mediterranean countries. We went to Egypt and Damascus, and flew over the Suez Canal while the trouble was going on.

Fry: I wanted to ask you if you were in on that.

Isaac: We were to land in Damascus while that trouble was going on, and they wouldn't let our plane come down. We had to fly over and I photographed the streets (the Damascus street called "Straight") from the air, and then we went on over to Jerusalem in Jordan. But we couldn't land, we had to go on over to Jordan. And everywhere we went in Jordan at that time we had to be accompanied by tourist police. We would walk up to this United Nations line that ran through



Isaac: Jerusalem, and they'd say, "Don't step over or that fellow standing right over there, a hundred feet away, will shoot you." And he was standing there with a loaded rifle and a bayonette on it. Conditions were that bitter when we were there.

Fry: We might explain, this was during the British-Egyptian Suez Canal crisis in 1958.

Isaac: Yes, and right after. Our trip was after the main trouble. Yes. It was a strange feeling to be traveling around there, walking in the land where the Prince of Peace was born and lived and taught and died, and there see human beings standing face to face a hundred feet apart with loaded rifles and bayonettes ready to rip each other's guts out. It was a really strange sensation.

Fry: When your two-year stint was over, you didn't come straight home, did you?

Isaac: No. When I wound things up in Turkey I went back to Rome and spent a month in Rome to write up my report and get it approved and corrected and in shape for publication. After that I took a short assignment with the Manning Seed Company, to again visit places in France, Germany, and Belgium where they were having unsatisfactory results with American tree seed.

Fry: How long did this last?

Isaac: Ten or twelve weeks. Over West Germany and the British Isles.

Fry: I have "months" down here in my notes.

Isaac: It was about four months before I got home and got back to work because I went to Washington and several other places in the United States. But this particular assignment was about twelve weeks.



Isaac: It was early October when I came to Rome, and it was Christmas when I got back to America.

Fry: This must have been 1958, because you went to Turkey in 1956.

Isaac: Yes, it was Christmas of 1958. And then in 1959 I did a lot of finishing up of my work after I got home, my reports and all that stuff. I had the reports to make out for the Manning Seed Company, and the reports to make out for our Washington office.

#### Private Consulting for Manning Seed Company

Fry: What about your work with Manning Seed Company? Is there anything written on that?

Isaac: Not except the Manning Seed Company stuff; that's their own private business. They have several publications that I prepared for them.

Fry: You don't have copies of these?

Isaac: Not at hand. But I'd have to look them up.

Fry: Why don't you outline for me here what your activities were for Manning.

Isaac: I first set up a plan for them to lay out the Douglas fir region in seed zones, based on the map in my bulletin. And these zones varied roughly two degrees difference in average annual temperature.

Fry: From zone to zone?

Isaac: From zone to zone. There was something like six or eight degrees difference in average annual temperatures, from southern Oregon to Canada: that



Isaac: would make three zones. I divided them this way (pointing to map) for temperature [from north to south] and from coast inward [from east to west] for humidity zones. There was the humid coast belt on the coast slope of the coast mountains. The interior valley, like the Willamette Valley, or from Olympia east to Mount Rainier, was the second humid zone; and then the Cascade Mountain slope: three general humidity zones.

Fry: And you did this also for European areas?

Isaac: No, I did that only for American seed zones, prepared the map that Manning wanted as his map of seed zones and that he used in selling his seed to European countries. He would say, "I will send you seed from Randle, Washington, that is in Zone Seven, collection area three on the Manning Map, or U.S. Weather Station number 90 on the map in Better Forests from Better Seed, or whatever it happens to be. It meets your climatic specifications and elevation."

Manning bought a lot of my Bulletins and sent them to all his customers in Europe. I first got that thing ready for him. Then I worked out his bonded seed zones where he would seek out particularly good native stands, would photograph them and have growth determinations made for them, and was guaranteeing to his purchasers that the seed would be collected and handled by trained foresters. The Company put out a whole book on it.

Fry: What was the purpose in that?

Isaac: To get the right seed from the right climatic zone for similar climatic zones over there.

Fry: Having it collected and handled by trained foresters was to insure that it would be collected properly.





Isaac: Yes. And handled properly and honestly.

Fry: And to enable him to hire these foresters to do that.

Isaac: But the foreign countries wouldn't pay the price that was necessary to get that kind of seed. They were worth a hundred times that much in final returns, but they couldn't see it. If they could get seed for three and a half a pound, any kind of seed, as against the right seed for six dollars, they'd take the three dollar and fifty cent seed.

In fact, Dr. Champion (Sir Champion now, he's been knighted since) of Oxford Forestry College, the head of the industrial forestry association in England, spent a whole fall with me here going over these seed zones, and then went back to England. In about three months they write me the most heart-breaking letter you ever saw. They told me that in spite of all they could do, the English high commission that had to do with the purchase of foreign seeds decided to take Douglas fir seed from around Boulder, Colorado, for reforestation in England, which by the farthest flight of imagination would never produce a forest in England. They bought 3500 pounds of that seed at three dollars and fifty cents a pound and the English foresters were obliged to use it, whereas the coast seed that would match their climate, that they should have had would cost them six dollars a pound at that time.

My relations with the Manning Seed Company were rather suddenly discontinued because I had written in all of my statements that there was no place in the entire economic structure of our reforestation that absolute integrity was as essential as the record of seed collection in the Douglas fir region, because it spelled success or failure of your forest project in Europe or any other place that you planted it; and you couldn't detect an error or



Isaac: mistake until it was too late to change. If you bought the wrong chicken you could fat him up the next year and chop his head off and eat him. If you got the wrong wheat you could get another brand next year. But if you planted the wrong forest tree you're stuck with it for a lifetime, and then stuck with a problem of getting the bad trees off your land. Much of south Sweden was planted up with a poor quality of Scotch pine that they purchased cheaply in Germany, and it has never produced a productive forest. Forests right alongside of them or across a road, but from the right seed were producing excellent forests. And they had examples everywhere to prove it.

But that was the situation, and I had written it into all my writings that absolute integrity was necessary in the seed collection. I had Manning all ready to shoot on that basis, but when his bonded seed deal didn't go over he started reverting to the old system of just selling seed. He wanted to establish a seed certification, a private seed certification agency that would be made up of a few seed dealers and buyers here.

And he had it all set up so that he could control it. He put the entrance fee so high -- \$250 a year for a little seed dealer -- so that only he and his subsidiaries could afford to pay it, and he could control the whole thing. He wanted me to write that plan up for publication in the Journal of Forestry so that he could put it over, and I wouldn't do it. I had already written my plans for seed certification and given the speech at the World Forest Congress at Seattle in 1961. My recommendations were on record and I wouldn't go back on them for anything in the world. And when he came to me with that for me to write up I wouldn't go along with him and never wrote it up. And he just summarily dropped me right there.



Isaac: I haven't had any word from him since.

I used to write something for him every year. He'd bring something down for me to work over and to write up for him. But he dropped me like a hot coal. He seemed to go berserk, spent most of his time traveling around Europe. He made too much money. He divorced his wife (who was a partner in the business) and married another one and turned his seed business more or less over to some hired men. Last year his two top men quit the business and I haven't seen or heard anything of him since. He has given his address as Tacoma, Washington, and seems to be carrying on the business as before by himself.

Fry: That sounds like it might even have been a case, later on, that could have lead to an anti-trust suit or something.

Isaac: It could have if it continued as planned.

Fry: In effect he would have had a monopoly.

Isaac: Yes, because he would have had it all tied up, but his plan for certification didn't work out.

Fry: I wanted to ask you, Leo, about this seed that the English bought. Is it too early yet to tell how these trees are turning out?

Isaac: I wouldn't even need to ask.

Fry: You haven't heard?

Isaac: Not definitely; I have heard from various places that it fizzled out and in later years they began buying from another source. I suppose they got rid of it as much as they could, planted it for Christmas trees or something like that. But they said they would never use any more of it than they had to.



Fry: But now they are beginning to do this as much as they can.

Isaac: Oh, yes, they're beginning again. They sent a young fellow by the name of Woods over here, and he stayed here a year. I worked a lot with him and he wrote up seed requirements and sources, and that kind of stuff. Another young fellow, in charge of their nursery in Scotland -- what was his name -- Don Fulkner or something like that. (I can't recall for certain right now.) They are younger fellows with new ideas and they are going ahead, and they are doing a good job of establishing new forests in England.

### Ireland

Isaac: Much to my great surprise and satisfaction, I got over to Ireland and I found the finest forest growing conditions in Ireland that I found anywhere in the European theater.

Fry: You mean natural conditions?

Isaac: Natural conditions. A moist climate through the summer, with rain all through the summer growing season. That's why it's called the Emerald Isle, it's green all year long, it doesn't dry out.

The Douglas fir that would stop growing here in August would keep on growing there right through September. Their plantations -- they have a scale the same as we do, of sites, one, two, three, four and five. The yield on their site one --

Fry: Which is the prime site --

Isaac: Which is the best site -- grew clear off of the scale





Isaac: of growth for site one in England. I saw that near Dublin.

Fry: You can't beat those Irish. (Laughter)

Isaac: I never could make Douglas fir in this country grow in heavy grass sod. But over there I found it growing in sod with the grass growing up through the first three or four limbs, the grass from the previous year, hanging on the tree the next year, and the seedling going right on out through the grass. I never saw anything like it. And they showed me a plantation twenty-seven years old of noble fir and hemlock, that for thinnings for fuel and the like, had already paid for the land and the planting of the trees. And they had a beautiful forest left.

Fry: So they've been at forestry in Ireland for quite a while, also.

Isaac: Yes. They are not as far ahead, they haven't had as much money to work with. But their chances for growth are admirable. And they are doing pretty good at it. The people are very poor.

Fry: This is what part of Ireland?

Isaac: Right out from Dublin. The finest forest I saw in all my travels was a plantation of our white fir, our Abies grandis. In Washington and Oregon we don't consider it a good forest tree at all. Grand fir is the regular or common name for it. It was forty miles out of Dublin in a plantation fifty years old. The finest forest I saw in all of my travels. Beautiful stems that had been thinned four or five times. It was just magnificent, and I was surprised to see it there in Ireland. Here at home in the forests of the Northwest, grand fir is looked upon as a second rate tree, both from the standpoint of form and growth rate.



Fry: Well, Leo, this has been an intensive series of sessions for both of us. It's been fascinating for me, and your hospitality is great.

Isaac: I hope this makes sense when it's typed off.

Fry: You'll get a copy to check over and make sure; so your work isn't finished yet. But many thanks for clearing the decks for me this week.

Isaac: Thanks for coming.



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