

THE MAN

WHO KNEW

TREES

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The Man Who Knew Trees

The Autobiography
of James W. Girard

FOREST HISTORY SOCIETY



THE FOREST PRODUCTS HISTORY FOUNDATION

MINNESOTA HISTORICAL SOCIETY

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INTRODUCTION

All old lumberjacks are supposed to turn into woodpeckers. This is probably a slight exaggeration, but it does indicate that men whose life work has been in the forests do not end their labors when the time for formal retirement has come. Rather, they are apt to continue to work with trees, although under different circumstances. So it has been with James W. Girard. When I first met him in the summer of 1947, he had only recently retired from a long and distinguished career with the U. S. Forest Service, but he was already hard at work as a consulting forester. In the summer of 1948, when I went to see him again and secured the bulk of the material that makes up this story, only an attack of pneumonia had kept him from going to Chile to survey that country's forest resources. No doubt the future will see him again striding through forests in the far parts of the earth, and his skill in estimating timber, his independent point of view, his ability to solve urgent problems in a practical way, and his unmatched experience will continue to benefit his contemporaries.

This is the story of Jim Girard, "Forest Service institution," "one-man organization of common sense," and "check cruiser of the universe." It was dictated by him in the summer of 1948, when he was recovering from pneumonia. Mr. Girard gave strict instructions that all evidences of the first person were to be removed from the published form, and, except for the final paragraph, his wishes have been followed. A few editorial changes have also been made, but as far as possible the story remains in his own words. It soon became evident that modesty was concealing certain facts in the story of Jim Girard, but fortunately I was permitted to go through a file of letters sent to him at the time of his retirement from the Forest Service. These letters contained stories, some perhaps apochryphal, that seemed too good to pass by, so I have selected portions of a few letters for inclusion in this introduction. These selected portions now follow:

"When I was a stripling ranger on the Cabinet Forest twenty-five years ago, I heard 'Oh, those estimates should be O. K.; Ol' Jim Girard cruised that timber.' . . . I remember the time

you came on the Kaniksu for Fred Herrick to look over Squaw Valley white pine. You were in a hurry as usual—and minus your calked boots, so I let you take a pair of 'Currin drivers' that gave me corns that I carry to this day. They had soles made of cast iron and besides were a size too small for you. I thought they'd kill you off, but you came out of the woods talking and walking faster than ever. So that proved to me adaptability was another of your virtues. There are legends around here about Jim Girard. Young rangers hear fireside talks about how Jim Girard outwitted the 1919 fires or just to prove that the diet of a buck ranger is important they are told how Jim Girard called the waitress over and ordered a dozen eggs, a plate of peas, and a quart of ice cream. The number of eggs and the volume of ice cream might have grown with the years, but nevertheless, it's now the folklore of this region."¹

"Though I was miles away at Camp Mildred in the Musselshell District, I shall never forget the dramatic incident of the Clearwater fire of 1919 when you were forced to get into the river behind a barricade of rocks until the roaring inferno swept by. On the back of your map you had written, 'If you find me here you'll see I did not lose my head.'"²

"I well remember the first time I met you. It was on the Oxford District of the Clearwater National Forest, just a few days prior to the blow-up of the August, 1919, fire which burned over some 150,000 to 175,000 acres. As big fires go, this was a dandy while it lasted. Viewing it from near the top of Pot Mountain was a far more spectacular sight than your view while lying in the river watching it twist, break off and blow down large virgin pine, to say nothing of the smoke, roaring of flames, and heat which reached out into and across the Clearwater River."³

"I have had several good trips in the hills with you, Jim, and they all stand out rather vividly. For instance, especially the day we were check cruising on Deer Creek on the Pend Oreille and found the freshly dug den under the fir tree where a bear had just holed up and how I got down on my hands and knees and looked in the hole and almost kissed the bear; and how you insisted that I get a stick and poke the bear out and that when

he emerged you would hit him over the head with the hand axe. It took me quite a while to prevail on you to give up the idea since I had visions of poking the bear, your missing him with the axe, and the bear chasing me down the hillside. We finally agreed to give the location of the den to the old trapper, Al Markham at Meadow Creek, and let him get the bear."

"Again the day we were cruising larch ties along the slope of Moyie below Placer Creek with the snow coming down in great big wet gobs. There was much understory of white fir reproduction and every time we made a move we got an avalanche of snow down the back of our necks. We were cold, hungry, and disgusted. Suddenly you asked me if I had any chewing tobacco. I had a fresh plug of Masterpiece with a tin tag on it. When I pulled it out of my pocket your eyes lighted up and you stuck the plug in your mouth and bit it right in half 'sloynchwise' cutting the tin tag neatly in half and handed me back the remainder. Apparently you never knew that the tag was there."⁴

"After knowing you many years by reputation only, I had the great pleasure of meeting you for the first time personally on a wild winter morning in January, 1939, at Manchester, New Hampshire. Together we sallied forth into the New England hinterlands where frozen scalers measured frozen logs in frozen ponds, and frozen talley-men graded frozen lumber at frosty sawmills. Thermometers here and there registered thirty to thirty-five degrees below zero. So what? You casually meandered over the ice from log to log as the Arctic winds howled, expounding on log grading rules, sizing up defects and check-scaling—after removing your mittens on account of the heat!"⁵

". . . you, Woesner, and Fitzwater came to Big Creek on the North Fork of the Flathead to help me get a timber survey job started, in 1919. You had been out of bed, following flu and pneumonia, for only a short time, and nearly walked me to death the first day."⁶

A somewhat similar occurrence happened when Jim Girard and Elers Koch of Missoula, Montana, went up Trout Creek to look at some timber. They secured horses from the ranger station near Superior and made their first night's camp at an old

¹ I. V. Anderson, Missoula, Montana, December 27, 1945.

² C. N. Whitney, Missoula, Montana, December 27, 1945.

³ Paul H. Gerrard, Russellville, Arkansas, December 29, 1945.

⁴ J. A. Fitzwater, Washington, D. C., December 28, 1945.

⁵ "Doc" Brundage, Washington, D. C., January 6, 1946.

⁶ Jim Brooks, Atlanta, Georgia, December 29, 1945.

placer mining cabin on Trout Creek. Girard received a bad fall and a dislocated shoulder joint while attempting to cross an old mining flume. After he had undergone considerable torture in attempting to relocate the shoulder joint, a doctor was summoned from Superior, but it was noon of the next day before the doctor got Girard repaired. After enduring all the pain, and with nothing more to bolster him than a stiff drink of whiskey, Girard led all the others non-stop over the twelve miles back to Superior. "Small wonder you gained a reputation as one of the best woodsmen and the toughest man in the Forest Service."⁷

"To me, a green country boy fresh from a Montana logging and sawmill camp, on my first assignment as clerk on the old Lewis and Clark N. F., the tales of your mountain climbing and woodsmanship were like the Superman strip . . . of today."⁸

"While following the lumberjack profession in the inland empire, 1917 till 1922, I heard the various cruisers, scalers, and camp pushers talk of a man who could tell the exact board feet in any tree just by walking through the woods."⁹ "At a meeting on the banks of the Cooper River in South Carolina, I heard how Jim estimated the diameter closer than a junior forester with tree calipers, and how, with only the help of an assistant, volume tables of proven accuracy were prepared for five million-acre areas in a week's time. In the Ouachita Mountains of Arkansas, several years later, I heard that Chief Forester Silcox was forbidding Jim to travel by air for he was the one man in the Service who could not be replaced."¹⁰

"I often recall our trip together through West Virginia and Kentucky, contacting mills producing yellow poplar aircraft lumber. On this trip you were experimenting and promoting the use of a recently developed 'gadget' (did you ever name it?) for determining the direction of grain in sawed lumber, and said 'gadget' having been developed from pulling a can opener across an old gum packing case."¹¹

"Do you remember the breakfast counter in Klamath Falls when you ordered two glasses of orange juice, two pieces of toast, two eggs, and two cups of coffee, and the waitress — never bat-

ting an eye — brought you two glasses of water, two plates, two cups, two saucers, two knives, two forks, two spoons, and two napkins?"¹²

"One Sunday, at the close of a golf game, he got a hurry-up call to go to Atlanta, Georgia. Changing from his golf togs he called a taxi, but on arrival at the station he had no money. He disposed of the cabbie by telling him to go back and collect from Mrs. Girard. For train tickets he had government transportation requests; for meals en route, his face. The dining-car steward not only let him get by but provided him with tip money. But the prize situation was at the hotel in Atlanta when Jim suggested that the cabbie stand by while he cashed a check. The cabbie replied, 'I've fallen for that gag before, but it's different with you. I trust you, Red; you look honest.'¹³

"A number of years ago I heard a supervisor say that he had been having a troublesome grazing problem. In walked Jim Girard. The problem was given to him and he remarked, 'Well, I don't know anything about grazing, but I believe I would do thus and so,' which the supervisor did and the problem was solved."¹⁴

"At a Society meeting in Washington many years ago you stood up and voiced your views, not in opposition to the chief's but to make sure that the meeting considered all the evidence. This researcher learned a basic lesson from a good administrator right then, to the effect that this basic principle of research is so basic that it is worth risking your neck to apply it."¹⁵

"You have had a very unusual career, which has not been equaled by any man in this country. With your great experience in dealing with timber all over the United States and Alaska, you unquestionably know the timber situation better than any man alive today, or in the past."¹⁶

Most of Girard's life has been spent with the Forest Service. His term of service extends from 1907 to 1945, although on several occasions he spent a year or more in private employment. The titles of his various positions pretty well cover the breadth of the Forest Service: forest guard, forest expert, forest ranger,

⁷ Peter Koch, Seattle, Washington, July 21, 1948.

⁸ H. J. B., December 29, 1945.

⁹ Hugh S. Redding, Alexandria, Louisiana, December 31, 1945.

¹⁰ N. E. Hawes, December 27, 1945.

¹¹ John E. Keefus, Elkins, West Virginia, December 17, 1945.

¹² Thomas Andrews, Portland, Oregon, no date.

¹³ *Forest Service Information Digest*, December 26, 1945, p. 3.

¹⁴ Karl A. Klehm, Libby, Montana, December 18, 1945.

¹⁵ H. T. Grisbourne, Missoula, Montana, December 17, 1945.

¹⁶ E. T. F. Wohlenberg, Portland, Oregon, December 24, 1945.

scaler, lumberman, logging engineer, and assistant director of the Nation-wide Forest Survey. His revision, made in 1921, of the *National Forest Stumpage Appraisal Manual* is still the "appraiser's bible." He is the author, together with S. R. Gevorkiantz, of *Timber Cruising* (1939), considered by many to be the best work in its field. Girard's rapid method of making volume tables, based on his knowledge of taper and tree form, proved its usefulness and accuracy during the Nation-wide Forest Survey. In 1943 Girard was placed on the honor roll of government employees in recognition of his especially meritorious service during the war. He is a member of the American Forestry Association's advisory committee on forest resource appraisal, and he has been elected a Fellow of the Society of American Foresters.¹⁷

Girard is married. His wife, the former Harriet Hammond of Ovando, Montana, is a niece of the noted lumberman, A. B. Hammond. Girard says that he met his Waterloo in May, 1908, and that he surrendered in December, 1914, but has never been treated like a prisoner. He says that he has been very happy indeed ever since living with the same girl and that he has no notions of making any changes. His son is a graduate forester from the University of Idaho, and his daughter is a graduate medical technologist from Moravian College, Bethlehem, Pennsylvania.

Rodney C. Loehr, Director
Forest Products History Foundation

¹⁷ *Forest Service Information Digest*, December 26, 1945. pp. 2-3.

The Autobiography of James W. Girard



JAMES W. GIRARD

The Man Who Knew Trees

James W. Girard comes from French, Irish, Scottish, and German stock. His father, Joseph Leonard Girard, and his mother, Nancy Feltz, were born in central Tennessee about twenty miles from Nashville. Their son, James, made his appearance at Pleasant View, Tennessee, on March 4, 1877. With his five brothers and four sisters James Girard grew up on the family farm, a quarter-section devoted to raising corn, wheat, oats, tobacco, and hogs. The main cash crop was dark tobacco.

As a boy, Girard worked on the farm in the summer and in the woods during the winter. This regimen of work kept him from going through high school. In 1892, at the age of fifteen, he started to work at stave camps and for small sawmills, falling and bucking, loading, hauling, and scaling timber. The stave bolts which he cut were made into bourbon staves for bourbon whiskey barrels. The stave bolts were cut from high-grade white oak, straight-grained and free from worm holes. These bolts were quarter-sawed into staves at small stave mills.

In April, 1897, Girard got a job at a stave bolt camp in Cheatham County, Tennessee, fifteen miles north of Nashville. His beginning wage was seventy-five cents a day, but after he learned to make stave bolts skillfully, his wages were raised to a dollar. When Girard learned that an old timber cruiser in this camp was being paid a hundred and fifty dollars a month and expenses, it impressed him as a lot of money, and he made up his mind that he was going to be a timber cruiser. Nothing discouraged him from that course, and finally the old timber cruiser consented to allow Girard to run compass for him. Girard ran compass just one day and then went back to his old job of cutting stave bolts. The old timber cruiser had refused to teach him anything about timber cruising and had said that Girard's job was to run the compass and not to ask questions.

For some this might have been a crushing blow, but Girard determined to learn by himself how to cruise timber. Back again at his old job of cutting stave bolts, he kept a record of every tree that he and his partner cut between April and September, 1897. This record showed the size of each tree, the number of

stave bolt cuts it produced, the number of stave bolts each cut produced, and the total for each tree. From this record Girard learned the number of bolts of different sizes required to produce one cord and the number of cords necessary to produce one thousand staves.

Late in September, 1897, Girard made a volume table from these detailed measurements. This table showed separately for each diameter class the yield that could be expected in the number of bolts and cords or fractions of cords for each diameter and height class. This was probably the second volume table made in the United States, the first having been compiled by Henry S. Graves, dean of the Yale Forestry School. Girard, who knew nothing about volume tables, called his compilation a "stave bolt table."

The next step was to learn how to apply this information on the ground in order to determine the volume of stave bolt material on a given timber tract. From some source Girard learned that the radius of a quarter-acre circular plot was 58.9 feet. He decided that he would run lines five chains or 330 feet apart. The lines would be run at right angles to water courses and a careful record would be kept of trees by diameter and height classes on quarter-acre circular sample plots at intervals of five chains along the travel lines. Estimated diameters were checked by measuring the tree circumferences with an ordinary tape measure. Although he had no idea at the time that he was adopting a sampling system which was statistically sound, later studies by Girard and others showed the soundness of this early system.

Girard applied his system to tracts of timber cut for the stave bolt camp, and his estimates of timber were far more accurate than those of the old timber cruiser. When asked to explain his method, Girard had the satisfaction of telling the old cruiser that his job was to cruise timber and not to ask questions.

From 1897 to 1903, Girard cruised timber, worked in small sawmills and for about two years ran a small sawmill of his own in Tennessee. His experience so far had been largely limited to hardwoods.

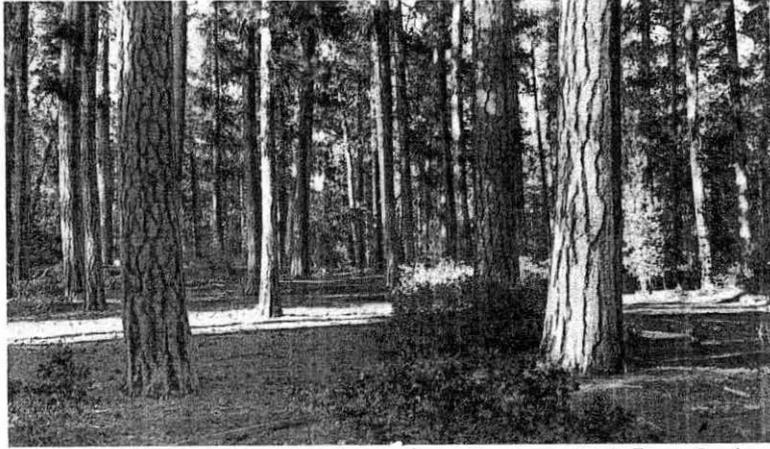
In 1904 he went to Indianapolis, Indiana, and secured employment with the Nordyke-Marmon Company, at that time the largest manufacturer of flour mill machinery in the country and

the maker of the Marmon automobile. Girard worked in this company's foundry until the next year. On a bright, beautiful spring day in May, 1905, Girard went out to a little park, as was his custom, to eat his lunch. As he sat in the little park, listening to the birds singing, he looked over at the big factory belching large quantities of smoke. While eating lunch, he made up his mind that that day would be his last at the factory and that he would go to the West.

Girard beat his way on a freight train from Indianapolis to Chicago, where he went to an employment office and shipped out with a group of woods workers to Sheridan, Wyoming. He went to work for the McShane Tie and Timber Company, whose camp was thirty or forty miles from Sheridan in the Big Horn Mountains. The company was cutting national forest timber, and his first job was piling brush from the ties being cut for the Burlington Railroad. The ties were transported by flume from the point of manufacture to the river at Sheridan. Wages were about three dollars a day, and Girard worked in the camp until autumn, when he went to North Dakota for the wheat harvest. He stacked and threshed wheat on the prairies for wages of about three dollars a day and board. By December everything was snowed in, so after a short trip East, Girard went to Coeur d'Alene, Idaho, where he got a job in a logging camp operated by the B. R. Lewis Lumber Company at Mica Bay. In this white pine country his job was to fall and buck timber. Two men comprised the falling and bucking crew, and the logs were nearly all cut into lengths of sixteen feet.

The idea of cruising timber in the West was still in Girard's mind. That was why he had gone to Idaho. He wanted to become familiar with the different species and their percentage of cull and breakage so that later he could cruise timber in that region. For the same reason, in the spring of 1907, he went to Missoula, Montana, and got a job in the lumber department of the Anaconda Copper Mining Company at Bonner. His job was to fall and buck timber, and he hoped to become familiar with the cull and defect in ponderosa pine, Douglas fir, and western larch.

One day he met an old friend who was then in the newspaper business in Helena, Montana. This friend asked Girard to go elk hunting on the South Fork of the Flathead River in Montana. The newspaperman in turn had a rancher friend who lived



Courtesy of U. S. Forest Service

VIRGIN PONDEROSA PINE MAKE A PARK
Deschutes National Forest, Oregon

on the Clearwater River in Montana, about two miles from Seeley Lake, and who had invited him to go hunting, since the rancher had lots of pack horses. When Girard and his friend arrived at the ranch, they found that the rancher was about half done with his haying, so they pitched hay for about ten days.

About this time the Anaconda Copper Mining Company had purchased a large block of timber from the Forest Service. This timber was located in the Seeley Lake Region. A day or so before Girard had planned to start on his hunting trip, an old lumberjack he had known in the Coeur d'Alene country passed by on his way to the A. C. M. logging camp at Seeley Lake, where timber and lumber were being cut to construct camps for the winter's operations and to build a dam at the foot of Seeley Lake for log driving. The superintendent of the camp was finding it difficult to get someone to ride the carriage and do the ratchet setting in the small mill. When the superintendent asked the old lumberjack if he knew anything about a small mill, he replied: "No, but I know a man on a farm two miles away who does know something about small mills." Girard had previously told the old lumberjack about running a small mill in Tennessee.

The superintendent came to see Girard and persuaded him to help out, so Girard never did go on the hunting trip. After

the lumber had been cut for the camps and dam, Girard was given the job of filing saws for the fallers and buckers.

In the meantime Girard had met Norton, the Forest Service lumberman, who had charge of the timber sale. Norton was a polished scholar and a very fine gentleman, but he knew very little about the practical aspects of logging. Girard frequently visited with him in the evenings, discussing forestry and the Forest Service, and became very much interested in forestry. The two men became friends.

Late in November, 1907, Norton went to the camp superintendent and asked permission to borrow Girard for a few days so as to catch up with the log scaling. Girard started scaling logs and about Christmas time he began to wonder when the "few days" would run out. On February 1, 1908, Girard received an appointment from Washington, D. C., as forest guard and began his long term of duty with the Forest Service.

A forest guard held the lowest paying job in the Forest Service. As such, Girard scaled logs and marked timber. He had never had any technical training in forestry, and he had never even gone to high school. Girard realized very forcibly at the beginning of his Forest Service career that he would never advance unless he was able to write his reports in reasonably good, clear English, so one of his first steps was to take a correspondence course in English. Later, he took correspondence courses in civil engineering, business administration, and cost accounting. These courses were tough sledding, but Girard got a good deal out of them. Girard also studied the best books he could get on technical forestry.

Girard worked on the A. C. M. timber sale from 1908 to 1910. This sale of 50,000,000 board feet was one of the largest made by the Forest Service up to that time, and many technical foresters from Yale, Ann Arbor, and elsewhere were sent to Seeley Lake to get experience in National Forest timber sale work, such as marking timber and scaling logs. Norton assigned the job of training these young men in marking and scaling to Girard, but he in turn had had no experience in marking timber. The area was to be cut selectively, but Girard says that he knew no more about silviculture than a snow bird knows about astronomy. He had been given a detailed set of marking instructions, but the longer he studied the instructions, the less he

knew, so he decided just to use good, common horse sense in marking timber and selecting the trees to be removed. He reasoned that if he marked for removal the mature and overmature trees in such a manner that would leave good distribution in vigorous and immature trees, it would be good forestry. This line of reasoning resulted in a marking job of which he is proud today.

The duties of a forest guard at the time of Girard's appointment were primarily those of fire protection, and the position had always been considered a summer job. Girard, however, had been appointed as forest guard in the middle of the winter when the snow was about four feet deep and there was no chance of a forest fire. As far as he knows, his appointment to that position was the only one ever made during the winter months. His rate of compensation, he recalls, was sixty dollars a month. He was told that he would have to have a saddle horse and a pack horse in the spring. After he had paid his board and fed the animals, there was little left of the monthly wage. Some of the technical foresters working with him on the sale said that his official title should have been "Acting Assistant Temporary Deputy Forest Guard," because he had started several rungs below the bottom of the ladder.

In the spring of 1908 Girard took the ranger's examination and was appointed assistant ranger of the district. His work in the autumn and winter months was largely that of scaling logs and in administration of the timber sale. During the summer months he marked trees for the next season's operation.

Norton, the government lumberman in charge of the sale, required an intensity of utilization that was entirely impractical for that territory and for that time. As a result, friction developed between the Forest Service and the A. C. M. Company, and the latter was highly dissatisfied with Norton's administration of the timber sale.

During the summer of 1908 Norton was called to Wyoming to do timber sale inspection work, and Girard was temporarily put in charge of the Seeley Lake sale. The timber along a quarter-mile strip of the lake shore was largely old and overmature western larch, and it was necessary to long-butt most of the trees because the shaky, pitchy butts would not float. The logs had to be driven a distance of ninety miles to the sawmill at Bonner, Montana.

Before leaving for Wyoming, Norton instructed Girard to penalty scale (double scale) all of the defective larch butts, which in Girard's opinion were unmerchantable. When the general superintendent of the A. C. M. Company learned of Norton's instructions, he was intensely disgusted. Gifford Pinchot, the chief forester at that time, sent one of his inspectors from Washington to inspect the timber sale area and to check Girard's scaling. The inspector, Paul G. Reddington, was an unusually fine and congenial gentleman. When he picked up the scale rule with both hands the way one would hold a canthook to turn a log over, Girard knew that he had never done any log scaling. He said, "Girard, I will be glad to check your scaling on this material if you will first show me how to scale." Girard put in a few hours instructing him how to scale the larch logs, and as a result, Reddington made a very satisfactory check of Girard's work.

The friction between the Forest Service and the A. C. M. Company kept getting worse and worse. The company sent one of its head men to Washington to make a strong personal protest to the chief forester. In the fall of 1909 the chief forester sent his right-hand man, Eugene Bruce, to Seeley Lake to check all of the scalers who had worked on the A. C. M. Company job during that autumn. In the meantime Norton had been checking Girard about twice a week and lecturing him about every other day on his scaling. He said that Girard was consistently low in his scaling, but since Norton would not let him know how much he himself gave any individual log, Girard continued to use his own judgment. When Eugene Bruce had completed his check-scaling of all of the scalers, Girard was the only man within gunshot of his results. Fortunately, Girard was reasonably close. Bruce stopped in Missoula, Montana, on his return to Washington and made a strong recommendation to the regional forester that Girard be put in charge of the Forest Service timber sale at Seeley Lake, Missoula National Forest. About a week after Bruce left, Girard received a letter from the forest supervisor informing him that he had been put in charge of the sale. Norton received a copy of the letter. He was asked to go to another job, but became somewhat peeved and resigned from the Forest Service.

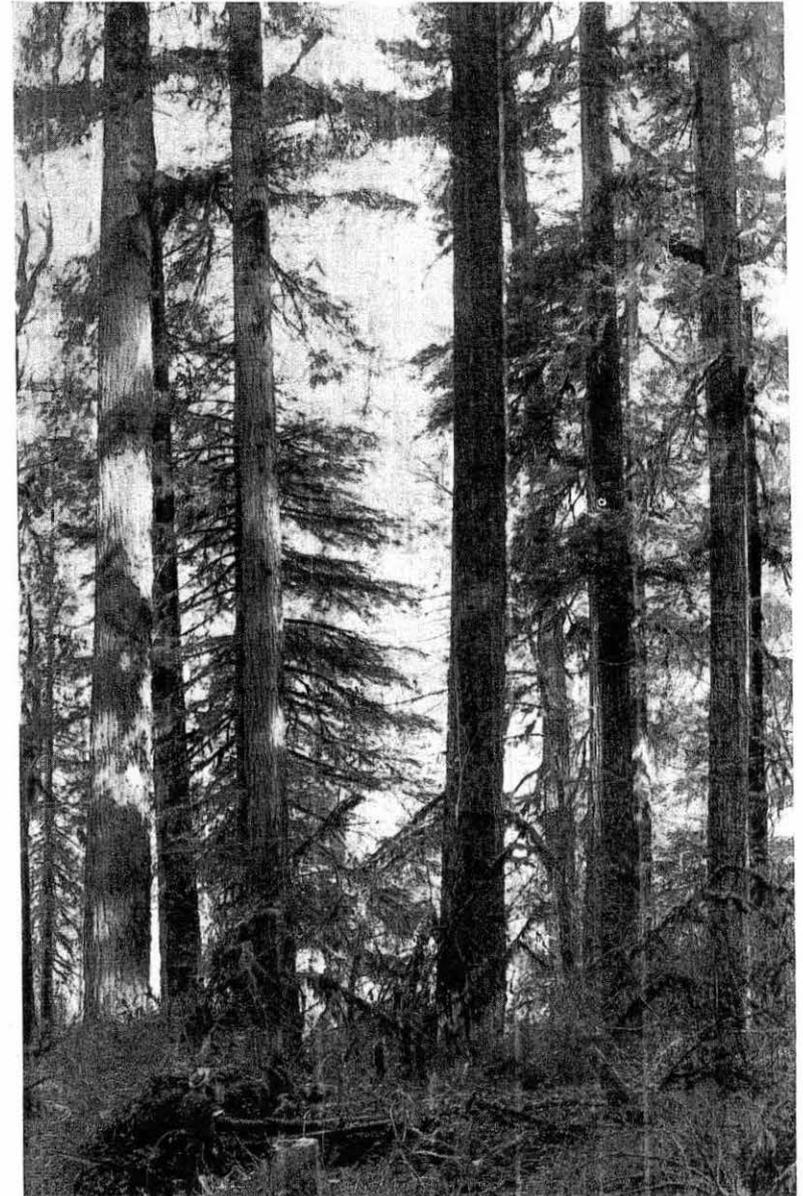
Kenneth Ross, general superintendent of the A. C. M. Com-

any, made a trip to Seeley Lake to see Girard shortly after the latter took over the sale. Ross was disgusted with all Forest Service officials and would hardly treat Girard with ordinary decency. He said: "Young man, what is your policy going to be? Are you going to be just the same as that _____?" Girard replied: "What do you mean?" Ross said: "You know what I mean. The type of utilization which we have been forced to practice is ridiculous. Norton would never let any of you scalers tell a teamster whether to skid in a certain log or not." Girard's answer was: "My scalers will be instructed to inspect any log that any of your teamsters desire to have them look at." Girard then continued: "We cannot settle this question here in the office, but if you will go into the woods with me, I will show you what I consider a merchantable log and a cull log, and I will be able to tell you why."

So, the two men proceeded into the woods. The timber sale contract did not provide any particular percentage of sound material that a log had to contain in order to make it merchantable. Girard told Ross that utilization would be required of pine or spruce logs if they were of reasonably good quality and were one-third or more sound and that larch and Douglas fir logs would have to be removed and utilized if they were fifty per cent or more sound.

Ross said: "That will be perfectly satisfactory to me, because that is the way we are utilizing our own timber, but the regional office will never permit this to be put in the contract. How are you going to work it out?" Girard replied, "It will be a definite understanding between you and me, and the regional office will never know anything about it until the sale is completed." In this way Girard took the bull by the horns and worked the problem out in his own way, and the result proved to be satisfactory to everyone concerned.

During the month of December, 1909, Girard first met David T. Mason, who at that time was working out of the regional forester's office and came to Seeley Lake to inspect Girard's work. Mason impressed Girard as being a very able, technical forester. At that time Mason had only recently graduated from Yale. The two men became close personal friends, a friendship which continued down through the years. Between 1910 and



Courtesy of U. S. Forest Service

GIANTS ON THE EARTH
Old Growth Douglas Fir, Oregon

1935 Girard did quite a number of important jobs with Mason, an association he enjoyed very much.

In 1909-1910 Girard became very much interested in logging costs. He believed that some day the Forest Service would have a branch of logging engineering and there would be a need for logging engineers to make scientific appraisals of the value of timber. Girard got on the good side of the Seeley Lake book-keeper and had him fill out a daily form, showing the number of men employed on each logging activity, such as road building, falling and bucking, and swamping and skidding. At the end of the operating season in the spring of 1911 Girard wrote a detailed report, showing his estimated cost of operation on the job. He sent the report to the supervisor at Missoula, who in turn sent a copy to F. A. Silcox, the regional forester. Silcox wrote Girard a letter in November, 1911, instructing him to report to the Missoula office. When Girard went into Silcox's office, the latter said: "Young man, I am going to make a logging engineer out of you." Girard was assigned to stumpage appraisal work on the fire-killed white pine in the St. Joe National Forest, where he remained until the spring of 1912.

In April, 1912, Girard was sent to the Kaniksu National Forest, with headquarters at Newport, Washington, to make a cruise and an appraisal of a large block of white pine on the upper and lower Priest River watersheds. It was probably the same year that he took the scaler's examination and received an appointment as scaler. His duties, when not on appraisal work, were to check-scale the scalers in the different parts of the region.

In the winter of 1912-13 Girard was transferred to the Coeur d'Alene National Forest, with his headquarters at Coeur d'Alene, Idaho. During that winter he cruised and appraised timber in the Coeur d'Alene National Forest. In the spring of 1913 he resigned from the Forest Service and accepted a position with a lumber company in Coeur d'Alene. During the summer and fall he cruised and appraised a large block of timber, owned by Largias of Butte, Montana, which was located on the St. Mary's River watershed.

In the spring of 1914 the Forest Service made Girard an attractive offer, which he accepted in April. He took the lumberman's examination and was appointed lumberman for the Coeur

d'Alene Region. His work consisted largely of timber cruising, check-cruising, timber appraisal, check-scaling, and fire protection in the summer months. In 1915, he believes, he took the logging engineer's examination and was appointed regional logging engineer. From that time until 1922, Girard did logging engineering work in Region I and several other regions. He was also sent to Portland, Oregon, and to Ogden, Utah, on important appraisal jobs.

About 1917, Girard took the junior forester's examination, one on strictly technical matters. Then, in December, 1920, he was instructed by Col. W. B. Greeley, chief forester, to report to Washington for the purpose of re-writing the *National Forest Stumpage Appraisal Manual*. This work took from December, 1920, until March, 1921. David Mason was in Washington at that time, organizing the timber section of the Bureau of Internal Revenue, and he requested Girard to take the examination for the position of forest valuation engineer.

Girard took this examination, either in January or early in February, 1921. Several men he knew took the examination at the same time, and in a short time they all received their returns. But Girard did not receive his returns. After waiting a few weeks he went to the Civil Service Commission to see what was wrong. He was informed that he was not eligible to take the examination, because one of the requirements was that an applicant have a degree from a college of recognized standing. Since Girard had never been to high school, the examiners refused to grade his papers.

Girard told the young clerk who gave him this information that he wanted to see the chief or else he would be bothering the clerk in his office every day and all day until he was permitted to see some of the higher-ups. He finally succeeded in seeing one of the assistant chiefs, a woman from Montana. She proved to be a very brilliant lady whose brain worked as fast as a trip hammer. She said: "You are not eligible to take this examination. Didn't you read the application blank?" Girard replied: "Sure, but what in hell difference does it make whether I got my education in a university or a sheep corral?" Girard never knew who brought pressure to bear, but in a week or ten days he received his returns and got a very high mark. He did not accept the position with the Bureau of Internal Revenue, be-



Courtesy of U. S. Forest Service

TOUGH COUNTRY FOR THE CRUISER
Willamette National Forest, Oregon

cause the chief forester told David Mason that he would not be allowed to take Girard from the Forest Service.

After completing the *Stumpage Appraisal Manual*, Girard returned to Missoula, Montana, and followed his regular work as a logging engineer until April, 1923. He then resigned from the Forest Service and accepted a position with the Fred Herrick Lumber Company of Burns, Oregon. Between 1923 and 1927 he constructed 100 miles of common carrier railroad and an all-steel, three-band mill at Burns. The company got into financial difficulties, and in 1929 the Forest Service offered him a position as logging engineer, with headquarters in Washington, D. C.

During these years there was an important interlude in his services with the Herrick Company. In the summer of 1926 Girard was appointed to a three-man board of arbitration which was to determine the volume and value of a tract of very fine redwood located in what was locally known as the "Bull Creek-Dyerville Flats." The California State Park Service and the National Park Service wanted this tract of timber for park purposes, since it contained some of the finest of the redwoods, including the tallest tree in the world which had been discovered by David T. Mason. The tract was owned by the Pacific Lumber Company of Scotia, California. The company, the state and National Park Services, and the "Save the Redwoods League"

could not agree on the volume and value of the timber involved, so it was decided that the case should be settled by arbitration, provided that three men could be found who would be satisfactory to all of the parties concerned. Girard was selected by all three groups. His estimates closely paralleled those of David T. Mason, another member of the arbitration board, and the figures finally accepted were approximately what these two members of the board suggested.

After a short period in the branch of Forest Administration, Girard was transferred on July 1, 1930, to the branch of Forest Research of the Forest Service. At that time the Forest Service had been authorized to make a Nation-wide Forest Survey, and the work was under the direction of the branch of Forest Research. The Forest Survey consisted of the following broad phases:

(1) A determination of the forest acreage and the volume of timber in terms of board feet and cubic feet for the entire United States;

(2) A determination of the rate of forest depletion or forest drain as a result of cutting operations for all commercial timber purposes, fire losses, insect losses, etc.;

(3) A determination of the rate at which this forest drain was replaced by forest-growth;

(4) A study of the timber requirements for all purposes, including lumber, timbers, pulpwood, ties, poles, special products, and fuel wood;

(5) A detailed analysis of this information and a comprehensive report for each forest unit throughout the country.

Girard had charge of the field work for the entire country. Certain areas were assigned to forest experiment stations, and Girard worked with experiment stations in Asheville, North Carolina; New Orleans, Louisiana; Columbus, Ohio; St. Paul, Minnesota; Missoula, Montana; Portland, Oregon; and Berkeley, California. His job was to write the Forest Survey instructions, train the Forest Survey personnel in survey methods, make the volume tables, and check the field work for the entire country. Girard worked in this capacity from July, 1930, until Pearl Harbor.

During that period the Forest Survey covered about 480 million acres on foot, or at the rate of a little more than fifty mil-

lion acres a year. Not all of this acreage was forest land, but the Survey did cover about 350 million acres of forest land, or a little more than half of the total forest area of the country. The Forest Survey work was started on the Pacific Coast, with headquarters at Portland, Oregon. Then, the Survey moved to northern Idaho and western Montana, with headquarters at Missoula, Montana. The next move was to the Lake States, with the headquarters at St. Paul, Minnesota, and the final one to the southern United States, with headquarters at New Orleans, Louisiana.

Since the Forest Survey had to have a lot of volume tables in a hurry, it was necessary for Girard to develop some rapid, but satisfactory method of constructing volume tables. He realized that if the old, slow, conventional methods of making volume tables were followed throughout the country, the Survey could not be completed before the "second coming" and that would be entirely too long a wait. That is why Girard developed a rapid method of making volume tables, known as the "Girard Form Class Taper" method. By "form class" is meant the percentage ratio between the diameter breast high outside of the bark and the diameter at the top of the first log inside the bark. The taper in the tree above the first log was estimated. Back in 1908 Girard had conceived an idea that there must be a definite relationship between the top diameter of the first log and the diameter breast high for each species. Detailed measurements of various species proved that this assumption was correct.

Early in 1933 the Forest Survey had started in the turpentine region of the deep South with headquarters at Lake City, Florida, the center of the southern turpentine industry. The first unit to be surveyed consisted of twelve million acres in southern Georgia, seven million acres in northern Florida, and three million acres in southwestern South Carolina. This unit was part of the flatwoods area of the South, and conditions were quite uniform throughout the large unit.

Girard's job was to make the volume tables, both board feet and cubic feet, for the unit. He obtained the best road maps available and selected east-west and north-south roads at approximately ten-mile intervals. He then got a fast recorder and a driver. A record of distance was taken from the speedometer,

and at each ten-mile point the automobile was pulled over on the side of the road and measurements were taken of all of the trees on a quarter-acre sample plot. The trees were recorded separately, according to species, form class, and taper. By this method Girard was able to cover the twenty-two million acre unit in twenty-four days. Some 18,000 trees were recorded from the sample plots located along the ten-mile travel lines at each ten-mile point. Under favorable conditions Girard was able to estimate 1,000 to 1,200 trees a day for volume table purposes.

The Washington office became very skeptical about Girard's method of making volume tables. They did not believe that anyone could cover the country that fast and make volume tables that were any good, so it was decided to make a scientific check of Girard's work in the turpentine unit. The chief of Forest Measurements was sent to Lake City, Florida. He selected at random 200 sample slash pine trees and measured these trees with an instrument called a lilgenstrom dendrometer. This instrument, like practically all of our forest instruments, had been invented in Sweden. In using this instrument it took three men five long working days to get the 200 sample trees. With Girard's method, under favorable conditions, that many trees could be measured in an hour.

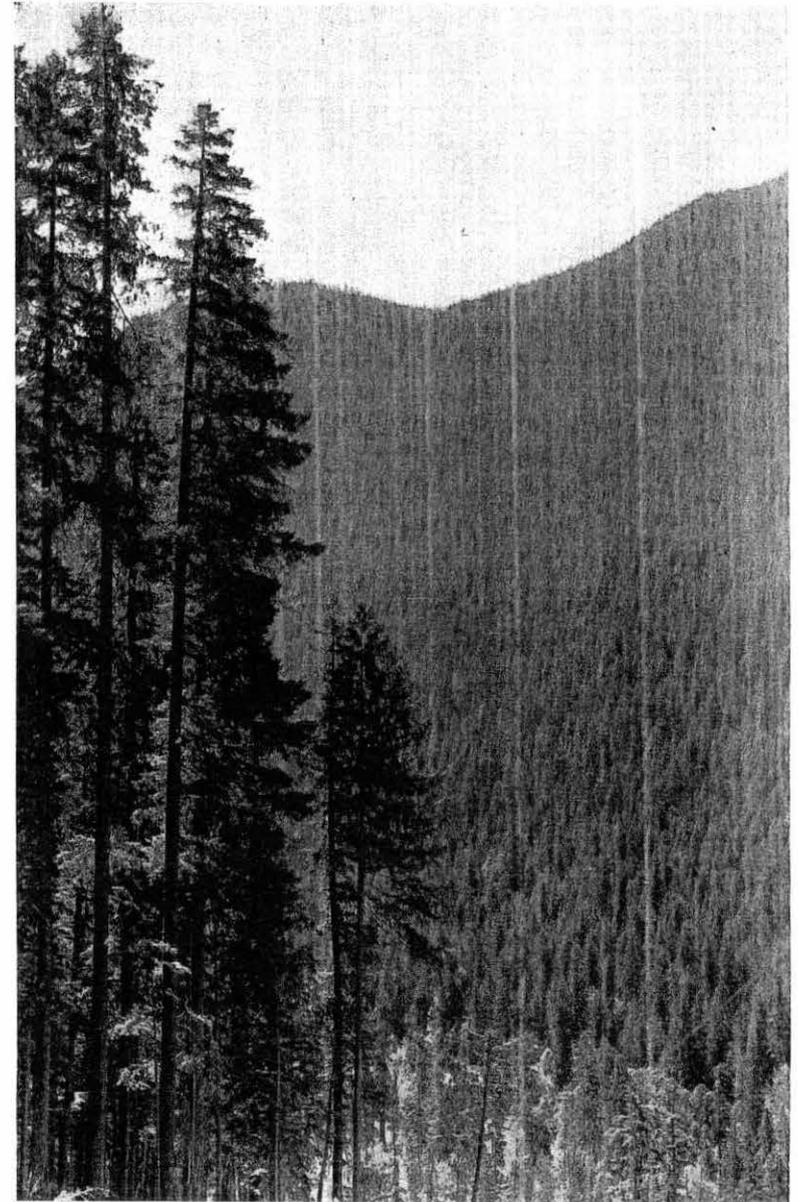
The gentleman who checked Girard's work returned to Washington and spent a considerable amount of time compiling the final results. One day Girard was called on the carpet by his superior and was told that his tables did not check. He asked Girard what he had to say about it. Girard asked him what the difference was and after receiving the amount said: "This difference represents the error made by the instrument." The dendrometer could measure the diameter outside of the bark at various points along the bole of the tree very accurately, but it could not tell how thick the bark was. Girard knew the thickness of the bark from actual experience. Girard stood pat and, as a result of what he calls his characteristic bull-headedness, it was decided to make a second check.

The chief of the Forest Survey, Chris Granger, accompanied the second check for the purpose of seeing that no tricks were played by either side in the controversy. Fifty sample trees were chosen. Girard estimated the form class and taper of these trees and computed the volume from this estimate. He numbered

each tree consecutively from one to fifty, so that individual trees could be compared in the final analysis. The check showed about the same difference as the original check of 200 trees. The question was finally settled by obtaining two sets of tree climbers, belts, and bark punches. They climbed the trees, determined the log point by letting a tape down, took the diameter of each of these points outside of the bark, took the bark thickness on four sides of each tree at these points and used the average of these four measurements as the bark thickness. The diameter of each log inside the bark could then be determined with a high degree of accuracy. This check showed that Girard's estimates were far closer than the results obtained by the dendrometer. Girard's methods of making volume tables were approved by the Washington office as far as that particular region was concerned, but the use of his method for the entire country did not receive approval until tree climbers had followed behind him and others using his methods and had measured approximately 4,000 trees in different parts of the country.

Girard worked on the Nation-wide Forest Survey from July 1, 1930, until the outbreak of the war. He started as senior logging engineer, but was later appointed assistant director in charge of field work. In the fall of 1941 he was on a trip in the South and, while returning to Washington, stopped at a gas station in Knoxville, Tennessee. As the gas tank was being filled, the report came over the radio that Pearl Harbor had been bombed. He reached Washington the next day and shortly after his return, the War Production Board, then called the Office of Production Management, and the Army and Navy called Girard and asked him if he would be willing to serve in World War II, and, if so, where he would be willing to go. Girard told them that he would be very happy to do whatever he could and that he was willing to go to any place on the face of the earth where his services were needed.

Girard was asked to go to Alaska to examine spruce for the purpose of determining its suitability for the production of high-grade aircraft lumber. He went to Juneau, Alaska, early in January, 1942, and from there to Ketchikan, where he organized a timber survey crew. During the months of January, February, and March, 1942, they cruised approximately 200 million feet of Sitka spruce. For the purpose of determining the timber



Courtesy of U. S. Forest Service

HARD CLIMBING
Timbered Ridge in Washington

quality, Girard took twelve million feet in sample trees scattered over the area.

Besides grading the logs in these sample trees, Girard determined the texture of the wood, the direction of the grain and the number of rings per inch of growth. He also wrote the aircraft log grade specifications, and detailed mill scale studies made later showed that these log grades were satisfactory. In order to make high-grade aircraft material the trees had to have eight or more rings per inch, a specific gravity of at least 0.36 and a toughness test of 75 inch-pounds per standard specimen, and could not have spiral grain to exceed one inch in fifteen for certain aircraft parts. A standard specimen was $\frac{5}{8}$ by $\frac{5}{8}$ by 10 inches long.

Many of the foresters in the States told Girard that the trip to Alaska was just a wild goose chase, because Alaskan spruce would not be very satisfactory for aircraft purposes. However, Girard found that the Alaskan spruce was of unusually good quality and would produce about twice as high a percentage of aircraft lumber as the same species on the Pacific Coast. According to Girard, the finest aircraft spruce anywhere in the world is found on Queen Charlotte Island, B. C., and the timber in southeastern Alaska is only a short distance from this point. Although great difficulties were encountered in getting logging equipment, the Forest Service logged about eighty-five million feet of spruce in Alaska before the end of the war.

Girard returned to the States early in April, 1942. A few days after his return the War Production Board called and asked if he could determine the volume of sweet gum suitable for aircraft veneer purposes in North and South Carolina, Florida, Georgia, Alabama, Mississippi, Louisiana, Arkansas, and Texas. He was asked if he could do this work in a month's time. Girard said that he thought that he could easily do the job in three weeks, which would leave one week in which to play golf.

The territory had been covered by the Nation-wide Forest Survey, and all of the information was on punched cards in the New Orleans office of the Forest Service. Girard asked to have the cards run through and to be supplied with the volume of sweet gum timber in trees over twenty-two inches in diameter. This task took only three or four days for the nine states. Maps

were prepared showing the location of the main bodies of sweet gum which were confined almost entirely to the river bottoms.

Girard went to New Orleans and got an automobile and driver. At that time war speed regulations were in effect. The automobile, government-owned, had a big sign on the dashboard which read: "Do not drive this car more than thirty miles per hour." Girard could not stand that slow gait, so he asked the driver if that was the fastest the car could go. The driver replied: "Certainly not, but that is the regulation." Girard exclaimed: "Mister, give me the wheel!" He went down the road seventy to seventy-five miles an hour so that he could finish the work on schedule. He was arrested several times before the job was completed, but when he showed his credentials and the letter from the W.P.B., they always said: "Go ahead, boy, and travel 100 miles an hour if you want to. You're on important war work."

The sweet gum of the South runs from twenty to as high as forty-five per cent aircraft veneer quality material. Through scientific tests the Forest Products Laboratory at Madison had demonstrated that sweet gum was as good as mahogany for aircraft veneer. Girard wrote the log grade specifications, and the Madison laboratory made studies in several plants for the purpose of obtaining the percentage of yield in aircraft quality material separately by log grades.

After his survey of the sweet gum Girard was asked to sample yellow poplar in North and South Carolina, Tennessee, West Virginia, and Kentucky. Yellow poplar was used for aircraft purposes in the form of lumber and veneer. With the help of a Mr. Bonner of the Appalachian Hardwood Association, Girard wrote the aircraft lumber grade specifications for this species, and these specifications were later approved by the Madison laboratory, the Army, and the Navy.

Girard's next job was to sample sugar maple and yellow birch in the Northeast and in the Lake States. Yellow birch was a very important species for aircraft purposes because it was used largely for making propellers. From 1942 to 1944 Girard worked on many special jobs for the war effort, such as aircraft quality logs, aircraft lumber, aircraft veneer, propeller stock, walnut gun stocks, handles for Army and Navy use, shunt

poles for Great Britain, shuttle blocks, tent pins, and cypress boat quality lumber.

In 1944 Girard went to Puerto Rico, the Dominican Republic, and Haiti and made a rough survey of their forest resources for the purpose of stimulating the production of certain items which were needed for the war effort. Girard had an amusing experience on this trip. He did not have a birth certificate, which he was supposed to have in order to get a passport from the State Department. He finally obtained an affidavit from a man old enough to know that he had been born, so the State Department said that he did not need a passport to go to Puerto Rico and that they would mail his passport to him before he had finished his work in Puerto Rico.

Girard had three weeks of work in Puerto Rico, two weeks in the field and one in the office. He had plane reservations for the round trip, which was very important, since if he did not leave on schedule, transportation back to the States was uncertain. Girard completed his field work in Puerto Rico and upon his return to the office, he asked the director of the experiment station if his passport had arrived. The director said: "No." A wire was sent to the Washington office in an effort to impress upon them the importance of protecting the plane reservation. Girard waited a full day but received no reply. He then asked the director of the experiment station to give him a letter showing the character of the work he was doing and told the director to wire the Washington office and tell them not to go to any further trouble about issuing a passport, since he was arranging to get it himself.

Armed with this letter, Girard went before the consul-general, showed him letters from the Forest Service, the War Production Board and other identification, and asked for a passport to Haiti and the Dominican Republic. The consul-general said: "Why didn't you get that before you left the States?" Girard answered that that was a very logical question, but that he had no birth certificate and had been unable to convince the State Department that he had been born. The consul-general asked if Girard had any other identification, so Girard exhibited his book of transportation requests, which gave his official title: "Assistant Director of the Nation-wide Forest Survey." When asked how long he had held that position, Girard replied: "Since July 1,

1930." The consul-general then said: "You could not have obtained this position without being a citizen of the United States, so you come down in the morning, and I will have your passport ready for you." Girard went down to the consul-general's office the next morning and the passport was all ready, except that he had to have visas from the representatives of the Haitian government and the Dominican Republic.

A man from the Madison laboratory was with Girard, and the two men left Puerto Rico strictly on schedule. When they arrived in Trujillo, the capital of the Dominican Republic, they registered at the hotel. Then they called upon the American minister, a fine gentleman from the state of Maine, who was very disappointed that he had not been told that they were coming to the country to investigate its forest resources. The minister said that he was leaving that evening, which was Friday, and would not return to his office until Tuesday morning. He thought that the only thing that they could do was to kill time until he returned.

The two men returned to the hotel and looked in the telephone book to see who was in charge of the American Economic Administration. They found that his name was McArdle. Girard told his friend from Madison that McArdle was a good Irish name, so he would call him up. He did so and told McArdle that there were two lumberjacks from the United States who were stuck and asked him if they would have to wait until the minister returned before they could proceed with any of the work. McArdle said: "No, come down to my office, and I will give you my car and chauffeur and a good interpreter, and you can hit the ball right away." The two men went to McArdle's office, showed him their identification, and he gave them the names of all of the leading lumbermen in the Dominican Republic.

Interviewing the lumbermen in Trujillo was completed on Saturday about three o'clock in the afternoon, so Girard proposed a call upon the secretary of agriculture, one of the outstanding men of the country. They went to the secretary's office and walked in. The secretary could not speak English, and the two men could not speak Spanish. Girard made a few motions toward some trees that were standing nearby, and the secretary divined their interest in forestry. He pressed a button and a

forester, who proved to be a graduate from an American college, came up. The forester gave them maps and all of the available information on forest resources.

Girard had told the American minister before leaving his office that he would like to fly over the timbered area between Trujillo and Santiago. The minister had said that he would make arrangements for the flight upon his return the following Tuesday. On Sunday Girard went out to the airport to see if he could get a reservation to Santiago and return on Monday. He was finally able to get a ticket, and then he called McArdle and told him what he proposed to do. McArdle said that when Girard arrived in Santiago he would be on the president's timber operation. McArdle called the company and had them meet Girard at the airport with a taxi. Thus, the work of the survey was completed before the minister returned to his office. Girard recalls that he was treated with the greatest consideration during his stay in the Dominican Republic and Puerto Rico, a factor which contributed to the success of his mission.

Upon Girard's return to Washington, he learned that his passport would be ready in a few days.

The War Production Board appointed Girard to a three-man board of arbitration to settle disputes at sawmills and aircraft factories as to whether or not certain lumber was suitable for aircraft purposes. Girard says that he was what might be called a general roustabout and trouble shooter for many critical items. It was his job to stimulate production for the various types of critical materials which were becoming scarce. He enjoyed this work greatly and found that the lumber industry as a whole was very cooperative. Girard was able to speak its language and feels that he was very lucky in obtaining results.

Girard retired from the Forest Service on December 31, 1945. He joined the firm of Mason and Bruce, consulting foresters, in Portland, Oregon, and, as he says, went to work.

In this last paragraph the editor wants Jim Girard to speak for himself: "During my career as a forester, I have taken more than a quarter-million sample trees for volume table purposes and have graded more than one million sawlogs in standing trees in different parts of the United States and other countries. It has been a long, tough road from a hillbilly in Tennessee to assistant director of the Nation-wide Forest Survey and then

as consulting forester in one of the most important forest regions in the United States. I have enjoyed the entire journey. Sometimes I would mire down and get stuck temporarily, but by hard work and determination I was always able to pull out on my own power. Before passing over the Big Divide and saying, 'Goodbye, boys and girls,' I hope that I may be able to accomplish a little something in forestry that I will be remembered by. That is why I keep plugging along.

With love to all, except some."

—Jim Girard.

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