

much further as the engineers deem it advisable; and

Be It Further Resolved—That a copy of this resolution be sent by the secretary of the commission to the Hon. Charles L. McNary and the Hon. Robert W. Stanfield, our United States senators—and to the Hon. W. C. Hawley, the member of Congress from this district."

—PORT OF TOLEDO
—PORT OF NEWPORT

EXHIBIT "A"—OCTOBER 31, 1923

"Logs handled in rafts by two boats from Manary's log dump in Yaquina bay harbor to the mill at Toledo, Oreg., a distance of nine miles, from September 1, 1922, to October 31, 1923 (fourteen months), 55,945,099 feet or 223,780 tons.

Equipment, consisting of locomotives, cars, rails, logging trucks, logging engines, camp and commissary supplies, handled on barges from Toledo, Oreg., to the Manary log dump from February 1, 1922, to October 31, 1923 (21 months), 4,955 tons.

"Logs handled in rafts by two boats from Logging Camp No. 11, located on the Siletz River about sixteen miles inland to mill at Toledo—a distance of 43 miles—via Siletz river and bay, Pacific Ocean and Yaquina Harbor, from August 1, 1923, to October 31, 1923 (three months), 6,883,424 feet or 27,734 tons.

"Finished lumber handled on lighters from the mill at Toledo, Oreg., to Newport, Oreg., Yaquina harbor, to alongside the the steamer

year from that concern will amount to the following:

| | Tons |
|------------------------------------|----------------|
| Logs | 400,000 |
| Lumber | 60,000 |
| Fuel oil | 3,750 |
| Logging equipment and supplies.... | 1,200 |
| Total | 464,950 |

PORT OF NEWPORT AND JOINT WORK

The first meeting of the Newport Port Commission was held in Newport on May 26, 1910, following the appointment of the commissioners by the governor.

An attempt had been made to organize one port district for Yaquina Bay, but a difference of opinion arose and the Newport district was first organized, embracing the territory adjacent to the lower bay, three miles north and three miles southeast to Yaquina City.

R. A. Bensall, J. A. Olssen, Edward Stocker, George King and Thomas Leese, the appointed commissioners, were present at the first meeting and Mr. Bensall was elected president, Mr. Leese secretary.

The personnel of the commission at the beginning of this year, 1924, is Capt. O. F. Jacobson, president; Frank Priest, vice-president; C. E. Sheffield, treasurer; Frank Dawson, secretary, and George Ashcraft.

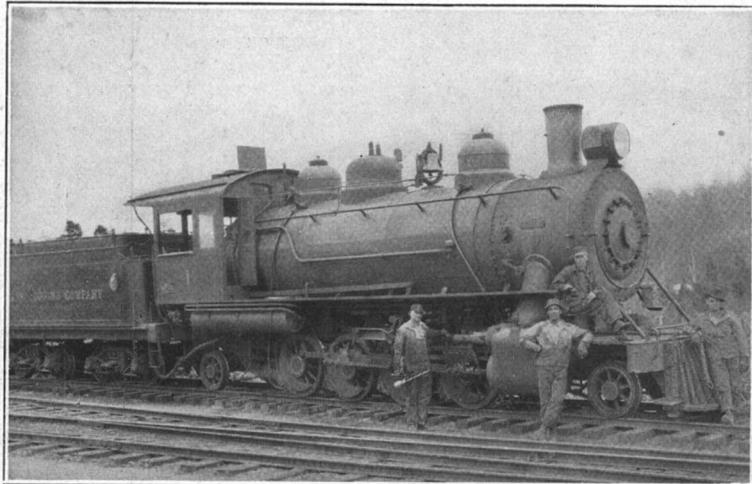
Capt. Jacobson is a seafaring man and has been president of the commission practically ever since his election ten years ago. For

as possible into two districts, leaving out that portion in the south part which had been embraced in the port of Alsea. Steps were then taken toward issuing bonds with which to continue the work of improving the harbor entrance. The first bond issue was for \$75,000 on December 1, 1917, after the Secretary of War had issued a permit, on August 11, 1917, authorizing the two port commissions to enter into contracts for the work contemplated.

The work of the two commissions was done through a joint committee which has functioned harmoniously and of which Capt. Jacobson has been president since its organization.

Under this arrangement work on the south jetty was renewed in 1917 and continued without government aid until 1919, when the government adopted the project of the survey made in 1916 and appropriated \$100,000 for it.

For the purpose of continuing the work, the port of Newport issued bonds as did the port of Toledo, as follows: December 1, 1917 \$75,000; January 1, 1918, \$90,000; September 1, 1918, \$90,000. On February 1, 1921, the government took over the project and the two ports were given credit for the amounts of money they had expended, a total of \$549,165 and were asked to give the government \$165,000 in cash, to meet the increased costs of the project which had been caused by the war. The port of Newport paid its share of this money out of a bond issue of October 1,



THE ABOVE COMPANION VIEWS SHOW THREE LOCOMOTIVES. LEFT-HAND VIEW—BALDWIN ROD ENGINE NO. 1, A 75-TON LOCOMOTIVE AND FOUR TRAINMEN. AT RIGHT—BALDWIN SADDLE TANK LOCOMOTIVE NO. 5, IN THE LEFT BACKGROUND, AND SHAY LOCOMOTIVE NO. 3 WITH TRAIN OF LOGS IN RIGHT FOREGROUND

'Robert Johnson' for movement to San Francisco and Los Angeles, Cal., from June 1, 1923, to October 31, 1923 (five months), 10,575,274 feet or 21,151 tons.

"Fuel oil purchased in San Francisco and Los Angeles, handled on return trips of the 'Robert Johnson' in her tanks and delivered to the Manary Logging Co. for use as fuel on its locomotives and logging engines, from June 1, 1923, to October 31, 1923 (five months), 11,743 barrels or 1,843 tons.

RECAPITULATION

| | Barrels | Feet | Tons |
|-------------------------|---------------|-------------------|----------------|
| Logs | | 55,945,099 | 223,780 |
| Logging Equipment | | | 4,955 |
| Logs | | 6,883,424 | 27,734 |
| Finished Lumber | | 10,575,274 | 21,151 |
| Fuel Oil | 11,743 | | 1,843 |
| Total | 11,743 | 73,403,797 | 279,463 |

GROSS TONNAGE

| | Tons |
|----------------------------|----------------|
| Pacific Spruce Corp'n..... | 279,463 |
| Multnomah Box | 74,000 |
| Misc. Freights | 15,000 |
| Lumber from Siletz | 5,750 |
| Fish | 768 |
| Total | 374,931 |

"Reports received from the Pacific Spruce Corporation indicate that the tonnage next

over twenty years he has piloted the boat running between Newport and Yaquina City daily and now owned by the Newport Navigation Co., of which he is president.

C. E. Sheffield is in the real estate business in Newport; Fred Dawson is a druggist; George Ashcraft is in the retail lumber business and Frank Priest is a retired business man. The commission employs D. T. Harding as deputy treasurer and secretary.

Late in 1923 the Port Commission purchased a building and considerable dock frontage in Newport and now has quarters of its own. The rentals from the rest of the building, not occupied by the commission, make a profit for the body. The berth of the steamship "Robert Johnson," as she takes on her cargo, is at the dock of the Newport Port Commission.

For seven years after the organization of the port district its activities were of purely a local character, the money for which was raised by a small annual tax. Following the edict of the government in 1915 that it was willing to co-operate with the port commission on a 50-50 basis in the improvement of the harbor, the need of an enlarged district became apparent, as did also the need of closer co-operation between the two ports; and in the fall of 1916 steps were taken to form an enlarged district and perfect a joint working arrangement.

At a meeting held in Newport November 11, 1916, the county was divided as nearly

1920, for \$132,000. On July 1, 1921, a bond issue of \$25,000 was made and on January 1, 1923, one for \$35,000 was issued, with which the bond issue of July 1, 1921 was retired. The total bond issues of the port district, then were \$422,000, deducting the \$25,000 issued and retired. These sold at 96 to 98 and the money was spent on the improvement of the harbor. They are being paid as they come due and the interest is provided for annually by taxation.

Part of the work performed by the ports of Toledo and Newport consisted in securing an eighteen-foot channel approximately 200 feet wide and 250 feet wide on the curves, from Yaquina City to the bar at the entrance.

THE PORT OF TOLEDO, OREGON AND ITS COMMISSIONERS

The first meeting of the Toledo Port Commission was held in Toledo, Oreg., on May 26, 1910, following the appointment of the commission by the governor. William Smith was president of this first commission, T. F. Stewart vice-president, A. T. Peterson treasurer, Lee Wade secretary, with W. C. Copeland as the fifth member of the commission.

One of the first actions of the Port of Toledo was to bond itself for \$50,000 for the improvement of Yaquina River from Toledo to Yaquina City, as related in that part of this story entitled "The Improvement of the Yaquina River."

The Toledo Port Commission joined with the Port of Newport in 1916 in an effort to secure the deepening of the Yaquina bar. Coincident with the action of the sister port, the Port of Toledo issued bonds for bar improvement as follows:

| Date of Issue | Amount |
|------------------------|-----------|
| December 1, 1917..... | \$ 75,000 |
| January 1, 1918..... | 90,000 |
| September 1, 1918..... | 90,000 |
| October 1, 1920..... | 130,000 |
| January 1, 1923..... | 35,000 |

Present Personnel

The personnel of the Toledo Port Commission at present is J. W. Parish, president; Guy Roberts, secretary; William Andrews, treasurer; Peter Frederick and Dr. R. D. Burgess being the other two members of the commission. The deputy secretary-treasurer is George Trommiltz. Mr. Parish, the president, has been a resident of Lincoln County for over thirty years. He lives on a ranch on Depot Slough, two miles north of Toledo, at a point directly across the water from where R. A. Bensall built the first mill on

stand exactly what is meant when it is said that, although active logging operations have been going on in that territory since early in 1922, there is no reason for changing the totals of the estimated stands in the various woods.

The table which follows indicates the quantities of the four principal woods that may be found today on the so-called Blodgett tract of 12,705.94 acres of land, situated in the three southern townships of Lincoln County Oregon:

| Species | Feet |
|-------------------------|--------------------|
| Sitka spruce | 330,000,000 |
| Douglas fir | 265,000,000 |
| Western hemlock | 190,000,000 |
| Western red cedar | 15,000,000 |
| Total | 800,000,000 |

TIMBER STAND IN THE "SILETZ" COUNTRY

Concerning the stand of timber in the Siletz, it appears to the general timber owner to possess an apochryphal and doubtful meaning, but having investigated all these various

south Lincoln County, it is safe and proper to say that the Pacific Spruce Corporation has in its possession today—inclusive of various tracts under option—not less than 2,000,000,000 feet of timber of all sorts.

"Siletz" Fir Stand Heaviest Known

The Siletz country runs heavier to fir than any other timber, as evidenced by all of the expert cruises that have been made in that territory; and in the specific statement concerning this timber, made below, under the sub-headings of "The Timber In the Territory of Camp 12" and "The Timber in the Territory of Camp 11" it is seen that the fir timber is much taller than in average tracts throughout the country; that the trees range in content from 3,000 to 25,000 feet and that the average in FIR is not less than 8,000 feet to the tree.

Our own observer, who is a timberman of no mean knowledge, makes many statements that the reader will find under the subdivisions named above; but Leo Martin, expert timberland man of the Pacific Spruce Corporation, refers especially to one particular 160 acres—the E. 1/2 of the E. 1/2 of Section



THE ABOVE VIEW SHOWS BALDWIN 65-TON SADDLETANK LOCOMOTIVE NO. 5 WITH A TYPICAL TRAIN OF EIGHT CARS LOADED WITH SITKA SPRUCE AND OLD GROWTH YELLOW DOUGLAS FIR LOGS, STANDING NEAR HEADQUARTERS CAMP 1 OF MANARY LOGGING CO., LINCOLN COUNTY, OREGON

Yaquina Bay in 1866. He has been a member of the commission for six years.

Mr. Fredericks is a merchant in Toledo; Guy Roberts owns and operates a sawmill at Toledo; Dr. Burgess is one of the physicians of Toledo and William Andrews is a retired business man.

AMOUNT, QUALITY AND CHARACTER OF TIMBER OF THE PACIFIC SPRUCE CORPORATION

There be many holdings of Douglas fir on the Pacific Coast tributary to saw mills, but there is no other combination of Douglas fir and Sitka spruce which has the Sitka spruce in as large quantity as on the possessions of the Pacific Spruce Corporation.

Considering the timber of the Pacific Spruce Corporation as a whole, there is no reason today for going back of the general estimate of the timber on the Lincoln County tract made during the formation of the Pacific Spruce Corporation. The figures given out then were in "round numbers" and those round-number figures will be maintained at this day and time and the timberman and timber owner, wherever dispersed, will under-

rumors it is found that the statement is true.

On the "Location Map" printed elsewhere which indicates the railways, main roads and camps of the Manary Logging Co., etc., there is no endeavor to mark each township where the possessions of the Pacific Spruce Corporation lie; but there is thrown a general hatched line about the territory of ownership, so that the reader may understand the approximate location.

The total acreage owned by the company in the Siletz is 14,626; the total amount of timber on these acres is 835,000,000 feet and the strictly worked out percentages are as follows:

| | |
|---------------|--------|
| Fir | 70.65 |
| Spruce | 21.17 |
| Hemlock | 5.65 |
| Cedar | 2.53 |
| | <hr/> |
| | 100.00 |

The various tracts purchased to date in the Siletz country have been the W. P. Porter tract, the Chautauqua Lumber Co. tract and the Sunset timber tract—this last having been purchased from A. B. Hammond of San Francisco. To sum up the various purchases of the Pacific Spruce Corporation inclusive of the government timber under contract in

30, Township 9 W., Range 10 W., which contains 20,000,000 feet of timber—125,000 feet per acre.

Enormous Length of Sitka Spruce Logs

As an evidence of the great growth Leo M. Martin, timber engineer of the Pacific Spruce Corporation, referred us to the fact that during last autumn they had many times carried Sitka spruce logs of high merchantable quality 160 feet long and often 40 inches in diameter at the top, for seventeen miles down the Siletz River in rafts and out into the Pacific Ocean in the same manner and landed them successfully at the booming ground at South Beach, finally putting them into the storage waters at Toledo. There is a record of many of these trees showing a content of 30,000 feet.

Timber "Fire Hazard" Very Low

The fire hazard on all the timber possessions of the Pacific Spruce Corporation, in both south Lincoln County and the Siletz country, is very small and can hardly be considered. This statement is predicated on the fact that practically all the timber possessions of the Pacific Spruce Corporation are in the so-called fog belt and there is probably more general dampness to the square

foot in that section than there is in any other timber section of the Pacific slope.

Notwithstanding this condition, the Manary Logging Co. keeps up modern methods of timber housekeeping as strictly as if the possessions of the Pacific Spruce Corporation were on a wind-swept table-land; and the company stands ready at all times to fight whatever fire might eventuate in either the timber or around the camps, as it picks up its waste along the railway line in a very painstaking manner.

SITKA SPRUCE "ARRIVED" DURING THE GREAT WAR

One of the surprising developments during the great World War was the recognition of the value of Sitka spruce and the establishment of its superiority, not only for airplane construction, but for nearly all other uses to which a commercial wood is adaptable. In trying various woods for airplanes it was discovered not only that Sitka spruce could be used—and proved the very best for that purpose—but that the available supply was much greater than had been supposed.

Almost without exception the locations

Pacific Ocean runs 20 percent to Sitka spruce; and this distance generally includes what is commonly known as the coast range, extending from British Columbia south to California and with a more or less similar distribution on Vancouver Island and in British Columbia.

In the early days timber investors, loggers and lumbermen eagerly sought out the heavy stands of old growth yellow Douglas fir and western red cedar and endeavored to secure as many adjacent holdings as possible, which might form a sufficient quantity to justify the building of a big mill at some point near by; but—at that time—when the proportion of Sitka spruce and western hemlock was only 10 or 15 percent of the stand, it was not considered as an investment which could be easily sold or utilized. ALL of this is now CHANGED. Those sawmill men NOW assembling timber for big operations are eager for Sitka spruce.

HIGH PERCENTAGE OF SPRUCE IN THIS REMARKABLE STAND

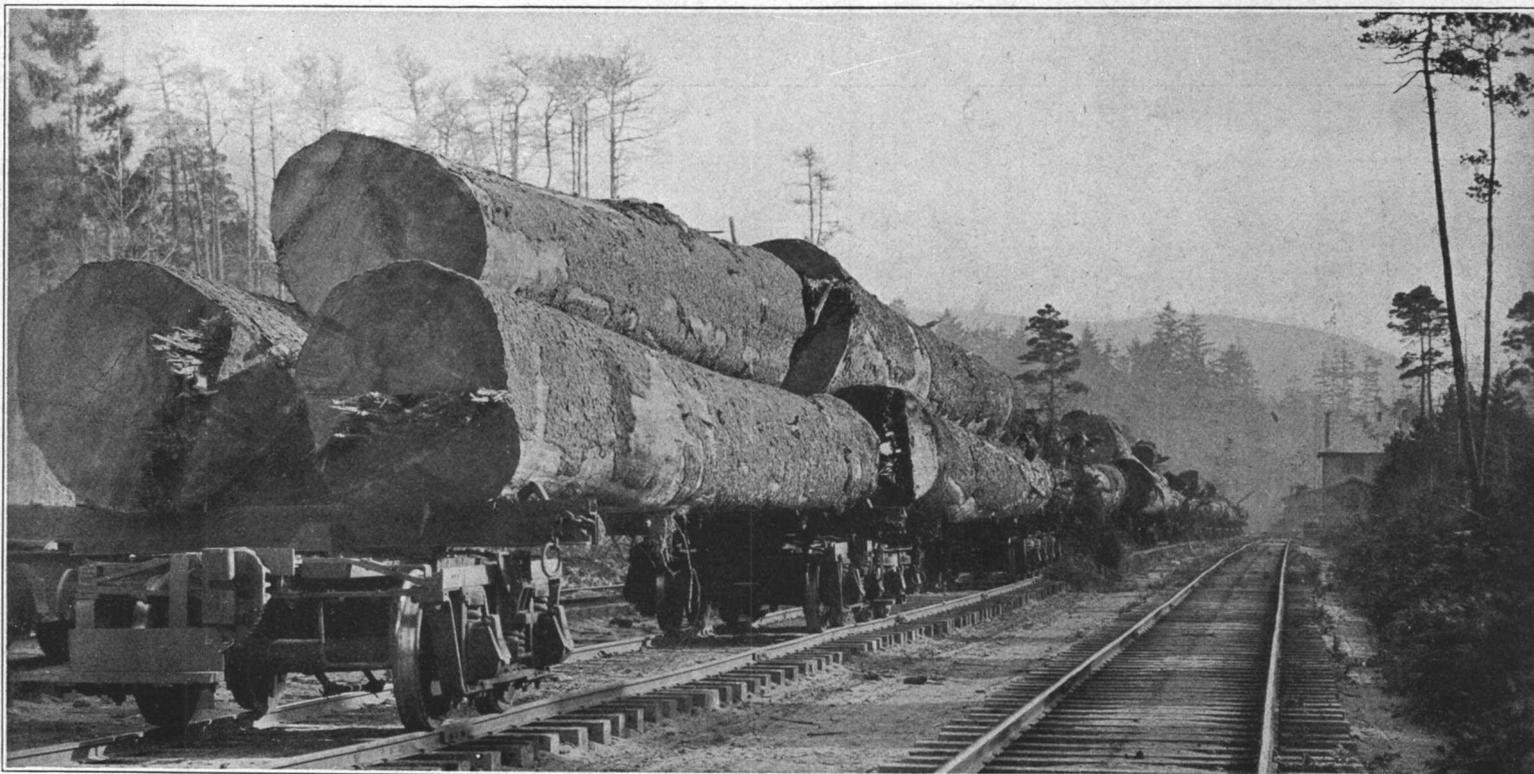
From this it can be understood why—in

one learns the basic fact that it runs 66,666 feet per acre.

Ownership of this timber previous to the war had included such well known timbermen as J. E. DuBois, of Pennsylvania, C. A. Smith, of California and John W. Blodgett, of Grand Rapids, Mich. So it seems a happy circumstance that at a time when C. D. Johnson, with his acute sense of timber values, was in the market for a timber proposition which would enable him to re-establish an outlet for his restless energy in the manufacture and sale of lumber on a scale commensurate with his previous enterprises in southern yellow pine, the newly established value of Sitka spruce, together with the long established value of old growth yellow Douglas fir, western hemlock and western red cedar, should be brought to his attention through the desire of the government to market its war time investment!

WEALTH OF SPRUCE REVEALED BY WAR TIME PRODUCTION

The war time development of this tract and its careful cruises naturally familiarized C. D. Johnson with it, in ALL its features; but



VIEW OF A LOADED LOG TRAIN OF ELEVEN CARS STANDING NEAR HEADQUARTERS CAMP 1 OF THE MANARY LOGGING CO. NEAR SOUTHBEACH, OREGON. FRONT CAR 10,790 FEET OF SITKA SPRUCE LOGS; SECOND CAR, ALSO OF SITKA SPRUCE, 15,250 FEET. REST OF TRAIN IS MIXED SPRUCE AND FIR

where the Sitka spruce stand was the heaviest were isolated from existing timber operations; though in the Grays Harbor, Willapa Harbor and Coos Bay sections, it formed a part of the output of the forests. Even there, prior to 1914, it was looked upon as an undesirable class of timber and to be avoided in logging operations whenever possible. The lumber had THEN little market value and the loggers disposed of many of the logs to the box factories, where it was utilized mainly for fish boxes.

Previous to 1914 these factories demanded as much clear Sitka spruce stock as they could prevail upon the loggers to supply; and many such logs, now carefully manufactured into shop lumber, were then left in the woods because of the knots above the two—or possibly three—first logs. It must not be inferred from this that the average Sitka spruce tree does not yield more clear lumber than above indicated. The trees THEN cut were usually found where they were more limby than in the heavy stands.

PROBABLE DISTRIBUTION OF SITKA SPRUCE

Probably on a fair estimate the average stand of timber within twenty miles of the

addition to its isolation—the present holdings of the Pacific Spruce Corporation lay dormant for so many years; and while it explains the availability of the holdings in which Sitka spruce figures largely, it gives no inkling of the value of some of the heaviest stands of the best quality of old growth yellow Douglas fir in the country, with a considerable percentage of western hemlock and a small proportion of western red cedar; nor does it convey the surprising information that a portion of these holdings show the heaviest stand per acre, in both AMOUNT and QUALITY, of any variety of merchantable timber in the known world!

On the tract of 12,705.94 acres lying between Alsea Bay and Yachats River in the southern part of Lincoln County, Oregon, the very accurate cruises made for the previous owners and accepted by the government Spruce Production Division, Bureau of Aircraft Production and ultimately transferred to the United States Spruce Production Corporation—from which C. D. Johnson purchased this timber—let it be known that this timber was selected by real timber experts, who eliminated unproductive areas—even 40- and 160-acre lots—so that in averaging the stand of timber on the acreage mentioned

with it, only a very FEW well-informed timbermen connected the possibilities of adding to this tract another, north of the Yaquina River, exceeding in quantity the government-owned tract and its potential additions.

The "Siletz" timber was mainly in the hands of small owners and its natural outlet under existing conditions was to the established mill at Toledo; otherwise involving an almost prohibitive expense to make connections by rail to any OTHER point.

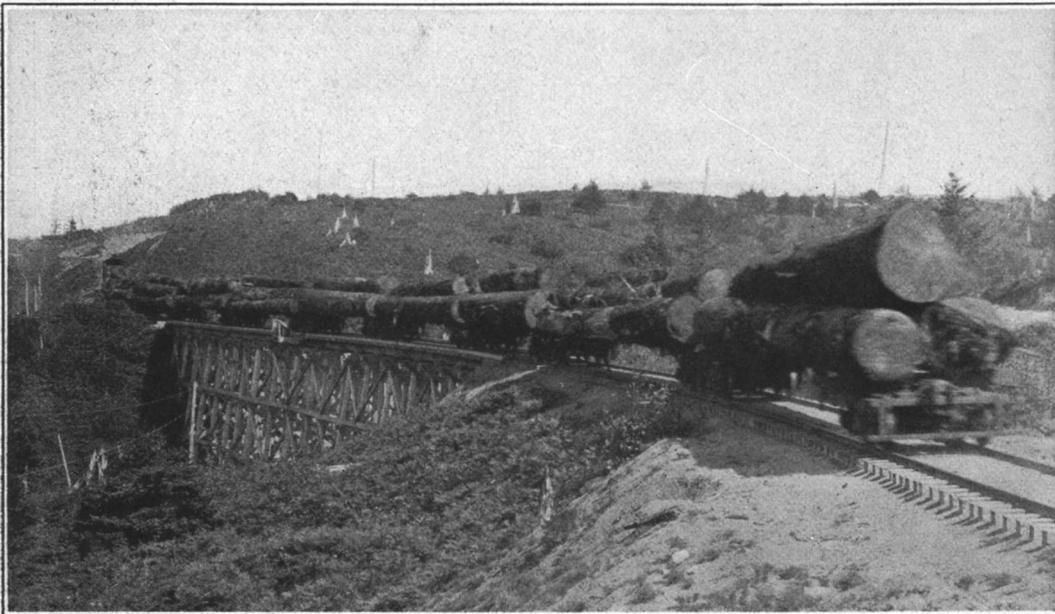
A glance at the "Location Map," elsewhere, shows the timber tracts of the Pacific Spruce Corporation, with the railroad built by the government from the unloading dock and rafting pocket on the south side of Yaquina Bay, at South Beach, following the coast line for some miles to Headquarters Camp 1 of the Manary Logging Co., a subsidiary of the Pacific Spruce Corporation.

This map also shows the Pacific Spruce Northern Railway, at present extended about six miles from the log dump on Depot Slough, Toledo, Oreg., to the operations of the Pacific Spruce Corporation, and its proposed extension to the Siletz River.

This map likewise shows the location of Camp 11 and Camp 12 on the Siletz River, the latter being eighteen miles from its mouth.



A VIEW ACROSS ALSEA BAY LOOKING FROM THE NORTH. A LOG TRAIN OF THE MANARY LOGGING CO. (SUBSIDIARY TO THE PACIFIC SPRUCE CORPORATION), IS APPROACHING OVER THE 7,000-FOOT TRESTLE. ALSEA BAY IS A VERY CONSIDERABLE AREA OF TIDE FLAT IN THE SOUTH CENTER OF LINCOLN COUNTY, OREG.



A LOG TRAIN OF THE MANARY LOGGING CO. (SUBSIDIARY TO THE PACIFIC SPRUCE CORPORATION), PASSING EASILY UP THE ONLY GRADE OF ANY IMPORTANCE BETWEEN HEADQUARTERS CAMP AND YAQUINA BAY. THIS INSTANTANEOUS VIEW WAS MADE JUST AS THE TRAIN PASSED INTO THE RANGE OF THE CAMERA



TEN CARS OF LONG-LENGTH SITKA SPRUCE AND OLD GROWTH YELLOW DOUGLAS FIR LOGS AT THE DUMPING WATERS AT SOUTHBEACH, OREGON, LOOKING OUTWARD FROM THE SHORE WITH LOCOMOTIVE PUSHING THEM INTO PROPER PLACE FOR DUMPING

TIMBER CHARACTERISTICS NEAR HEADQUARTERS CAMP 1

At present, logging operations have been conducted on Spurs No. 1, No. 4 and No. 4B, as specifically described in another department devoted to "Logging Operations and Equipment."

The timber adjacent to Spur No. 1 is a mixed stand of Sitka spruce, old growth yellow Douglas fir, western hemlock and western red cedar, one of the few places where all these species occur.

TOPOGRAPHY OF THE COUNTRY ADJACENT TO CAMP 1

The main line of the railroad follows a comparatively level area close to the ocean. In this section of the Pacific Spruce Corporation holdings practically all of the timber is located on a series of ridges and the valleys between, rising to the mountain ranges farther inland, which never attain a height of 3,000 feet above sea level. None of the Pacific Spruce Corporation holdings in the southern portion of Lincoln County attain 2,000 feet; but even these elevations unquestionably presented great problems, all of which the intelligent engineering of the Manary Logging Co. has successfully overcome at reasonable expense.

Headquarters Camp 1 is located a half mile from the Pacific Ocean, only a few feet above sea level, with the first range of hills a half mile inland. Here the timber is not as large as it is farther inland. As the second range of hills is approached, it changes to a very heavy growth, until the second mile inland presents a stand of Sitka spruce, old growth yellow Douglas fir and western hemlock timber which is thick upon the ground, the trees large and of unusual height, with clear poles 75 to 100 feet to the limbs. It is in prime condition, just approaching the age when it would become overripe, but is yet sound to the extreme tops of the trees.

Sound Trees Most Impressive

On Sections 18 and 19, Township 14 South, Range 11 West, the array of tall, sound trees of good size is most impressive. In the valleys it is generally Sitka spruce, ranging from 30 inches to 5 feet in diameter while toward the top of the ridges old growth yellow Douglas fir from 40 inches to 6 feet in diameter is found, which is also in solid stands. There is a sprinkling of tall young western hemlock, 12 to 24 inches in diameter, in this section, which might almost be overlooked in the general assembly of big timber. The hemlock will average about 1,000 feet to the tree, whereas the Sitka spruce and fir run 8,000 to 20,000 feet per tree.

Timber So Thick It Forms Perfect Canopy

The timber stands so thick that the tops form a perfect canopy and the heavy shade retards the underbrush to a minimum height. The trees stand in solid masses and in clusters and occasionally a single massive trunk seems to monopolize the area around it. While many of the trees rise with the minimum of taper, the occasional spreading roots of the big Sitka spruce trees seem almost to interlock and among them there is not a dead or diseased tree.

Were it not for the Sitka spruce and hemlock saplings, and their foliage, the view would show only massive tree trunks; and this is typical of a large part of the holdings—not an isolated exception. How could it be otherwise where the stand cruised 150,000 to 200,000 feet to the acre?

Remarkably Small Number of Windfalls

Another remarkable feature is the very small number of windfalls in this section. These trees are located where it would seem that their exposure to heavy storms from the Pacific Ocean would occasionally take toll from them, and the only explanation why it does not would seem to be that the tenacious red clay soil gives to the roots a firm hold. The fertility of the soil also accounts partly for the sound and rapid growth. Felled trees show in the annual rings a most remarkably uniform growth, the rings of the first twenty-five years varying from one inch to three-eighths of an inch a year, reducing to one-quarter of an inch in the next ten or fifteen

years; then for forty to 150 years is found an almost uniform growth of one-quarter of an inch a year, decreasing gradually to the usual narrow width.

Most of the country is too hilly and the valleys are too narrow to attract ranchers, but the rich soil will undoubtedly produce another crop of timber in a minimum time.

Official Thought on Reforestation

It is proper to state at this juncture that the careful findings of N. Leroy Cary, forest examiner for the government, in his Bulletin No. 1060, issued in May, 1922, says substantially that pulpwood may be expected to reproduce on the cutover land in this area in forty years and an excellent grade of merchantable timber in eighty years. So that it is not a violent supposition to say that the Pacific Spruce Corporation—with its present holding of about 2,000,000,000 feet, and other timber which it will undoubtedly purchase in the years to come—may—with ordinary care in logging—become a well-nigh perpetual operation.

TIMBER HOLDINGS ADJACENT TO CAMP 12

Camp 12 of the Manary Logging Co. during its first activity was located along the county road leading to Siletz, six miles north of the mill at Toledo, tapping the southern limit of the Siletz timber holdings.

The timber here is mainly old growth yellow Douglas fir and Sitka spruce of moderate size, with a small proportion of hemlock; but its stand upon the ground is of a phenomenally dense character. It will run about 150,000 feet to the acre; the trees run two to four feet in diameter; they are unusually thick on the ground and tall and sound.

One of the most remarkable views of cut timber—which, by the way, is used in this article—was photographed in the late summer of 1923. From a vantage point near the bottom of a valley, an area of about thirty acres is seen, in which the fallen logs almost cover the ground and in many places they are piled three, four and five deep. Literally there was not room enough for them otherwise. (See pages 36 and 37.)

The extremely sound character of this timber enabled the loggers to fell the entire tract at one time, a method which would not have been practicable had the timber been less sound, and subject to breakage. Successive fellings would then have been necessary, owing to the density of the stand.

Along the old mail trail from Siletz to Kernville is found, first, medium sized old growth yellow Douglas fir and a small proportion of western hemlock, exceeding 150,000 feet to the acre; then is seen a marvelous stand of old growth yellow Douglas fir exceeding—on some acres—250,000 feet; on one 40 acres, 5,600,000 feet; and on one quarter section 20,000,000 feet; and in a mixed stand of fir, Sitka spruce and hemlock 69,000,000 feet on one section.

The old growth yellow Douglas fir averages six feet in diameter, and is above 150 feet in height, with 90 feet surface clear and running heavy to No. 1 logs. It is practically free from underbrush. There are no dead trees, few showing indications that they are approaching the full-ripe stage, and there is a minimum of windfalls. It is a sight never to be forgotten by any woodsman familiar with this type of timber.

Adjacent to this wonderful stand of old growth yellow Douglas fir, as the ridges drop to the bottoms along Jaybird Creek, is found Sitka spruce, which has attained the largest size common to that species and which maintains, despite its size, the greatest freedom from rot or other defects. The stand is not dense, but the trees run 10,000 feet to 30,000 feet each and of course are surrounded at the base with a dense mass of underbrush as is invariably found with Sitka spruce timber.

This unusually heavy stand is not an exception in the Siletz country. Many other portions approach it and practically all of the well-located areas are of the same general character. More or less logging has been done in past years along the river, where the logs could be floated down the river and raft-



DETAILED VIEW OF THE BUTT OF AN OLD GROWTH YELLOW DOUGLAS FIR LOG 4 FEET IN DIAMETER. THE RINGS SHOW THE RAPID GROWTH OF THE TREE TYPICAL OF THIS SECTION WHICH, IT IS EASY TO ASCERTAIN, WAS 150 YEARS OLD AS SHOWN BY THE ANNUAL RINGS



A "BUCKER" SAWING AN OLD GROWTH YELLOW DOUGLAS FIR LOG THREE FEET IN DIAMETER AT THE TOP OF AN 80-FOOT CUT, USING AN "UNDER-CUTTER," A SAW-GUIDE ARRANGEMENT "DOGGED" INTO LOG NEAR TOP AND CARRYING BELOW AN ADJUSTABLE CLAMP

ed to the Columbia. Much of this was logged for ranches and with the brush lands cleared, These flourishing ranches demonstrate the fertility of the soil and the climatic adaptability for hay, oats, wheat and even corn.

The cleared lands are mainly adjacent to the river and its tributaries and do not infringe on the practically continuous stand of timber from the north half of Township 10 to the mouth of the Siletz River—and even beyond that. Thus there will be a continuous supply of fine timber adjacent to any proposed railroad, even extending to the mouth of the Siletz, which could be reached by laying less than twenty-five miles of rail from Toledo.

Right here is a chance to discuss the variation in old growth yellow Douglas fir timber. Until a Douglas fir tree has shed its lower limbs and begun to cover them with what will make clear lumber, it is generally known as red fir; and, where the growth is rapid and continuous, that designation means "young fir"; but in different locations at this

All of the above statements about Douglas fir are prefatory to the most important statement of all, which is that fir of the Pacific Spruce Corporation is away and above 150 years of age and practically all of it can be characterized as old growth yellow Douglas fir, from 250 to 300 years old.

THE TIMBER ALONG THE SILETZ RIVER

The timber holdings of the Pacific Spruce Corporation in the Siletz region are located in Township 8, 9 and 10, Ranges 9, 10 and 11; and following the windings of the Siletz River to Township 9, Range 10, west of the river, a body of timber is found which, in many places, exceeds, in the quantity of merchantable timber on the ground, any region in the

feet to the first limb, 129 feet in its total log length and scaled 33,000 feet. Another 4-foot Sitka spruce showed 124 feet to the first limb; and one of the largest measured 11 feet in diameter, with an estimate in the standing tree of 35,000 feet. Long-bodied Sitka spruce trees 4 to 8 feet in diameter characterize the stand on the first levels near the river, with a gradual diversion to fine fir up the slopes. The hemlock, as in all the holdings, is tall and clear, but slender.

With this great resource of magnificent timber, located in a climate which favors continuous operation, its right-up-to-date logging equipment and the highly efficient sawmill at Toledo, the Pacific Spruce Corporation will undoubtedly continue to surprise the consumers of lumber as much with the high quality of its output as it has in the assembly and



A REMARKABLE PANORAMIC VIEW OF TIMBER ON THE N. W. $\frac{1}{4}$ S. W. $\frac{1}{4}$ SEC. 17, T. 10 S., R. 11 W., IN THE LOGGING OPERATIONS COVERING THE GROUND THREE OR FOUR LOGS DEEP, ALL SO SOUND AS NOT TO HAVE BEEN IN ANY WAY BROKEN AND AVERAGING AN AREA OF ABOUT THIRTY ACRES OF TIMBER

point in its growth the change in the character of the wood varies greatly and the wood formed directly after the knots are shed may have all the characteristics of yellow fir.

In some sections of the Pacific coast fir belt—apparently due to soil variations, but possibly where the fogs carry less moisture and the rains are lighter—there is little change from the "red fir" character; but in its continuously rapid growth, close to the Pacific Ocean in Oregon, where the Pacific Spruce Corporation operates, the second characteristic of the Douglas fir timber forms "bastard fir," approximately, until the tree passes the age of 150 years, after which it becomes "Old Growth Yellow Douglas Fir," which is far and away the highest type of Douglas fir.

known world where merchantable timber is available, being probably exceeded in the stand only by the wonderful Sequoias in the national parks in the Sierra Nevada Mountains of California, which will never be cut for lumber.

THE TIMBER HOLDINGS ADJACENT TO CAMP 11

The preceding descriptions of the Siletz timber will apply in general to that in the vicinity of Camp 11, with its heavy stand of gigantic spruce close to the stream and the fir and hemlock further back. Without going into detail as to the standing timber in general, the felled logs illustrate its character. One magnificent tree measured nine feet across the butt, was absolutely sound, 85

present development of one of the greatest enterprises of its class in the country; writing into history not only the names of C. D. Johnson and his sons, but the names of other men now and later to be added to its list of capable employees.

REVIEW OF THE LOGGING OPERATIONS OF THE MANARY LOGGING COMPANY

The problems confronting a logger anywhere are difficult, but nowhere in the world are they more difficult than in the big timber of the Pacific coast, where large trees and a rough terrain combine in presenting problems which tax the ingenuity and techni-

cal skill of the logging engineer.

When the Pacific Spruce Corporation contracted with the government for a large part of its properties in Lincoln County, Oregon, some of the initial work leading toward logging already had been done. A railroad had been constructed by the government from Toledo to the timber south of Yaquina Bay, a distance of 23½ miles, and the airplane spruce operations abandoned at the signing of the armistice and this railroad were included in the sale.

THE MANARY LOGGING CO. HAS ITS REAL BEGINNING

For the purpose of conducting the logging operations a subsidiary company of the Pacific Spruce Corporation, the Manary Logging

en out at this point, and these were the first logs delivered to the mill at Toledo.

During the progress of this work, Camp 1, at the southern terminus of the road, had been opened, buildings were erected and the equipment was installed.

LOGGING OPERATIONS BEGIN AT HEADQUARTERS CAMP 1

In September, 1922, Camp 1 was ready to operate. At that time Spur 1 had been extended into the timber about a mile north of Camp 1, where "Side 1" was opened at the end of the spur. This side consisted of a 12x14 compound geared two-speed Willamette swing, operating 1,300 feet; a 12x14 Willamette Humboldt yarder and an 11x13

In January, 1923, "Side 1" had completed its work at the first set on Spur 1 and was moved 2,000 feet farther into the timber on the extension of this spur, where it operated until June, 1923, when it had taken out 5,000,000 feet. By this time the spur had been further extended, 600 feet of trestle had been built and 1,200 feet of railroad constructed, with a maximum grade of 6½ percent and a maximum curvature of 16 degrees. With the completion of this extension of Spur 1, "Side 1" was moved from its second set, to its third set, in June, 1923.

Standard Equipment for Swings

By this time a standard equipment had been adopted by the Manary Logging Co., in places where a swing was to be used and



THE MANARY LOGGING CO. (SUBSIDIARY TO THE PACIFIC SPRUCE CORPORATION), SHOWING THE TIMBER AFTER BEING FELLED 2,000 FEET TO THE ACRE OF SITKA SPRUCE, OLD GROWTH YELLOW DOUGLAS FIR AND OTHER TIMBER. THE PICTURE SHOWS AN ACRES OF TIMBER, THE TIMBER BEING MOSTLY FIR

Co. was formed, with James Manary, a skilled Pacific coast logger, as president and his two sons, Gordon and Roland Manary—experienced loggers—as his right-hand men, occupying official positions in the company.

The first actual work begun by the Manary Logging Co. was in March, 1922, when Roland Manary arrived at Toledo with a crew of men who were put to work on the railroad right-of-way south of the bay in order to clean it up. Several weeks were spent in this work and in ballasting the roadbed. Then Camp 2, at the 12-Mile Post, was opened with one side. The equipment consisted of a 12x14 Willamette Humboldt yarder and an 11x13 Willamette loading donkey, made by the Willamette Iron & Steel Works, of Portland, Ore. Several million feet of logs were tak-

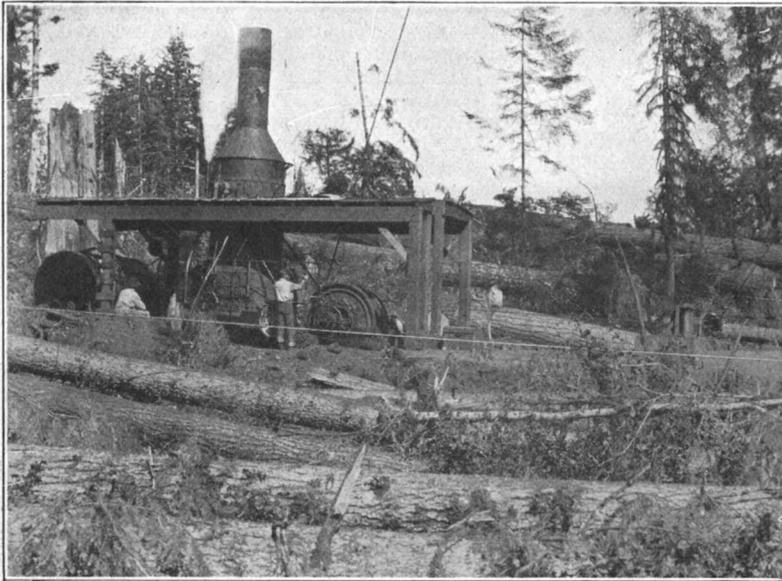
Willamette loader, using the crotch-line loading system. From this set 12,000,000 feet of Sitka spruce and western hemlock was logged, a record for a one-side operation which speaks volumes for the quality and density of the timber in which it operated.

In October, 1922, Gordon Manary, superintendent of Camp 1, opened "Side 2" on Spur 1, similar in operation and equipment to "Side 1," with a 12x14 compound-g geared two-speed Willamette swing, operating at 900 feet, in conjunction with a 12x14 Willamette Humboldt yarder and an 11x13 Willamette loader with a crotch-line loading system. By February, 1923, "Side 2" had logged 4,000,000 feet of timber on what was known as the "Johnson tract," when its equipment was moved to Spur 4.

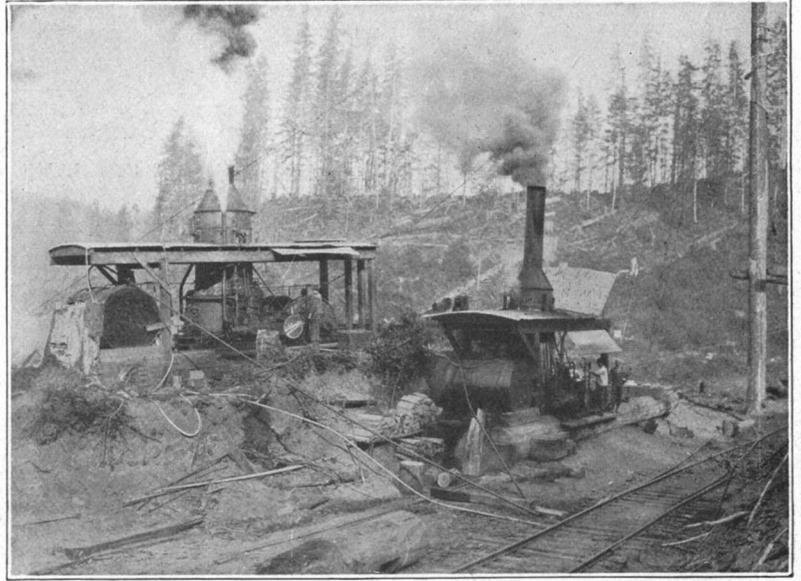
which was first installed when "Side 2" was moved from Spur 1, to Spur 4, in February, 1923, and began operating in March. This standard equipment for swing logging is illustrated elsewhere in this issue. It was made possible by the uniform quality of the timber and the condition of the ground.

A head spar tree is first chosen, as close to the track as possible and the head rigger equips it with the necessary guy lines and blocks for a 12x14 compound-g geared two-speed Willamette for the high-lead system. This spar tree is also rigged for a double-boom loader operated by an 11x13 three-drum Willamette loading donkey assisted by a "monkey chunk."

Two to four tail trees are then selected, ranging from 900 to 1,200 feet distant from



THE ABOVE PICTURE REPRESENTS A WILLAMETTE 12x14 HIGH-SPEED YARDER WORKING AMONG FALLEN LOGS NEAR CAMP 12 OF MANARY LOGGING CO.



A WILLAMETTE 13x14 HIGH-SPEED SKY-LINE YARDER WORKING WITH A 10x11 LOADER FOR THE MANARY LOGGING CO. NEAR CAMP 12

the head spar tree and located at such points as will adapt them to the operation of the swing in that particular location. One of these tail trees is then rigged with the tail blocks of the high lead and a Willamette Humboldt yarder taken to it. With the aid of a straw line, which is taken out from the two-speed engine to the tail tree—a 7/16 inch MacWhyte wire rope—the 13/16-inch haul-back is carried to the tail tree and the 1 3/8-inch haul line follows. The two-inch MacWhyte sky line is then carried out, with the aid of these lines and the two-speed engine with which they have been connected and is stretched with the proper deflection in position from the top of the head spar tree to the tail spar tree. The lines of the Humboldt yarder at the tail tree are put out. Logs brought to the tail tree are taken by the swing and carried to the landing at the railroad. When the timber tributary to this first tail tree has been logged, the Humboldt yarder is moved to a second tail tree and the swing lines changed from the head spar tree to this second set and another section of the area logged. This change is repeated for each tail spar tree until the entire area surrounding the head spar tree for a distance of about 2,000 feet is logged. The yarder operates at distances up to 1,000 feet.

"Double Boom" Loading System

The topography of the country, the character of the timber and certain improvements to the double-boom loading system, make this system particularly adapted for use in the swing equipment above described. It

consists of an 11x13 three-drum Willamette loader, a double-spar boom rigged to the head spar tree and a "monkey chunk."

Logs which the swing has brought from the tail tree are dropped on the ground as near the spar tree as possible. The double loading boom is swung over these logs by the loading engine; the tongs are lowered, and made fast to the log, which is then lifted up close under the swing boom. The drum is then released and the "monkey chunk" (a heavy log counterweight), by gravitation, swings the boom, with the suspended log, back over the trucks, where it is lowered to position.

The third drum on the engine is used for spotting cars under the loading boom.

The double-boom loading system, in each one of the sides of the Manary Logging Co., now in operation, is working perfectly and giving excellent service.

Interesting Logging Operations

"Side 1," on Spur 1, at its third setting, operated the remainder of 1923, during which time 8,000,000 feet of timber were logged from this location. Here it had logged two yarder settings and was operating on its third at the time of the holiday shutdown, December 22, 1923. "Side 1" will continue in operation on Spur 1, and will be the only side operated on that spur until all of the tributary timber has been removed. It is logging about 80,000 feet each day. When the operation is extended farther into the timber, a small camp will be established. This camp will be on wheels, of the usual bunk car type,

each car accommodating eight men, with a dining room and cook house.

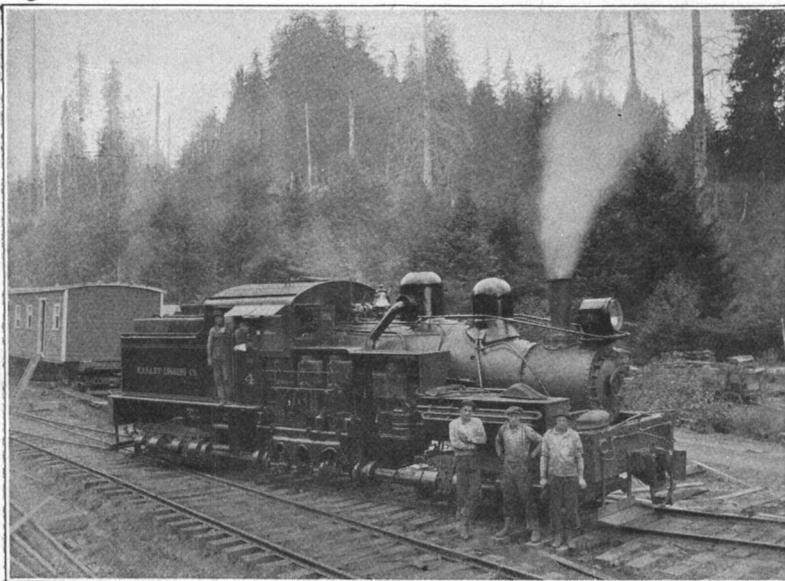
Operations from Spur 4 out of headquarters camp began in March, 1923, following removal of "Side 2", from Spur 1 to this new location. When "Side 2" was removed from Spur 1 to Spur 4, the standard equipment, previously described, was used for the first time, and, having been found to be successful, it was adopted for all swing logging operations. Spur 4 extends in a general easterly direction from headquarters camp, about four miles and has a branch called Spur 4-B. The terrain necessitated the building of five bridges within the first mile, with a total length of 1,200 feet, and of an average height of 40 feet.

"Side 3," consisting of the standard equipment of a 13x14 Willamette high-speed swing, a 12x14 Willamette Humboldt yarder and an 11x13 three-drum Willamette loader equipped with double boom, was placed in commission on Spur 4 in March, 1923. By July 4, 1923, "Side 1" had logged two settings and "Side 3" two settings and additional logging road had been built, the first mile of which had three bridges, with a maximum height of 65 feet. In these two settings, "Side 2" had logged 7,000,000 feet, and "Side 3" had logged 6,000,000 feet.

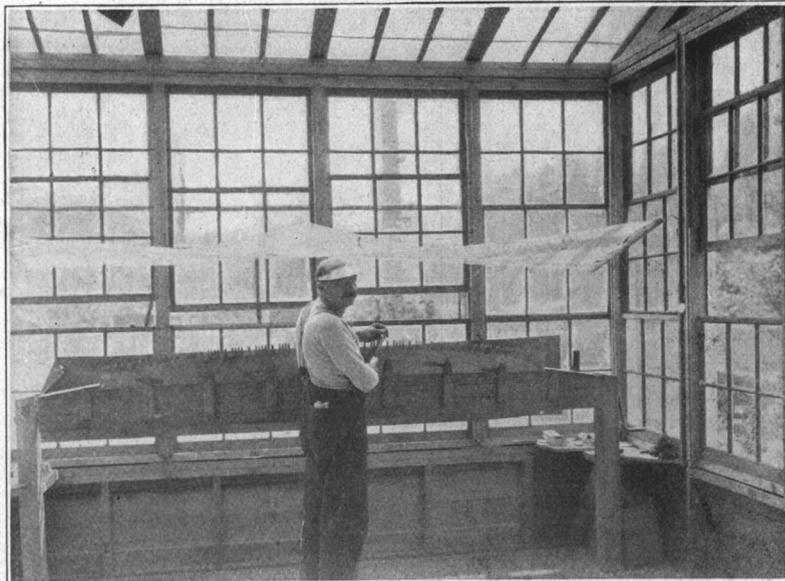
During July, 1923, in which month comes the annual summer vacation of the logger, the railroad was farther extended on Spur 4, with considerable heavy construction, cuts being made in rock formation, and with a number of bridges. In August, 1923, "Side 2" and "Side 3" again began operating on



AN INTERESTING PANORAMIC VIEW OF A LOG TRAIN STANDING NEAR THE LOG DUMP OF THE TOLEDO (OREGON) PLANT OF THE



THE 55-TON SHAY LOCOMOTIVE NO. 4 OF THE MANARY LOGGING CO. AND THE TRAIN AND LOCOMOTIVE CREW AT CAMP 12 IN THE SILETZ COUNTRY



INTERIOR OF THAT PACIFIC SPRUCE CORPORATION INNOVATION, A "FILING CAR"—AS IT STANDS AT CAMP 12 OF THE MANARY LOGGING CO.

Spur 4 on their third set, which was completed by the end of the year and during which time "Side 2" took out 8,000,000 feet and "Side 3" took out 5,000,000 feet.

During this period Spur 4-B had been built a distance of 2,300 feet into the timber, necessitating the construction of two bridges 400 feet long. "Side 2" was removed to Spur 4-B, and "Side 3" to the end of Spur 4; and on November 18, 1923, the loggers began operating on their new locations. From these new sets, "Side 2" will log 8,000,000 to 10,000,000 feet and "Side 3" will take out 12,000,000 feet, which will carry them well into 1924. The above record of the operations of the Manary Logging Co. at Camp 1 covers the period from March, 1922, when the road was first cleared of its debris, until the close of 1923.

TRANSPORTING OF LOGS ON SPURS AND THE MAIN LINE

The logs which have been delivered at the spar tree from the swing are principally in lengths of 48 to 64 feet and are loaded on disconnected trucks. The Manary Logging Co. at Camp 1 uses 72 sets of Northwestern disconnected trucks, made by the Northwestern Equipment Co., of Seattle and 20 sets of Pacific Car & Foundry trucks, made by the Pacific Car & Foundry Co., of Portland and Seattle.

On Spur 1, a 65-ton Baldwin locomotive takes out five loaded sets in each trip, carrying 10,000 to 12,000 feet to the set, to the main line railroad, where they are left on a siding until the full main-line trainload has

been assembled. This 65-ton Baldwin locomotive, which is of the saddletank type, experiences no difficulty in handling these five loads on the 6½-percent grade, which is the maximum grade of the spur; neither does it experience any difficulty in bringing back five sets of empty trucks, for the approach to the 6½-percent grade is level and affords a run of a short distance to make the grade.

On Spurs 4 and 4-B a Shay 50-ton locomotive, manufactured by the Lima (Ohio) Locomotive Works, brings the loaded trucks in trains of five from the swing where they were loaded, to headquarters camp, where they are assembled in trains for the main road.

An 85-ton Baldwin locomotive is used on the 23½ miles of main line logging road from Camp 1 to the log dump at Southbeach. This train makes two trips a day, taking out fifteen to eighteen loads at a trip.

RAILROAD CONSTRUCTION AND MAINTENANCE

The main line and all spurs of the logging road of the Manary Logging Co. are of 60-pound steel, laid on 16 ties to the rail and are sand ballasted practically throughout. The bridges are of timber and are uniform in construction. There are eight sidings along the main right-of-way, at each one of which a telephone connects with the headquarters camp, and the other sidings and with the main office of the Pacific Spruce Corporation at Toledo. The total trackage of the railroad line is 23½ miles, with 3½ miles of spurs. The main line has a maximum grade of 3½

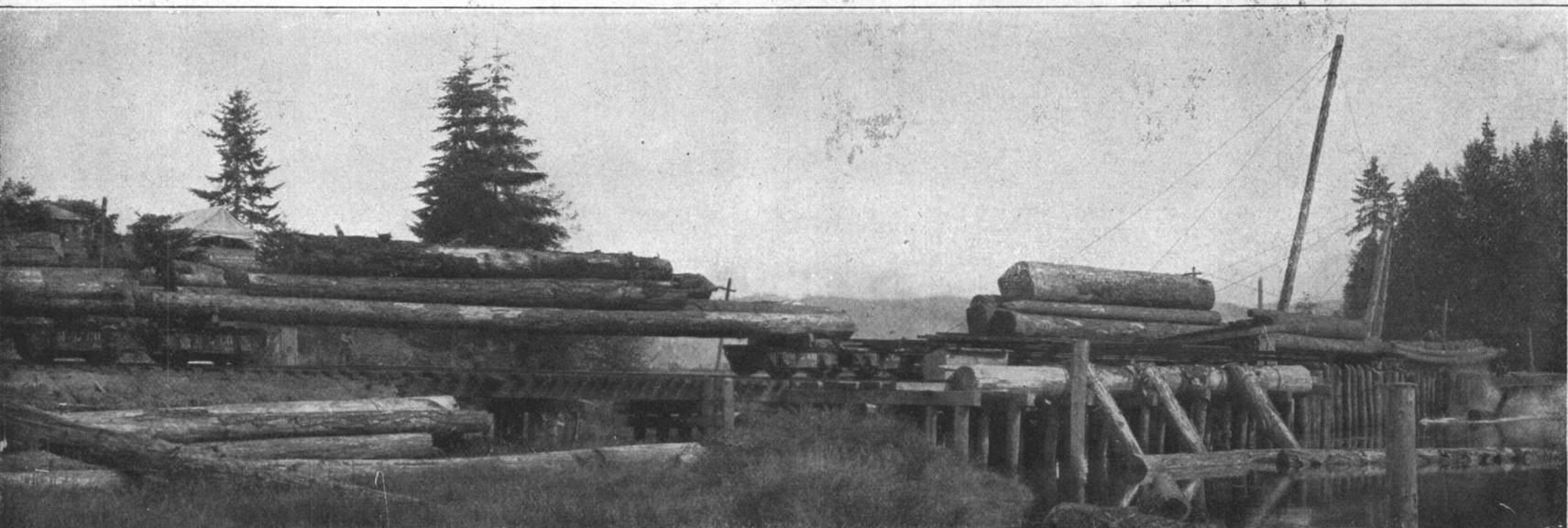
percent with 16 degrees maximum curvature. The maximum grade on the spurs is 6½ percent. The main line has a total of three miles of trestle.

The Manary Logging Co. is continually constructing additional spur lines. The steel gang, ten men, in charge of a foreman, is employed in laying the track. A 10x11 Willamette donkey and an Erie ¾-yard steam shovel are used for grading and chunking out ahead.

The bridge crew consists of eight men, with a foreman, and has a pile driver which was made by the company for its special use. These crews are busily employed extending the spurs into the timber, it being the policy of the company to have all track-laying, bridge building, grading and ballasting done well ahead of the logging operations, so there may be no delay when it is necessary to move from one location to another.

IMPORTANT BUT MISCELLANEOUS CAMP 1 AFFAIRS

The total number of men employed at Camp 1 is between 140 and 150, depending upon the size of the maintenance crews. Each locomotive has an engineer, a fireman and two brakemen, making a total of twelve railroad men for the three locomotives. The following is a list of men employed at each side: One windfall bucker, twelve fallers and buckers, one head bucker, four choker setters, one hook tender, three chasers, three engineers, one fireman, one whistle-punk, two loaders, one foreman, and one powder



PACIFIC SPRUCE CORPORATION IN AUGUST, 1923, THE TRAIN CONTAINING SIX CARS OF LOGS UP TO 90 FEET IN LENGTH

monkey. This total of 31 men may be increased from time to time, depending upon the requirements.

One foreman has charge of the three sides operating at Camp 1.

Besides the head buckler, who marks the trees, and the windfall buckler, there are four sets of fallers and buckers to each side. These men cut by the thousand feet, with deductions for breakage. This method of falling and bucking has been found satisfactory to all interested. Two scalers are employed

A small but comfortable camp is maintained at the log dump, for the four men who are employed there. In addition, the crew of the main-line Baldwin takes some of its meals there and stays there nights.

An Industrial crane, made at Bay City, Mich., is used to pick up the logs which occasionally fall off the loads on the main line.

Camp 1 has a 100-ton moving car with which to move donkeys from one spur to another, or over the main line.

Accommodation and Mail Cars

For carrying the mail and for the accom-

the oil tanks of the steamer "Robert Johnson."

A Complete Machine Shop

A modern, fully equipped machine shop is maintained at Camp 1. The building is 90 x 146 feet and of frame construction. Power for the machinery is furnished by a 50-H. P. Fairbanks-Morse semi-Diesel crude oil engine. This same engine, belted to a 15-K. W. General Electric generator, furnishes lights for the entire camp, which is illuminated by 200 electric globes, ranging from 40 to 220 candle power. The machinery con-



THE ABOVE VIEW OF TIMBER IS FIT TO GLADDEN THE EYE OF ANY LUMBERMAN OR ANY TIMBERMAN WHEREVER SITUATED. IT IS KNOWN AS THE "OLD MAIL TRAIL" RUNNING BETWEEN SILETZ AND KERNVILLE, OREGON; AND THE LOCATION OF THIS TIMBER RUNS ABOUT 7,000 FEET TO THE TREE, 150 FEET HIGH, 90 FEET SURFACE CLEAR

to scale the logs as they are brought out to the main line from Spur 1 and Spur 4.

The record for Camp 1 was made October 20, 1923, when 480,000 feet of merchantable timber was delivered to the main line.

The South Beach Log Dump

The northern end of the main line road terminates at the Southbeach log dump. Four men are employed at the log dump and a 9x10 Willamette donkey furnishes the power for the single-line unloading device. In the water the logs are assembled into rafts of 300,000 feet each, and towed to the mill.

modation of the people who desire to go to Camp 1, or for others who wish to travel between the different points, two Fords have been converted into railroad cars, each of which pulls a trailer in which is carried mail, quick delivery packages and express.

Use Oil for Fuel

With the exception of the chunk-out donkey, all the logging donkeys used by the Manary Logging Co. at Camp 1, and the locomotives, are oil burners. The oil which is used for fuel is brought from California in

sists of a 10 x 12 Ingersoll-Rand air compressor belted to the line shaft of the semi-Diesel engine. This air is delivered to the two forges and to the 800-pound hammer.

In addition to these machines, there is a 48-inch wheel lathe, a 24-inch lathe, a shaper, a large car wheel press, a drill press, a steel saw and a power grindstone. A 6-ton crane operates the full length and width of the machine shop.

Adjacent to the machine shop is a tool room, 20 x 24 feet, and a wire rope room, 32 x 40 feet. The Manary Logging Co. uses