

exclusively MacWhyte wire rope, manufactured by the MacWhyte Co., of Kenosha, Wis., in all its logging operations.

Fire Protection at Camp 1

Fire protection is provided at Camp 1 by a 42-gallon A. G. Long & Co. (Portland, Oreg.), chemical equipment, with 75 feet of hose. Fire drills are frequent by company organizations, both officials and men taking pride in their frequent drills.

Each locomotive is provided with a pump and carries 100 feet of 1¼-inch hose. Water is supplied to each log donkey by a pipe lead-

Warren Construction Co., of Portland, during the war spruce activities.

Pacific Spruce Northern Railway Co.

The Pacific Spruce Northern Railway Co., of which C. D. Johnson is president, is a subsidiary company of the Pacific Spruce Corporation and was organized for the purpose of continuing the road from its present terminus into the timber to the north. A survey has been extended the full distance and the grading is done as far as Mill Creek, 1½ miles. During 1924 an additional mile will be built.

a portable camp was established at the end of the line, where a standard equipment, consisting of a 12x14 Humboldt yarder, a 13x14 Willamette high-speed swing and a 10x11 loader with a double swing boom, was installed. This side was put in operation early in 1923 and a yarding engine was finishing its last setting at the shutdown in December, 1923.

The timber in this section is all old growth yellow Douglas fir, averaging four feet in diameter and the side has been logging approximately 3,000,000 feet a month.



VIEW SHOWING OLD GROWTH YELLOW DOUGLAS FIR TIMBER WITH A FEW WESTERN HEMLOCK TREES, SITUATED ON WHAT IS E S. E. ¼ S. E. ¼ SEC. 19, T. 9 S., R. 10 W. THE TIMBER THE OBSERVER IS LOOKING AT AS DEPICTED BY THE ABOVE ENGRAVING D SHOWS AS INDICATED IN THE PICTURE 20 PERCENT NO. 1 LOGS

ing from a pump located near some water supply and each donkey has a pump and hose equipment to be used in case of fire.

LOGGING OPERATIONS AT CAMP 12

Roland M. Manary is logging superintendent of Camp 12, which has been located six miles north of the mill, but which is now being greatly enlarged and moved two miles further north on the road of the Pacific Spruce Northern Railway Co., which is being built into the timber of the Pacific Spruce Corporation. This road was built by the

The grade of the first five or six miles of the Pacific Spruce Northern Railway is practically water grade, the last mile in the woods having a 3 percent grade, which is the present maximum of the road. In the seven miles which have been built there are 1½ miles of bridges, usually low trestles not exceeding 15 feet in height.

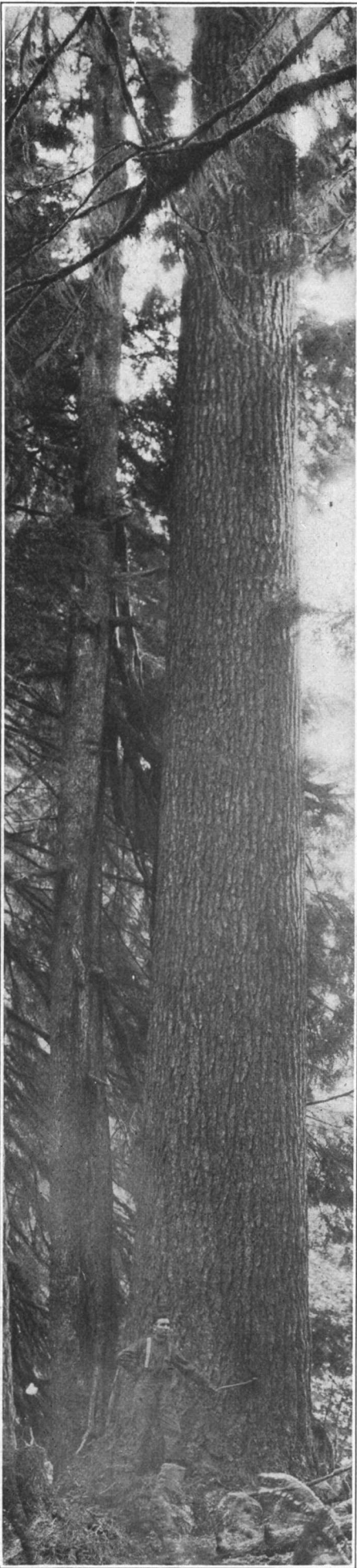
After finishing the work on the railroad south of the bay, Roland Manary, on July 1, 1922, opened one side on the railroad north of the bay and proceeded to build additional track. By November of that year the side had logged the timber adjacent to it and

Railroad Operations at Camp 12

The railroad equipment at Camp 12 comprises a 50-ton Shay locomotive and thirty sets of Northwestern disconnected trucks. A 100-ton moving car is also provided.

Four men are used on the 50-ton Shay, an engineer, a fireman and two brakemen. A section crew of eight men, with a foreman, equipped with a Sheffield speeder, driven by a 40-H. P. Moore engine, makes up the maintenance crew of the railroad.

The Shay locomotive makes one trip a day from the camp to the log dump at Depot Slough, taking eighteen cars at a trip.



A GOOD "FIR" TREE EXAMPLE
Above Picture Shows first two Log Lengths of the Great Douglas Fir tree Which is Pictured on the Right.

The Log Dump for Camp 12—The log dump at Depot Slough is electrically operated. It consists of a 50-horse power General Elec-

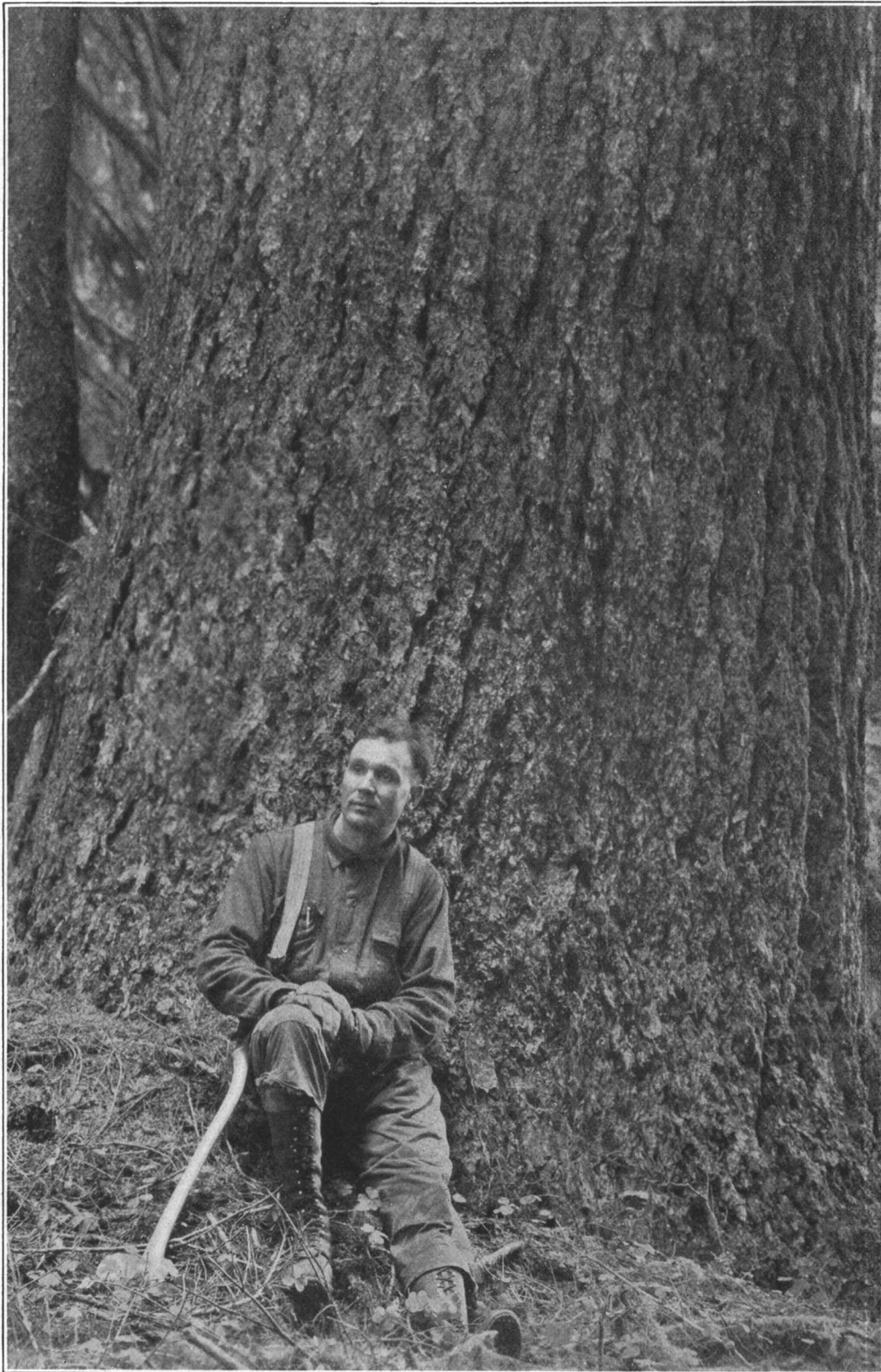
tric motor band, with a 10-inch band to the gear of a 2-drum donkey. Two lines are employed and an "A" frame equipment is provided. One man operates the unloading device and a car a minute can be dumped at this point.

Rafting Camp 12 Logs to Mill—After the logs from Camp 12 have been dumped into Depot Slough, they float down the slough about 3,000 feet to a point near the mill, where the boom crew assembles them in small

setters, a powder monkey, three chasers, a high climber, two loaders, three engineers, two firemen, a wood splitter, a wood buckler and a foreman.

Construction Crew at Camp 12—The construction crew on the Pacific Spruce Northern Railway consists of two civil engineers, a bridge crew of nine men and a construction crew of twenty-six men.

A 20-ton Industrial combination locomotive crane, steam shovel drag line and pile



VIEW SHOWING THE BASE OF AN OLD GROWTH YELLOW DOUGLAS FIR
Base of Old Growth Yellow Douglas Fir tree, first two Logs of which are Shown in Long Picture on left. This Tree is 9 feet in Diameter at Butt, and Shows Leo M. Martin, Pacific Spruce Corporation Timber Cruiser, "Life Size" in Front. Sec. 19, T 9 S., R. 10 W., on S. W. $\frac{1}{4}$ of N. E. $\frac{1}{4}$, "Jaybird Creek" Section.

rafts and they are taken to the mill by the gasoline tow boat "The Logger."

Men Employed at Camp 12—The Humboldt yarder operated at this side uses wood for fuel and takes, in addition to the engineer and fireman, a wood buckler and a wood splitter. The following men have been employed at this side: Twelve buckers and fallers; a head buckler, a hook tender, two whistle punks, a head rigger, three choker

driver will have its headquarters at Camp 12. This machine was furnished by the Industrial Co., of Bay City, Mich., and will be used at the mill when needed and also at Camp 1 to pick up logs which have fallen from the loads along the right-of-way.

Future Operations at Camp 12—Early in 1924 Camp 12 will be located at its new site, two miles north of its former location, where a permanent camp will be established. In

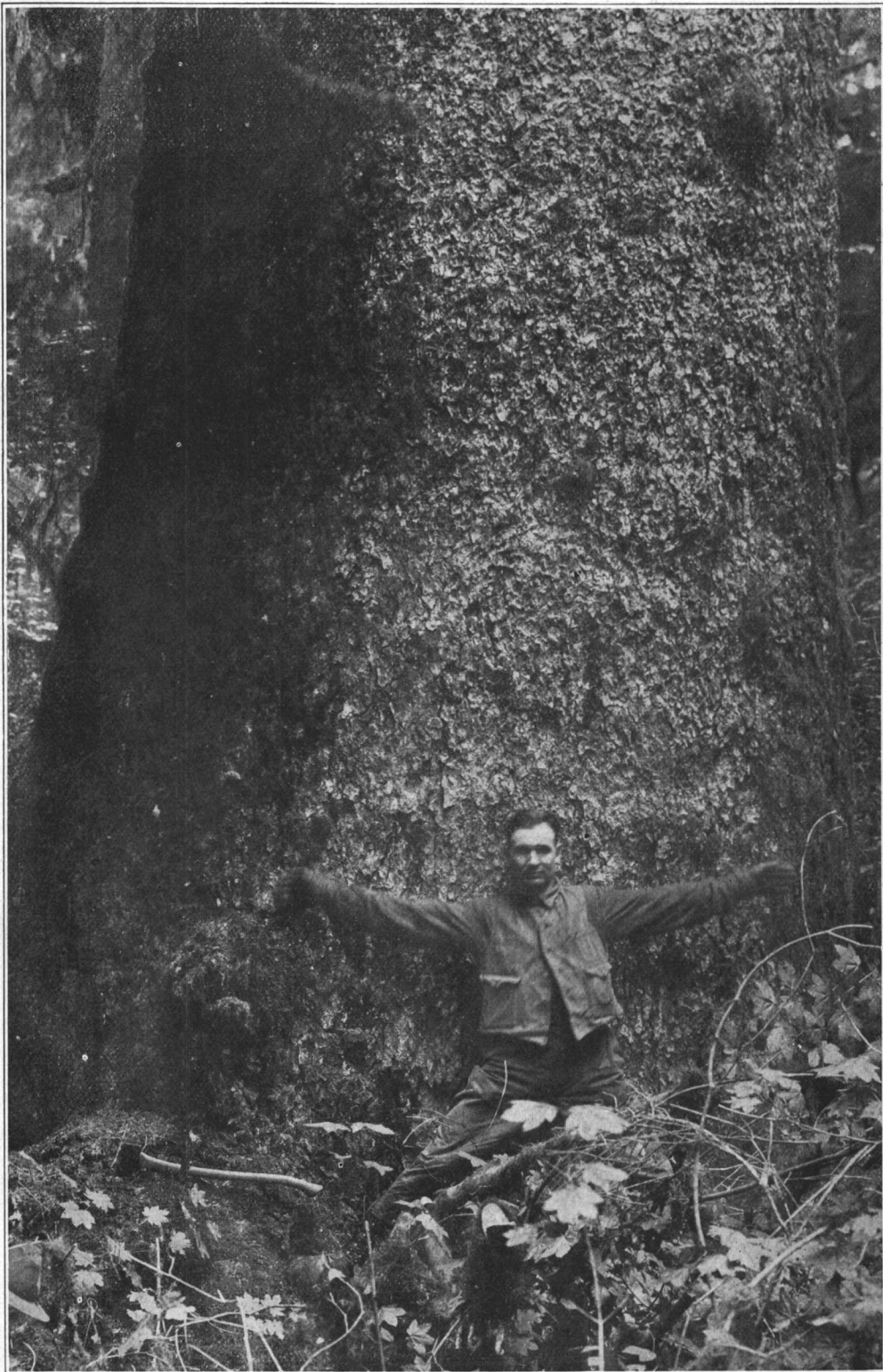
addition to the side which has been operating, three additional sides will be opened, one located on the spur to Mill Creek, another on the northern fork and one on the main line. Three new engines—a 12x14 two-speed swing a 10x11 three-drum loader and an 11x13 Humboldt—have been purchased from the Willamette Iron & Steel Co., of Portland for one of these sides and orders for three more machines will be placed.

Description of New Camp 12—A beautiful

Shop, Camp 12—The machine shop will contain a large lathe, a shaper, a small lathe, a planer, a drill press, a steam hammer, a wheel press, two forges, an air compressor, a power crane and a full equipment of tools.

Camp 12 has a blacksmith shop, sand and oil house and is electrically lighted. Water is furnished from a near-by creek under gravity pressure.

Filing House at Camp 12—One of the attractive buildings at Camp 12 is the filing



THE BASE OF THE MONSTER "SITKA SPRUCE" DETAILED ON THE RIGHT
The Above View shows a "Sitka Spruce" Tree Nine Feet in Diameter Where it Will be cut—Which Contains at least 30,000 Feet of Lumber and While one of the Largest, the Bottom Land about it has Many Other Large Spruce Trees. Location S. E. $\frac{1}{4}$, N. E. $\frac{1}{4}$, Sec. 30, T. 9 S., R. 10 W., also in "Jaybird Creek" Section

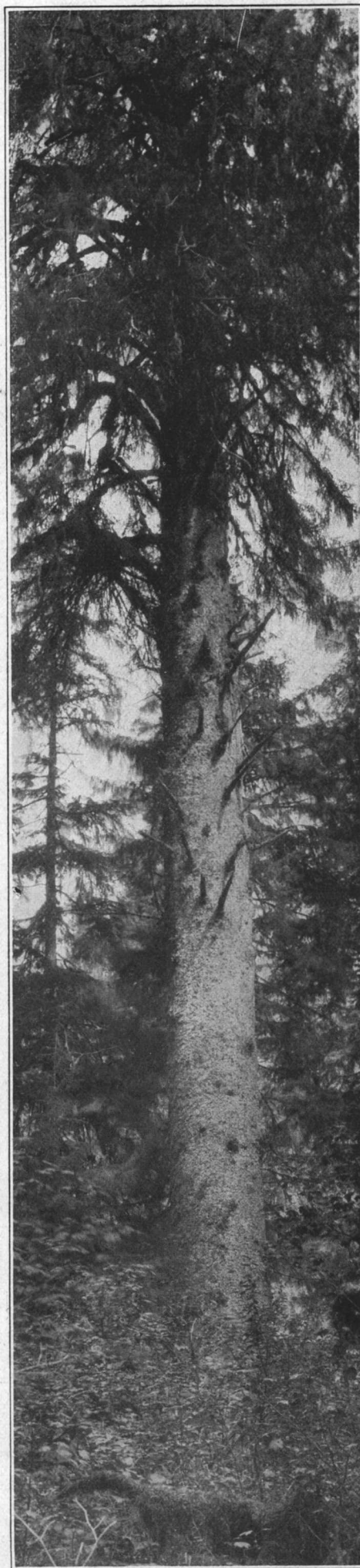
site has been selected for the new location for Camp 12 on the Siletz River overlooking a broad valley of berry land, with the old buildings of the Siletz Agency about a mile distant. In addition to the bungalows and bunk-houses, which will be erected here for the employees, a combination round-house, rip-track, machine shop and blacksmith shop 70x172 feet in size, will be built.

Round-house, Machine and Blacksmith

house, three sides and the roof of which are constructed entirely of glass. One end of this car house is occupied as quarters for the filer and the other end, which is all glass, is his work room.

LOGGING OPERATIONS AT CAMP 11

Few sections of the great west present the solitude of the Siletz basin. It is compelling



A FINE "SPRUCE" TREE EXAMPLE
This view of a great "Sitka Spruce" Tree shows nearly the entire height of the tree, the butt of which is pictured on the left.

in its wildness and remoteness from the habitations of man; for, with the exception of a few settlers, an industry or two and an

occasional shallow-draft fishing boat, this section was practically uninhabited before the Manary Logging Co., began operations at Camp 11.

The river flows through a primeval forest of giant old growth yellow Douglas fir, Sitka spruce and western hemlock, of quality and quantity best described by the pictures of this timber, which appear elsewhere.

Deer, bears and cougars live unmolested on its banks and gamey trout and salmon lie in its clear waters. The river, which is navigable for shallow-draft vessels to the first rapids, eighteen miles above its mouth, may be followed by canoes for practically 125 miles, at which time the voyager would be only fifteen miles, as the crow flies, from the place he started.

No railroad nor any wagon road worthy of

there. The workmen of these two industries form the principal population of Kernville and a ferry across the river forms a link in what will eventually be the Roosevelt Highway and may in time give way to a bridge spanning the river. The setting of the little village of Kernville is beautiful, with a number of large spruce trees leaning over the river, giving a most picturesque view through their foliage of the steep hills on the north side of the river.

At intervals on the bench lands of the Siletz ranchers are located, but the upper reaches of the river follow a canyon and the banks are unadapted for agricultural pursuits.

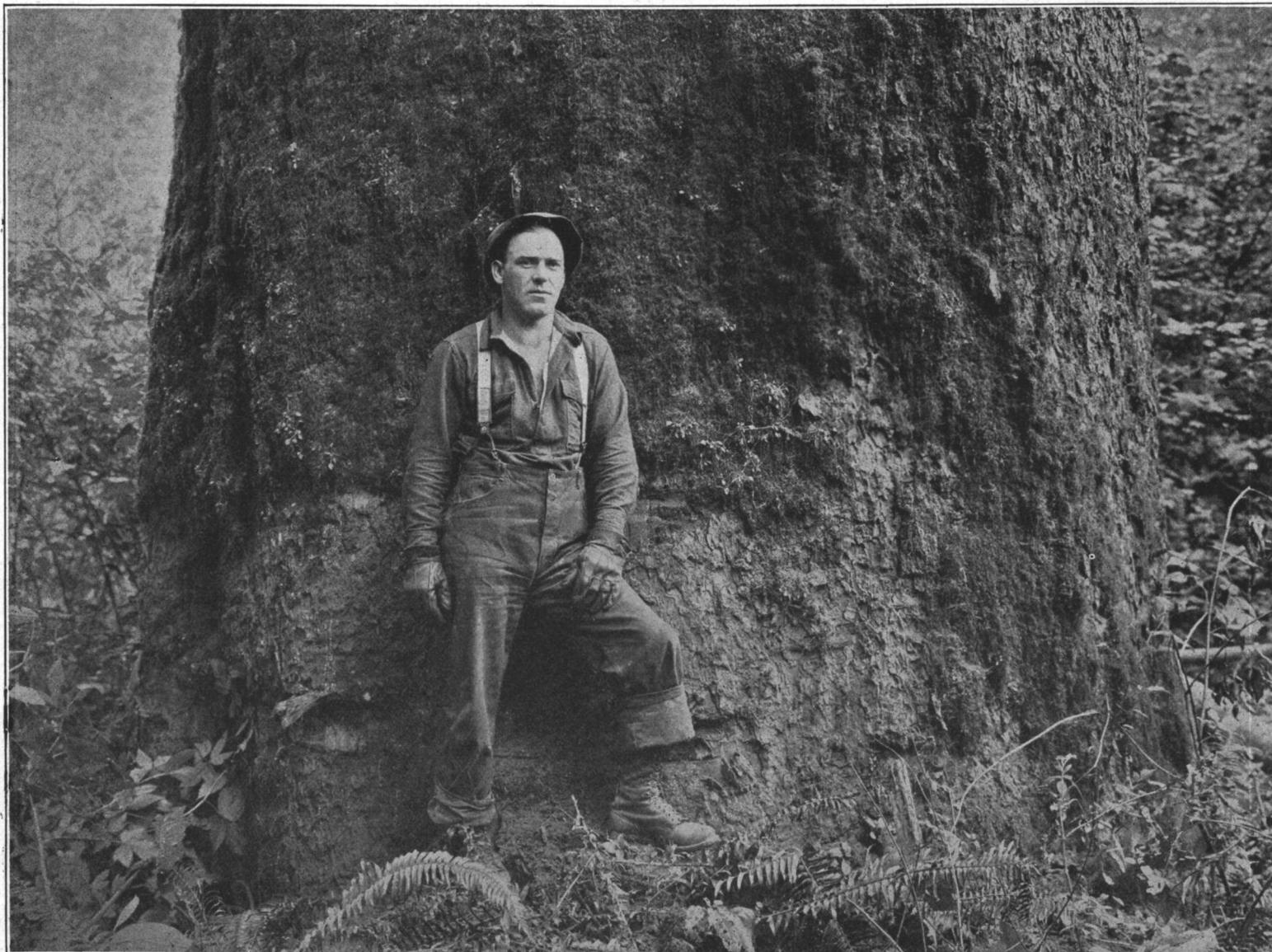
Timber Logged to River

The Pacific Spruce Corporation owns a large body of timber adjacent to this river

which was built at Toledo and towed to the camp.

The timber in which Camp 11 is operating—and in which it will be operating for a number of years—is tall and of good size. The trees are felled and cut full length, some of the longest logs reaching 160 feet. These logs are yarded by the 13x14 Willamette high-speed yarder to the tall tree, which is about 1,200 feet from the head spar tree, located on the opposite side of the river, close to the bank. The logs are brought to the river by this 12x14 compound-g geared Willamette swing and dropped into the water.

Water for the logging engines is furnished by a 15-H. P. 4-B Fairbanks-Morse semi-Diesel engine and a pump. The water is driven through a 1½-inch pipe a distance of 1,400 feet.



VIEW OF A GREAT "SITKA SPRUCE" ELEVEN FEET IN DIAMETER—ESTIMATED AT 35,000 FEET OF LUMBER

When We Print Pictures of Such Enormous Trees as this Above We Want the Reader to Understand it is not for the Purpose of Making the Reader Believe that All the Trees of the Pacific Spruce Corporation are as Large as the One above or Others of Similar Size, but We do Want them to Know that Such Pictures Represent "A Type" and that There are Many Such—This Tree is on S. E. ¼, N. W. ¼, Sec. 36, T. 8 S., R. 11 W.

the name penetrates this forest and access is possible only by trail or by shallow-draft boats out of Yaquina Bay up the ocean twenty-two miles and into Siletz Bay.

The county road north of Siletz leading toward Camp 11 is very rough, with a large part of the planking, which was put down some years ago, now worn out. This road does not come within a mile of Camp 11 and mail and freight are carried from the landing at the end of the road on the river, by small power boats. Supplies and equipment come to Camp 11 by way of the ocean. Another wagon road leads from Newport to Kernville near the mouth of the Siletz River, but it is also rough and both these roads are practically impassable during the rainy season.

At Kernville a sawmill has been in operation for some time and a cannery is located

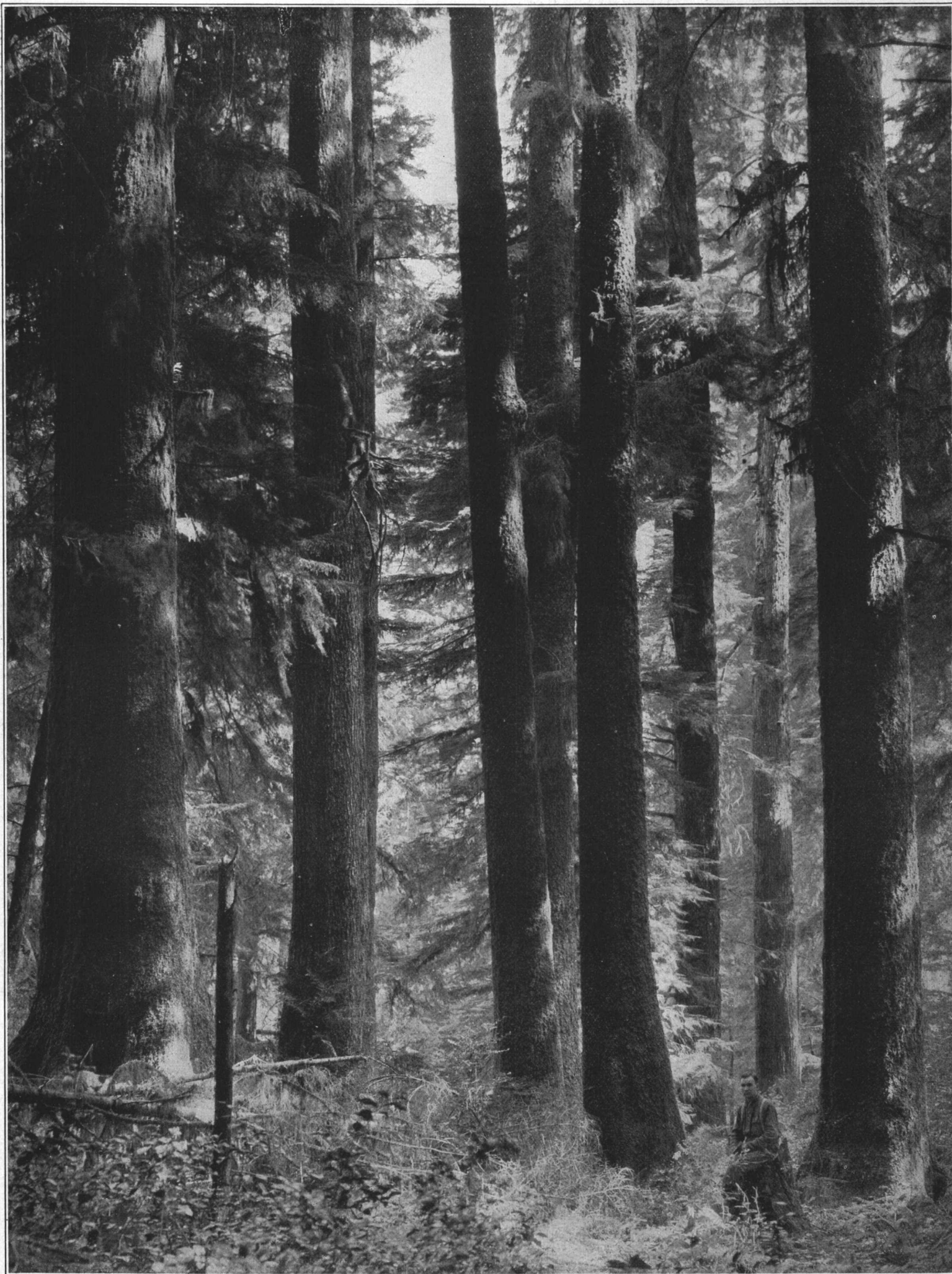
for many miles along its course, the logging of which has been solved by methods which form an interesting story.

When it was decided to open the camp on the river, the tug "Sea Foam" took a crew of men there in charge of Gordon J. Manary and a temporary tent camp was opened. Three Willamette logging donkeys—a 13x14 Willamette Humboldt yarder, a 12x14 compound-g geared, two-speed Willamette swing and a 11x13 Willamette loader used as a boom and rafting machine, were transported on an ocean-going barge from Toledo out of Yaquina Bay to Siletz Bay and taken up the river to Camp 11, which was opened in July, 1923. After this tent camp had been in operation several weeks permanent quarters were established for the men in a boat house,

Men Employed at Camp 11

Thirty-two men are employed at Camp 11 and the output of logs during the summer and fall of 1923, when this camp was in operation, was extremely satisfactory. The largest day's logging at this camp was 192,000 feet.

The logs deposited in the river float downstream about half a mile to the booming grounds, where they are held in booms from which the sea-going rafts are made. The Willamette boom donkey, which is on a large float, takes the logs and places them in position in the rafts. The first course of logs is arranged as to size and length, assembled side by side and interlaced at seven points with 1½-inch John A. Roebling & Sons wire rope, which passes above and beneath each log. The bottom layer of the raft thus formed is now piled with logs; and when



DENSE STAND OF SITKA SPRUCE AND WESTERN HEMLOCK IN THE "SILETZ" TERRITORY—TRIBUTARY TO CAMP 2
 This Stand of Spruce and Hemlock Timber is 30 to 54 inches in Diameter, 80 feet to the Limbs and Trees 150 feet High. Trees Left to Right: 54-inch Spruce; 30-inch Hemlock; three Spruce Trees, each 30 inches; two Hemlocks, 40 inches each; one Spruce, 40 inches. Spruce on this Acre Cruised 150,000 feet. Location, N. W. $\frac{1}{4}$ of S. E. $\frac{1}{4}$, Sec. 36, T. 8 S., R. 11 W.

300,000 to 600,000 feet have been placed in the raft, the top logs are interlaced at ten different points with the same size cable as was used on the bottom. A 1½-inch bridle is then clamped to the outside end logs which, with an eye, is secured to the tow-line of the tug "Go Getter."

This tow-line is attached to the Cunningham towing machine on the stern of the tug to prevent the swells of the ocean, especially on the bars, from breaking it.

The logs are towed from the booming grounds down the Siletz out over the Siletz bar and twenty-two miles on the ocean to the Yaquina bar, up the Yaquina bay and river and delivered to the mill at Toledo. About seven hours are required to tow a raft from the Siletz to Yaquina Bay, depending upon weather conditions, the longest time required being 9½ hours, when the "Go Getter," with its tow, encountered a heavy southwesterly

the mill; the handling of logs which come from Camp 12 through Depot Slough to the mill; the towing of log rafts from Camp 11 on the Siletz River through the Pacific Ocean to Southbeach; the towing of all rafts of logs to the storage waters near the mill at Toledo and the loading and towing and general handling of lighters from the mill at Toledo to shipside at the Newport dock.

THE STEAMER "ROBERT JOHNSON" AND ITS OPERATION

The crowning feature of the transportation service of the Pacific Spruce Corporation is the operating of the steamer "Robert Johnson," a steel ship, whose activities and features are an important factor.

Dean Johnson and W. J. Thomas, manager of the transportation department, went east in the autumn of 1922 and found and pur-

speed of ten knots an hour.

On the arrival of the "Robert Johnson" at Portland, Oreg., she was taken to the Albina Marine Works, where she was fully equipped for the Pacific lumber-carrying business. Four steel masts, each 90 feet in height, were stepped, with eight 75-foot Douglas fir booms. Four double-drum ball racer steam winches were installed, together with the necessary oil and bilge pumps and other equipment. Four hatches were provided, each 18x28 feet.

Loading the "Robert Johnson"

The loading of the "Robert Johnson" begins at the sorting chains of the mill, where the lumber is assembled into units, each of uniform grade, length and size. The units are four feet wide and four feet high, contain about 1,800 feet and weigh 7,500 pounds.

The monorail hoists pick up these units



THE BUTT END AND THE FIRST LOG LENGTH OF A 9-FOOT "SITKA SPRUCE" LOG—SEE DESCRIPTION BELOW
The Above Picture of a 9-foot Sitka Spruce Log with Head "Bucker" C. C. Sherman at the Side of the Log. This View was made on the N. E. ¼, S. W. ¼, S. 36, T. 8 S., R. 11 W. This Tree Scaled 33,000 Feet. This Locality is Tributary to Camp 11, of the Manary Logging Co., Subsidiary to the Pacific Spruce Corporation.

gale. The rafts are 230 feet long and 48 feet wide.

At the booming and rafting grounds below Camp 11 there are five to ten million feet of logs held in storage. Siletz Bay is a natural protected harbor for the log rafts, which can be held there during the storm period.

SUPERIOR TRANSPORTATION DEPARTMENT OF THE PACIFIC SPRUCE CORPORATION

It is not given to many lumber manufacturing concerns to own and operate such an elaborately effective transportation system as does the Pacific Spruce Corporation; and in this statement distinct reference is made to its methods and facilities for getting its logs from the assembling point at Southbeach to

chased from the U. S. Shipping Board the steamer "Lake Shebago," a coal-burner. This vessel was rechristened the "Robert Johnson," in honor of C. D. Johnson's youngest son, a lad of eleven, who is already steeped in lumber lore, is thoroughly acquainted with all the activities of the great corporation and stoutly declares that he, too, will become a lumberman.

The "Robert Johnson" is 271 feet over all, with beam of 43 feet 6 inches, a depth of 21 feet, and draws 18 feet 6 inches of water when loaded.

The boat was converted into an oil burner in New York and brought to the Pacific coast via the Panama Canal. The power of the "Robert Johnson" is furnished by two marine boilers of 1,250 indicated horsepower, with a triple expansion engine with 20½-, 33- and 54-inch cylinders. She was designed for a

and convey them to the loading slip, where by means of a traveling bridge, 40 feet wide and 150 feet long, they are piled on barges, with 6x8-inch crosspieces, four feet in length, between the units, and piled four or five high. Two of the lighters will each carry 200,000 feet; two, 300,000 feet, and one, 350,000 feet. These lighters are built of timber and heavy planking. They are respectively 30x120 feet, 36x130 feet and 36x140 feet in size.

When the "Robert Johnson" arrives at Yaquina Bay, she lies at the Newport Port Commission dock at Newport. The loaded barges are taken by the "Go Getter," the "Sea Foam" or the "Aleut"—the competent fleet of tugs and small vessels maintained by the Pacific Spruce Corporation for towing purposes—and on high tide are towed to the vessel. Two barges are lashed fore and aft to

the shipside and the units are hoisted from them by the ship's own gear.

The four port winches, five tons each, are used; the lumber is deposited in the hold, where thirty stevedores pile it rapidly. The "Robert Johnson" has a hold capacity of 900,000 feet of lumber; and when this is filled the fore and aft decks of the vessel are piled twelve feet high, making about 600,000 feet more.

Lashing chains, copied after those on a vessel Mr. Thomas saw in Baltimore, are fastened to the fore and aft well-decks with steel deck pads. These chains are brought up inside the bulwarks, where large steel links hold them in place. The ship's cargo gear is attached to these links when the deck load is ready and the lashing chains are pulled to the center over the load, where they are fastened to chains from the opposite side by pelican hooks. The ship is equipped with eight of these chains forward and aft; and during all her trips, the cargo has never shifted, nor has a board been lost.

Oil Tanks Installed

The arrangement of the oil tanks in the "Robert Johnson" is ingenious. Two fore and aft peak tanks extend from the bottom of the hull to the upper deck. In addition to these, the water tanks of the vessel were converted into eight oil compartments, each 36 inches deep, covered with ½-inch steel. Amidships the water tank has a capacity of 190 tons of water, sufficient for twenty-five days' cruising.

All the oil tanks are inter-connected with pipes and valves and are equipped with swash plates which keep the oil from washing from side to side. By pumping oil from one compartment to another, the vessel may be trimmed after cargo is taken on and a perfect keel secured.

The "Robert Johnson" has an oil-carrying capacity of 500 tons, or about 3,300 barrels. Under load the ship uses 103 barrels a day for fuel. This fuel oil is taken from two settling tanks, built amidships where the coal bunkers were. She can run thirty days when loaded to her full oil capacity without replenishing fuel.

Her oil capacity is greatly in excess of the amount required for her own use and this excess capacity makes her of value to the company's logging department, for she can bring crude oil from California as ballast and deliver it in Yaquina Bay for the locomotives and logging donkeys, at a minimum cost for transportation. The Manary Logging Co. requires about 3,500 barrels of fuel oil per month. The "Robert Johnson" makes two trips a month and brings 1,750 barrels of oil each trip. The round trip to San Pedro requires about ten days—three days down and four days back—during which she uses about 1,000 barrels of oil for fuel, leaving about 500 barrels as a margin of safety, continually in the hold.

While she is taking cargo at the dock at Newport, an oil barge tanker is brought alongside and with her own pumps she discharges 1,500 to 1,800 barrels of oil into this tanker, for the Manary Logging Co.

The Crew of the Steamer

The crew of the "Robert Johnson" consists of a captain and 27 men. Capt. P. W. Johnson has stood on the bridge since she has been on the coast and he is assisted by three mates, a chief engineer and three assistant engineers. A wireless operator is in charge of the wireless installation supplied by the Radio Corporation of America, and three oilers, three firemen, four winch men, six sailors and three stewards comprise the balance of the crew.

The comfort of the men employed on the vessel has been provided for in every way possible. They have commodious, well-lighted quarters, which are kept spotlessly clean. Bunks furnished with clean linen, and food served from the spotless galley, compare favorably with the service of the camps ashore.

The "Robert Johnson" has proved an economical lumber carrier. The company is looking forward to the time when a sister ship will be on the run with her and to that day when the deepening of the bar will permit larger vessels to enter the harbor and load for foreign ports.

THE "GO GETTER" AND THE OTHER BOATS

When the "Robert Johnson" is out at sea she is the master of her own destinies. She is able to ride the storms and buffet the gales; but when she arrives off Yaquina Bay she is met by the "Go Getter," one of the finest tugs on the Pacific coast, which becomes her constant tender during the time she is in port.

The "Go Getter," which is under the command of Capt. D. Brown, was built in Seat-

every detail. She has a Kohler lighting system, built by the Kohler Co., of Milwaukee, Wis. A 6-inch Fairbanks-Morse pump provides for fire fighting or bilge work. Fresh water is provided by two 450-gallon tanks.

Compressed air, used in starting the engines, is furnished by an electrically driven compressor, which is available for other work. The gauge-board in the engine room is a work of art. It is made of mahogany and the telegraph instruments connecting with the bridge above are resplendent in all the glory of shining metal.



"HIGH CLIMBER" MCGEE OILING SPAR TREE BLOCKS NEAR CAMP 11

A Spar Tree near Camp 11 and two Photographs of High Climber W. J. McGee—One about as big as a bug, about an inch and a quarter from the top of the spar tree, oiling the blocks—And a portrait in the oval, showing the "climber" immediately after his descent.

tle, Wash., by the Lake Union Dry Dock & Machine Works. She is 76 feet over all, with beam of 18 feet 6 inches, drawing 8 feet of water. She is an oil burner, with 4,200 gallons capacity in the two main tanks and a reserve supply of 2,000 gallons in auxiliary tanks, giving her a cruising radius of 2,000 miles at a speed of 9½ knots.

Her two Fairbanks-Morse semi-Diesel engines, each of 100 horsepower, swing twin propellers 50x34 inches. With the exception of the knees, Douglas fir has been used in her construction throughout. The workmanship of the "Go Getter" places her in a class by herself and her equipment is complete in

The crew quarters are comfortable, eight bunks being provided, each lighted by electricity and furnished with blankets and linen. Battleship linoleums cover all floors.

A specially designed Cunningham towing machine, with a one-inch steel cable, performs its duties aft, while a power capstan forward stands always ready for service.

Besides being the bar boat, the "Go Getter" is used to bring the log rafts from the Siletz basin to the mill.

THE VARIOUS OTHER BOATS OF THE PACIFIC SPRUCE CORPORATION

The "Sea Foam," used in Siletz only—A



THE ABOVE PICTURE SHOWS HOOK TENDER AND CREW AT HIGH LEAD POLE MANARY LOGGING COMPANY NEAR CAMP 11 GROUPED AROUND 12x14 "WIL-LAMETTE" HIGH-SPEED YARDING DONKEY

tug of importance, which does a great deal of work is the "Sea Foam," which tows the log rafts from the South Beach log dump to the storage near the saw mill at Toledo. It is used on occasion as a bar tug and also

makes trips to the Siletz Basin for log towing purposes. The "Sea Foam" is 65 feet over all; 11 feet in the beam and of 6½ feet draft. This boat is equipped with a 90-H. P. Imperial semi-Diesel engine.



THIS VIEW SHOWS A "WILLAMETTE" 12x14 TWO-SPEED YARDER WHICH HANDLES LOGS ON THE SKYLINE FROM THE HIGH LEAD TREE ABOUT 1500 FEET FROM THE YARD AND FROM ACROSS THE RIVER

The "Aleut"—This boat, formerly running out of Seattle, Wash., is used by the Pacific Spruce Corporation for work within Yaquina Bay, for hauling booms from the log dump to the mill, and also assists in handling the barges and other work within the harbor.

The "Logger"—This boat uses gasoline as motive power, handles logs around the mill and brings in the big sticks from the booming ground to the log haul-up.

The "Go Gettem"—This boat might be called—and should be called—the dispatch boat. Its motive power is gasoline; it runs at a high rate of speed and is capable of carrying six or seven passengers within its glass-enclosed cabin; and, as this description and other statements would indicate, is decidedly useful to the Pacific Spruce Corporation, in conveying dispatches that can be sent no other way from the general offices at Toledo to the various logging centers and for conveying the executives and various officers and superintendents from place to place.

Towing Logs to the Mill

The logs, dumped into the water at the South Beach log dump, are placed in boom rafts, each containing 300,000 to 500,000 feet. They are towed by either the "Aleut" or the "Sea Foam" to the storage at the mill.

The logs which are delivered from the Pacific Spruce Northern Railway at the logging dump on Depot Slough float down this slough about 3,000 feet. Here they are cut and formed into smaller rafts which are conveyed by the gasoline tow boat, the "Logger," to storage at the mill. The log rafts from the Siletz each contain 250,000 to 300,000 feet, and are delivered by the "Go Getter" from the Siletz rafting grounds, by way of the ocean and Yaquina Bay, direct to the log storage.

Car Transfer Barge

The Pacific Spruce Corporation owns a transfer barge which operates on the waters of Yaquina Bay between Toledo and the two logging dumps. This barge is 36x136 feet in size and has tracks which accommodate three box cars. It is used in handling locomotives, logging trucks, cars and oil tankers between the different points.

LUMBER PRODUCTION OF THE PACIFIC SPRUCE CORPORATION OF TOLEDO, OREGON

The sawmill is so designed and equipped with such machinery as to enable it to produce the highest grades of lumber from the timber in maximum quantity at minimum expense; and it is today producing such lumber at the rate of 9,200,000 feet from January 1 to February 8, operating one and one-half shifts. With the completion of certain improvements and additions which were building in September, 1923; and which will be in operation early in 1924, the output of this mill will be further increased, and with this additional machinery and the operation of the mill on two shifts of eight hours each, the production of the mill will be not less than 600,000 feet daily, using 800 men in all operations.

Throughout the entire plant the watchword is "Quality First," and to that end no expense has been spared in creating a plant which will function in every detail to its highest maximum, and which will co-ordinate with the other departments of the institution in attaining the results desired.

FROM THE LOG POND TO THE LOG DECK

It shall be the purpose in this division of the article to follow the lumber in its various stages of manufacture, from the time it arrives at the mill in the form of logs, until it is loaded on the cars or barges in a finished state, ready for transportation to its market. In this story of the manufacture of lumber at this plant, it is the intention to deal with each process, in each building of the plant, as the product arrives at these buildings, and to tell the story of the building, the machinery it contains, and what is done to lumber while there or while it is passing through.

The logs are delivered to the mill 48, 64 and up to 150 feet in length, and held in storage in log booms capable of holding thirty million feet, and are brought to the log slip as desired, where they are first cut into such lengths as the manufacture of them into lumber demands.

A Comprehensive Plan

The sawing of the logs is accomplished by two marine drag saws, one gasoline-driven and one electrically driven, both manufactured by the Portland Iron Works of Portland, Oreg. The electrically operated saw is housed in a 20x30-foot building, located on a log float near the end of the log slip. The gasoline-driven drag saw is housed in another building located on a float and may be moved to different parts of the log pond as desired.

After the logs are sawed into convenient lengths they are pulled to the log haul, a heavily timbered slip, 162 feet in length, up which they are carried on a 2x10-inch chain, 362 feet in length, on dogs of 18 inches spread, spaced 8 feet apart. The power is furnished by a 75-H. P. Allis-Chalmers motor, located in the mill at the head of the slip, and belted to the log haul. As the logs pass up the slip a log spray washes foreign substances off the bark. The slip terminates in the center of a two-way log deck, from which an excellent view of the entire saw-mill and its machinery has been secured and is shown on another page of this article.

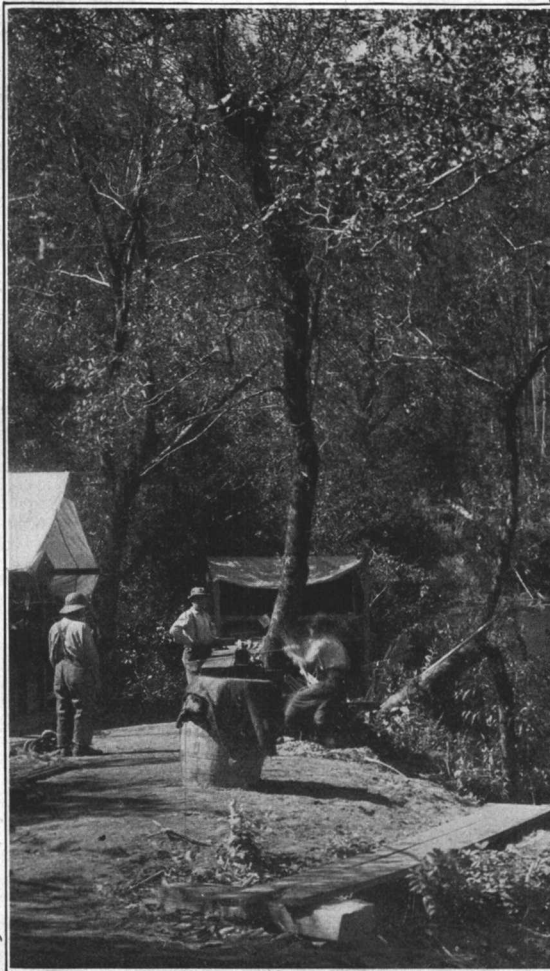
The first impression one receives, as he stands upon this log deck and sees for the first time the smoothly running mill in full operation, is a consciousness of some tremendous power that has been unleashed and which is driving the maze of machinery in its various functions of manufacturing lumber. One feels it necessary, in order to understand the saw mill operations perfectly, first to visit the power plant, where the force which drives all this machinery is generated.

STORY OF THE CENTRAL POWER HOUSE OF THE COMPANY

Steam is generated in modern sawmills,

such as that of the Pacific Spruce Corporation, in a battery of boilers sufficiently large to provide power for the plant. The steam is conducted to a steam turbine generator which creates the electricity, which is then

conveyed by insulated wires in conduits to motors in all parts of the plant, each of which in turn drives that particular piece of machinery for which it is intended. A portion of the electric power generated by the



THE BEAUTIFUL SILETZ RIVER FROM CAMP 11, WITH TUG "SEA FOAM", POWER BOAT AND SMALL BOATS AT LANDING AND THE SPLASH OF A BIG LOG AS IT HITS THE RIVER FROM THE SKYLINE CABLE. LOGS ARE "DOGGED" ON NORTH SIDE OF RIVER UNTIL TIDE RUNS OUT, THEN FLOATED TO RAFTING BOOMS ONE-QUARTER MILE BELOW THE "HIGH LEAD" SPAR TREE, WHICH ALSO CARRIES THE LINE



BOOM OF LOGS AT RAFTING GROUND A HALF MILE BELOW CAMP 11, WHERE OCEAN-GOING RAFTS ARE MADE UP—WOODS FOREMAN ROWLAND IN SPEED BOAT—1,000,000 FEET SITKA SPRUCE AND DOUGLAS FIR LOGS IN BOOM—A VIEW USUAL AND CUSTOMARY DURING THE LOGGING SEASON



A GENERAL RAFTING SCENE LOOKING UP THE SILETZ RIVER FROM THE FLOAT AT THE RAFTING PLACE NEAR CAMP 11, AND IT CONTAINED BY ACTUAL MEASUREMENT TAKEN AT THE TIME THE PICTURE WAS MADE (THE LATTER PART OF AUGUST, 1923), NOT LESS THAN TEN MILLION FEET OF LOGS IN SIGHT