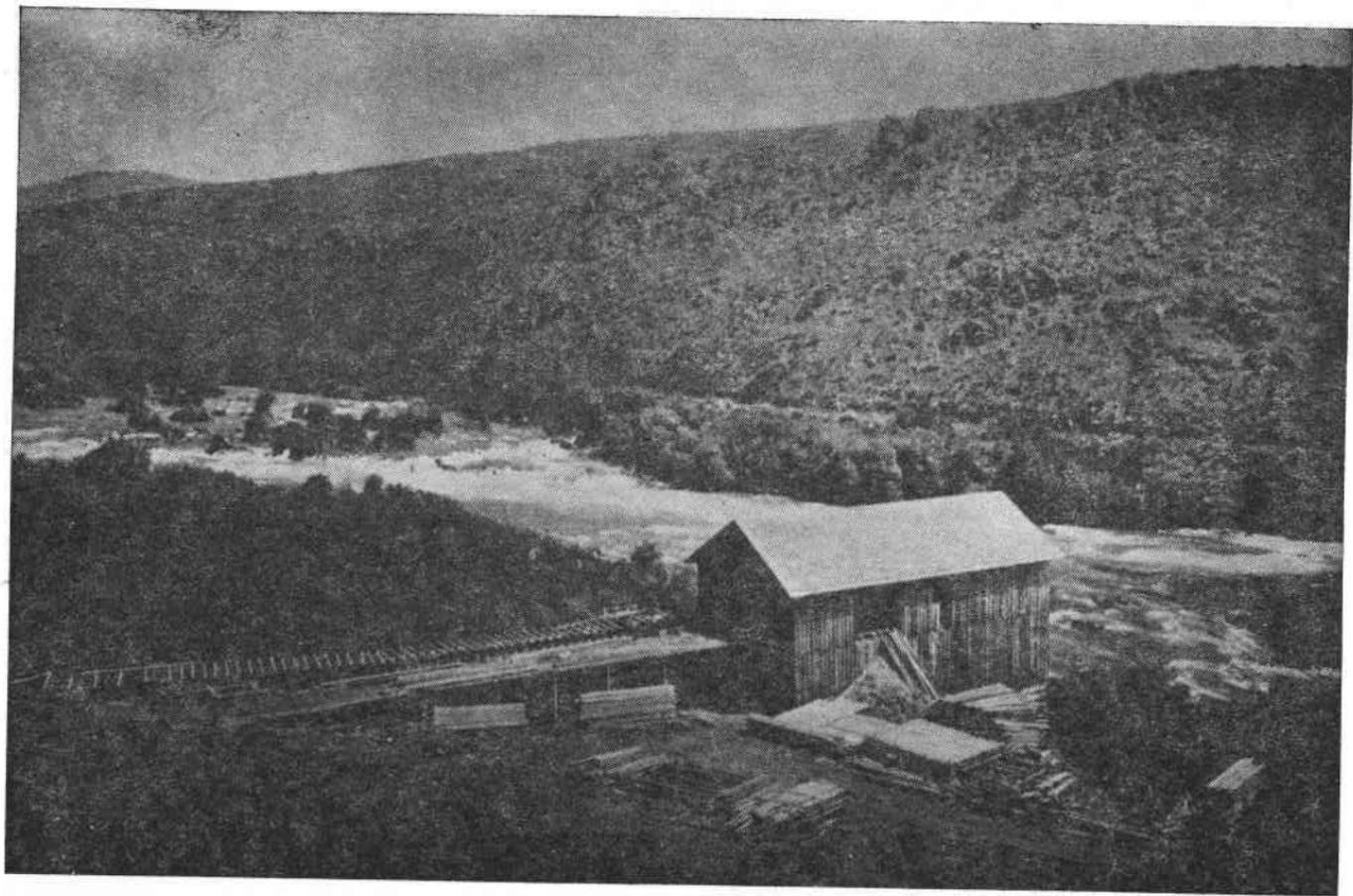


LUMBERING IN KLAMATH

By W. E. LAMM



The Moore Mill, 1877 to 1907

PREFACE

Since no complete history of the early lumbering in Klamath County has previously been written, and since further delay would jeopardize the possibility of obtaining the information, material has been gathered from living pioneers identified with the industry, and this treatise has been written, primarily to preserve that history.

Secondarily, this treatise is intended to give the layman a brief over-all picture of the lumber industry of the county, from the pioneer days to that indeterminate date in the future when the first timber cutting cycle will have been completed and further harvesting restricted to a sustained yield basis.

Appreciation is extended to those organizations which encouraged the writer in this work and to all of those friends who have been so generously helpful in gathering the information for this treatise.

CHAPTER I.

GOVERNMENT SAWMILLS

The United States Army brought the first sawmill into the county from Jacksonville in 1863, that being the year "Old Fort Klamath" was established. It was a steam driven circular mill erected on the east side of Fort Creek opposite the site of the fort and probably had a capacity of two or three thousand feet per day. It is reported that the machinery was privately owned and that it was operated, either under lease or contract, until 1870. The mill was built to furnish lumber to the Indians and for various buildings in connection with the fort, which itself was constructed of logs.

In 1870 the army brought in from Vancouver a fire box boiler and upright engine which had been taken out of one of their boats on the Columbia river and, with this equipment for power, built a new circular mill on the west side of Fort Creek at a point approximately east of the present Fort Klamath Junction. The mill did not operate very much at that location, probably because the one built at Klamath Agency the same year was more efficient and supplied the requirements of the Indians. The mill was moved to Yainax in 1893, where it operated until 1899, when it burned.

The treaty establishing the Klamath Indian Reservation was concluded October 14, 1864. One of the considerations of the treaty was that the Government would provide a sawmill for the use of the Indians and for a period of twenty years would keep it in repair and furnish all tools and supplies as well as a sawyer. The Reservation being under the supervision of the army in those

early years and the fort area being included within the Reservation, it seems certain that the first mill at the fort was used to comply with the treaty terms, especially since records at Klamath Agency show that Peter W. Caris of Applegate, Oregon, (born in France) was hired as a sawyer by the Indian Service on October 1st 1868. An official at the Agency has stated that other sawyers may have been hired before that time.

In 1870 the Government built a circular mill powered with a water turbine at Klamath Agency about a quarter of a mile down stream from the big spring adjacent to the present Highway. The capacity was probably three thousand feet per day. In October of that year Captain O. C. Knapp, Sub-Agent, reported the completion of this sawmill, stating, "***today cut from a log 18 feet long and ten inches in diameter, 10 planks in four minutes."

The following year Mr. J. N. High, the new Sub-Agent, in one of his reports stated:

"The completion of the saw-mill has worked a great reformation and inspired them (the Indians) to extraordinary exertion to amass various kinds of property. Savages in skins, paints, and feathers, as they were two short years since they have donned the white man's costume, taken the ax and cross-cut saw and hauled to the mill a half-million feet of lumber and today are lumber merchants with stock in trade constantly on hand evincing shrewdness and business integrity that make an agent's heart strong to work with and for them."

Indian Agent O. C. Applegate, in his annual report for 1900, stated:

"The only sawmill now in operation on this Reservation; the antiquated water mill located at this Agency and constructed 30 years ago, cannot begin to supply the lumber required for use by the Indians—age and long use has impaired

its' capabilities and 30 years of almost continuous operation have exhausted the available timber for many miles."

The mill burned late in 1912 and was replaced with a steam driven circular mill located on Crooked Creek near the Agency in 1914. This second Agency mill burned in 1918. Two other steam driven circular mills were provided by the Government for the use of the Indians. One was built in 1905, some miles from Beatty on the old Klamath Falls road, then moved in 1910 to the "Paiute Camp" and again in 1924 to Five Mile Creek, where it operated until 1929. Another was constructed in 1914 at Trout Creek and operated until 1920, when it burned. Even though provided with the mills, sawyers, tools, supplies and repairs, the Indians had little interest in sawing their own timber, especially after 1918, when private concerns started buying Reservation timber heavily, which provided them with substantial funds.

The government built its largest mill near Kirk in 1917, a steam-driven circular rig with a capacity of thirty-five thousand feet daily and intended to give employment to the Indians by logging tribal timber and sawing it into lumber for commercial sale, the conversion margin going into tribal funds. Since few Indians wanted to work and these not capable of handling positions requiring skill and since the operation was not very successful, the project was discontinued in 1919 and the mill leased to Larkey and Brown, who operated it in 1920. In 1922 the mill was leased to Christie Brothers, who operated as the Solomon Butte Lumber Company until 1929, after which date the mill was dismantled.

CHAPTER II.

EARLY PRIVATE SAWMILLS

A number of the earliest privately owned sawmills in the county used what was called a "sash saw" and were commonly known as "sash mills" or "up and down mills." They were very crude in construction with most of the equipment being home made, largely of wood, and all were powered with old-fashioned water wheels. In the Keno district the "overshot" type of water wheel was used, since there was sufficient head of water, while in the Bonanza district with a low head of water the "undershot" type was used.

The overshot wheels were made of wood with the diameter nearly the same as the water head, usually 8 to 12 feet, and with paddles or boxes four or five feet long.

At least one of the undershot wheels used a log about 12" in diameter for a shaft with 2x4 or 2x6 or larger paddles ten feet long fastened on edge lengthwise of the log so that the wheel was about 2 feet in diameter and ten feet in length. The water flowed under the wheel so the name "undershot". In any case an iron crank was fastened to the end of the shaft with a wooden connecting rod transmitting the "up and down" motion to the "sash" or wooden saw frame in which the saw was held vertically. The saw blade of very heavy gauge was from 8 to 12" wide and from six to eight feet long. The sash frame was from about 9 feet to 10 feet wide and the length of the saw high. The carriage was narrower and went through the frame carrying the log on a carriage. The carriage had blocks on which the log was set out for each cut the necessary amount and spike dogs hinged to the blocks to hold the logs steady.

The carriage was pulled by a cable wrapped around a drum mounted on a shaft which was turned by a cast iron ratchet bolted on the side of a wooden wheel about

four feet in diameter. With each revolution of the crank shaft, a dog engaged the ratchet and advanced the carriage just enough for the next cut of the saw, thus constituting an automatic feed. Another device disengaged the dog when the saw line was finished, providing an automatic carriage stop. Water turned upon a small water wheel would gig the carriage back.

It required only one man to operate the entire mill, since, with the automatic carriage feed and stop, he would simply start the carriage, then leave it while he took care of the lumber, slabs, and edgings. When the saw line was finished, he would return, gig back the carriage, and set the log for the next cut by the use of a hand pinch bar used first on one end of the log and then on the other. When the log was squared, the side lumber was piled on top of it so that the next run of the carriage would edge this lumber. Sash mills usually cut from 500 to 1,500 feet per day, based largely upon the water available.

Frank Nichols of Bonanza, who owned and operated one of these sash mills in the early eighties, recently stated:

“It didn’t cost much to make lumber in those days, since I cut free Government timber, then hired a man and team to haul in the logs. I ran the mill by myself, so I didn’t have any payroll to meet, and the only supply bill was for axle grease to grease the sash.”

Another old-timer of Bonanza, when questioned about the Gordon mill, remarked:

“Yes I knew the Gordon mill, it was one of those up and down mills—up today and down tomorrow. Grandpap used to start the saw in the log, then go away, sometimes to catch a fish, and then after a while he would go back to see what effect the saw had had upon the log.”

The better early mills had the usual circular head saws and were run by water turbines. These mills were

much more efficient, since the turbine developed a great deal more power than a water wheel with the same amount and head of water, and since the circular saw was cutting all of the time it was in the log, whereas the sash saw was cutting less than half of the time. Later, when mills were located where water power was not available, steam traction engines were used for power. Still later, stationary steam boilers and engines came into general use.

Most of the very early mills sawed logs from homesteads or just helped themselves to Government timber. Logging was done at the start with oxen skidding into the water, then with oxen and wagons. In the eighties oxen were being replaced with horses.

The lumber was sold almost entirely right at the mill. In the early years \$10.00 per thousand feet was considered the standard price for log run of grades. Some mills close to a good market averaged \$12.00 per thousand feet, whereas others farther away received only \$8.00.

Keno District

The first privately owned sawmill in the county was, no doubt, the sash mill with overshot water wheel located about one-half mile up Spencer Creek from the Klamath River. This operation was very well written up in the July, 1928, issue of THE TIMBERMAN, which is here quoted:

“The manufacture of lumber in the great Klamath Basin, in south central Oregon, had its inception in the late sixties. Available records indicate that the first sawmill to be built in the Basin was erected by Naylor & Hockenouse, on Spencer Creek, 18 miles west of Klamath Falls, in 1869. It was a “muley” rig, the sawing unit being similar to a gang saw, and was propelled by water power. This mill could cut about 1,200 feet of lumber per day. The carriage had no head blocks, the log being set up on the carriage

by means of a pinch bar. The power had to be shut off from the mill while the log was being set up. This mill cut the lumber for the first bridge across Link River at Klamath Falls, then Linkville. H. E. Spencer purchased this mill in the fall of 1870, H. A. Spencer, a son of H. E. Spencer, operating it until 1886."

An unusual example of the pioneer spirit was Daniel Gordon, born in New York in 1810. While still in his teens, Dan moved to New Orleans and from there went to Missouri in 1831. In 1852 he crossed the plains settling in Scott Valley near Yreka, California, where he built and operated the first sawmill in that district. In 1873 he moved to Klamath County and became known as "Grandpap" Gordon after becoming a grandfather by his son, also named Dan.

"Grandpap" built the second private sawmill in the county in 1874 on the south side of the Klamath River, about one mile west of Keno, on probably the best site south of Linkeville. It was a sash mill powered by an overshot water wheel and had a capacity of 1,500 feet per day. In 1875 or 1876 he sold it to his son-in-law, Newton W. Pratt, who in turn sold it to Charles Withrow three or four years later. R. E. Dusenberry, in 1888, bought the mill from Withrow.

Sometime before 1880 Cooper Brothers, Herbert E. and Elbert H., built a circular mill, run by a water turbine, on the north side of the Klamath River near Cooper Stage Station, about three miles west of Keno. This mill could cut three or four thousand feet of lumber per day, but was greatly handicapped by insufficient water because of a long, small canal.

In 1888 Herbert Cooper and R. E. Dusenberry went into partnership and moved the better equipment of the Cooper mill to the better site of Dusenberry's purchase. They borrowed a fairly large amount of money from Dan Van Bremer, on notes secured by a mortgage, to build the mill to a capacity of 10,000 feet per day. As they were

unable to pay the notes when due, Van Bremer foreclosed and took the property. In 1892 Van Bremer then sold to Thomas McCormick, who ran the mill until 1909. The machinery was afterward moved to Sheep Mountain, fifteen miles south of Dorris, California.

In 1895 John Connolly built a sash mill on the Klamath River, at his ranch about a mile down river from the present highway crossing west of Keno. Since the water was insufficient, this mill sawed only 400 or 500 feet per day. He ceased operations in 1897, when he took Henry Snowgoose into partnership. They built a new turbine driven circular mill of 3,000 feet capacity on the same site, which was known as the Snowgoose and Connolly mill. The difference in capacity of these two mills indicates the greater efficiency of a turbine driven circular mill over a sash mill run by a water wheel. Mr. Connolly dropped out of the partnership in 1899 and Mr. Snowgoose operated until 1903. Snowgoose later sold the mill to Alfonzo Kinney, who moved it in 1906 to the Snowgoose ranch, one-half mile south of Keno. He used a traction engine for power, increasing the capacity to 7,000 feet per day. The mill ran only one year, as it burned in 1907.

Bonanza District

"Grandpap" Gordon built the first mill in the Bonanza district in 1876 or 1877. This was a sash mill, run by an undershot water wheel, and was located on the east bank of Lost River one-eighth of a mile south of Bonanza, opposite the lower end of the island at that point. This mill ceased operation about 1883.

In 1880 or before, Orson Lewis built a similar mill for G. B. Van Riper on the west bank of the river, opposite the Gordon mill. The island provided each mill with a separate channel of the river, but that did not prevent trouble over the water question, since the volume was insufficient for both mills. Van Riper hauled logs about four miles with oxen and wagons and cut 700 or 800 feet per day. About 1882 he sold out to a nephew of Lewis,

Frank Nichols, who logged with horses and a wagon. He doubled the capacity of the mill and ran it until 1885.

James P. Colahan built a circular mill on Bly Mountain north of Bonanza about 1885. Run by a steam traction engine, it was the first steam driven mill in the county and had a capacity of 5,000 feet or more per day. This mill was portable and was moved quite often to various sites on Bly Mountain, probably to shorten the log haul. It was moved to the White ranch in 1889 and again to Keno Springs about twelve miles northeast of Bonanza, in 1898.

Al Fitch built a steam driven circular mill near Hildebrand in 1894, the first mill to have a stationary boiler and engine and the fastest mill in southern Oregon, up to that date, capable of cutting 15,000 to 20,000 feet per day. The mill ceased operating in 1903, when Mr. Fitch was killed, crushed by a log. The mill machinery was sold in 1904.

Malin District

In 1888 Jesse D. Carr, owner of the ranch now known as the Dalton ranch about two miles south of Malin, financed the building of a sawmill on Bryant Mountain about ten miles northeast of Malin. It was a circular mill powered with a stationary boiler and engine and was operated by Rogers and McCoy until 1892 or 1893, when they had flooded the very limited market of a few stock ranches in that district. Quite a lot of the product was still piled at the Carr ranch when William Dalton arrived in 1900.

The Moore Mill

William S. Moore, the most prominent pioneer lumberman of the county, came over the plains from Illinois in 1848 at the age of nineteen and settled in the Willamette Valley. About 1868 he moved to Klamath Agency and in 1870 built the sawmill for the Government there. In 1877 Mr. Moore constructed a sawmill on the west

side of Link River, about half way between Linkville and Upper Klamath Lake. A canal was built from the lake to the mill to provide water for the turbine and also to float the logs to the mill. This was the finest site in the county since ample water power and an unlimited supply of timber were available. The mill equipment consisted of a water turbine, circular head saw, friction-driven carriage and a push feed rip saw to edge the lumber. The capacity of the mill was eight to ten thousand feet per day with a crew of ten to twelve men.

In 1887 William Moore sold the mill to his two sons Charles S. and Rufus S. Moore, after which it was known as the Moore Brothers' Mill. Later a planer was installed on the ground floor of the mill building in order to furnish surfaced lumber, flooring, and siding to the customers. This was the first planer installed in conjunction with a sawmill in the county. Lumber was sold right from the pile and loaded on the wagons of the customers, as was the general custom in those days. This mill, the fourth private sawmill built in the county, had by far the steadiest and longest run of any of the early mills. The operation was unusually successful and continued until 1907, covering a period of thirty years.

At first logs were skidded into Shoal Water Bay with ox teams, and the rafts of logs were towed down the lake with a mule tread mill and a sail. Later horses and wagons supplanted the ox teams, the towing being done with a steam boat.

Early Affiliated Industry

The only prominent concern affiliated with the lumber industry in the nineteenth century was the planing mill and cabinet shop built by A. M. Peterman in the late eighties on the lot that is now the northwest corner of Klamath Avenue and Center Street. In 1891 John F. Goeller arrived in Linkville and purchased one-half interest in the plant. The name of the town being changed from

Linkville to Klamath Falls in February, 1893, the firm name was changed to "The Klamath Falls Planing Mills." The plant was enlarged and elaborated until it could turn out all of the finished wood work for a complete building, including sash and doors. While Mr. Goeller continued in the business, he had a succession of partners until 1896, when he obtained complete control. In 1909 he took his son Harry into partnership and the business was continued as J. F. Goeller and Son until 1929, when they sold out. The plant burned a year or two later.

CHAPTER III.

EXPANSION OF LUMBERING

In 1900 or 1901 the Klamath Lake Railroad Company started building a railroad from Thrall on the Southern Pacific Railroad up the Klamath River, primarily to haul out logs but also with the intention of eventually building to Klamath Falls. By 1903 the road was completed to Pokegama, thus being the first railroad to enter the county. It was a common carrier road, handling passengers as well as freight, although its chief function was handling logs and lumber. The Weyerhaeuser Interests acquired the railroad with a large amount of timber in 1905 and planned to extend the road to Klamath Falls. When it was learned in 1906 that the Southern Pacific Company was going to build into Klamath Falls, plans for further construction by the Klamath Lake Railroad Company were abandoned.

Ray Potter built a small sawmill at Pokegama in 1903 and shipped the first lumber out of the county. The mill ceased operations in 1906. In 1910 the Algoma Lumber Company built quite a large mill at Pokegama, which ran three seasons and closed down in 1912. Operation of the railroad was then discontinued.

The promise and subsequent completion of a railroad into Klamath Falls gave great impetus to lumbering in the county. In addition to the better known plants referred to later, there have been dozens of small plants of short term operation constructed since 1900.

In 1901 W. P. Rhoads built a circular mill of about eight thousand feet capacity, high up on the northeast slope of Stukel Mountain. Later the capacity of the mill

was almost doubled by the addition of another boiler and another engine, water had to be hauled from a spring about a mile away. After four years operation, the mill was sold to Turner Brothers, who moved it first to the spring, and after a few seasons work at the new location, again to a site about two miles south of Olene.

In 1904 John and Harry Ackley purchased the Al Fitch sawmill near Hildebrand and moved it to Klamath Falls. It was erected on the Shore of Lake Ewauna, where it started operating in 1905 under the firm name of Ackley Brothers. It was a steam driven circular mill of about 20,000 feet daily capacity. In 1920 a band mill was installed and the entire mill improved to a capacity of 50,000 feet. It continued as a sawmill only, without kilns, planing mill or factory, and usually operated a short season. This mill—the oldest now sawing in the county—is now being leased and operated by the Modoc Pine Company.

About 1905 William Huson and Roscoe Cantrell built a circular mill of about 20,000 feet capacity on Long Lake and operated under the name of the Long Lake Lumber Company. In 1908 the mill was moved to Shippington, being the first sawmill on Upper Klamath Lake. The plant was sold and dismantled in 1915.

In 1907, after closing down their old sawmill on Link River, Moore Brothers built a fast steam driven circular mill on the west shore of Lake Ewauna, a short distance south of the mouth of Link River. It had a capacity of 50,000 feet daily and had a planing mill in conjunction. Logs were at first obtained from a Forest Service unit of timber lying west of Wampler Creek, the first unit of Government timber sold in the county. Horses and stinger-tongue wheels were used in logging to Wampler Creek, where the logs were rafted and then towed down the lake with a steam boat finally driven down Link River to the mill. Driving logs down Link River proved entirely unsatisfactory; therefore logs were later obtained from the Keno district and towed up the river.

In 1901 the plant was sold to Walter Innes and W. I.

Clarke, who operated as the Innes-Clarke Lumber Company for two years, and then sold in 1912 to the Big Basin Lumber Company, at that time a subsidiary concern of the Klamath Development Company. The plant was operated for an additional two seasons and closed in 1914.

The California Fruit Canner's Association in 1908 built the first box factory in the county, adjacent to the mill of the Long Lake Lumber Company at Shippington, and hired Charles McGowan as manager. This company shipped the first box shook from the county by hauling it in wagons to Pokegama, where it was shipped over the Klamath Lake Railroad to the California market. The factory was sold in 1912.

The railroad being completed into Klamath Falls in 1909, H. D. Mortenson came to Klamath in 1910 and organized the Pelican Bay Lumber Company, which contracted for a large unit of Government timber lying west of Pelican Bay in the Crater National Forest. The company, in 1911 built a complete and strictly modern sawmill plant with the first band head saw, the first shotgun carriage feed, and the first complete planing mill in the county, all entirely planned for supplying the United States markets. The plant had a capacity of about 60,000 feet per shift and was the first plant to run two shifts. Dry Kilns were added in 1912. The sawmill burned in 1914 and was promptly rebuilt with a larger mill, consisting of two band head-rigs and a band resaw. In 1918 a fire destroyed this second mill, and it in turn was replaced with one of similar size. This third mill was the first completely electrified mill in the county and until 1926 was the largest mill. In 1921 a large box factory was added.

The timber was opened up with a logging railroad, the logs being yarded with horses and the first slip-tongue wheels in the district. After hauling the logs to the water, they were towed to the mill with a steam boat. After finishing logging the original unit of timber, the logging operations were moved to the Klamath Indian Reservation, where the North Mount Scott unit of timber

was obtained. Private timber was also purchased and logged, and in 1936 the Sycan unit was obtained from the Shaw Bertram Lumber Company. The Pelican Bay Lumber Company has been the largest purchaser of timber under Government contracts, both Forest Service and Indian Service, in the entire West.

In 1912 Robert A. Johnson organized the Klamath Manufacturing Company and purchased the box factory at Shippington, owned by the California Fruit Canner's Association. Three years later the company purchased the machinery of the old Innes-Clarke mill from the Big Basin Lumber Company and built a single band sawmill adjacent to their factory. After the death of Mr. Johnson, the plant was sold to the Earle Fruit Company in 1919, who continued the operation under the name of the Klamath Lumber and Box Company until 1942, with G. A. Krause as manager. Since that date, the operation has continued with Mr. Krause as manager under the name of the DiGorgio Fruit Corporation. Logs for this mill have been obtained almost entirely by purchase for delivery in the pond.

C. B. Cristler and Charles McGowan organized the Ewauna Box Company in 1912 and built a factory on South Sixth Street, Klamath Falls. A few years later McGowan sold his interest, when Claude H. Daggett and Fred Schallock bought into the concern. In 1917 the factory burned and was immediately replaced with the largest and most modern box factory on the coast and the second largest box factory in the United States. In 1920 the company built a single band sawmill on Lake Ewauna adjacent to the factory and later built dry kilns and a planing mill. The sawmill was enlarged in 1926 to a three band mill, which made it of about equal capacity with the Pelican Bay Lumber Company mill, previously the largest in the county. The Ewauna mill broke production records in 1928 with an exceptionally large cut of 95 million feet. Logs were obtained from various Reservation units—Cliff Boundary, Cave Mountain, Long Prairie, Saddle Mountain, and South Calimus. They also

purchased the large Booth tract of timber in Lake County, which they have logged in conjunction with the Reservation timber.

In order to get the mill site, Algoma Lumber Company bought in 1913 the small circular mill which D. B. Campbell had built in 1911, near Rattle Snake Point on Upper Klamath Lake, now known as Algoma Point. The Algoma Lumber Company, owned by the Faye Fruit Company and E. J. Grant, then moved their machinery from Pokegama and built a mill was a band head-rig and a gang saw. The mill town was then named Algoma. R. H. Hovey supervised the construction of the plant, which was completed in the spring of 1914, and continued as manager for the first year when a planing mill and box factory were added; later dry kilns were constructed. Mr. Grant took over the management in 1915 with the main office in Los Angeles and with a resident manager located at Algoma. After a number of years, Mr. Grant took over the direct management and moved the main office to Algoma.

For a number of years logs were obtained from the valley southeast of the mill site and were hauled in by rail. Later their railroad was built into their timber in the Swan Lake district, using an incline railroad over the hill about two miles northeast of Algoma. The empty cars were pulled up the incline, and the loaded log cars were let down with a hoisting engine located at the top. From 1918 to 1930 logs were obtained from the Middle Mount Scott unit on the Reservation, and after 1930 largely from the Antelope Valley unit, again using the incline until 1936, when logging operations were moved to the Yawkey tract north of Fort Klamath. The balance of the Antelope Valley unit was transferred to the Kesterson Lumber Corporation. The company closed operations and dismantled the plant in 1943.

In 1914 W. E. Lamm organized the Lamm Lumber Company, and contracted for the Odessa unit of timber on the Crater National Forest. Logging operations started in January, 1915, and the logs produced that year were sawed at the Long Lake Lumber Company mill at

Shippington under lease. Late in the year construction was started on a single band mill at Lelu, the name being changed later to Modoc Point. The mill started operating in the Spring of 1916. In later years dry kilns and a planing mill were added; in 1929 a resaw was installed in the mill, and in 1932 a box factory was built.

After the Odessa unit was finished in 1919, logs were obtained from the Southern Mount Scott unit on the Reservation, from 1920 to 1929. After contracting for a block of Long-Bell Lumber Company timber south of Yamsay mountain, a railroad was built from Chinchalo into the tract in 1929. Logging on this tract started in 1930, and logs were also hauled out that year for the Kesterson Lumber Company, who likewise had contracted for part of the Long-Bell timber. Later on logs were transported for the Long-Bell Lumber Company from 1936 to 1942 and for Pelican Bay Lumber Company from 1937 to 1943. In the latter part of 1943 and in 1944 logs were obtained from the Scott Creek unit of timber in the Rogue River National Forest. The plant closed down in the fall of 1944 and was dismantled.

In 1916 Wilbur Knapp built a small circular sawmill on Williamson River, one mile north of Chiloquin, to cut a small unit of Reservation timber. In 1918 Knapp sold out to the Modoc Lumber Company, organized and operated by J. O. Goldthwaite. The mill was enlarged, a gang saw being added. Under the name of Williamson River Logging Company, the North Spring Creek and the Calimus Marsh units were obtained under contracts in 1918 and in 1920. Having financial difficulties, the company sold out to the Forest Lumber Company in 1924, who wrecked the whole plant and built a strictly modern two band plant, including kilns and planing mill. Later the North Marsh unit of timber was acquired from the Freemont Land Company. A fire burned the entire plant in 1939; it was not rebuilt.

In 1917 the Big Lakes Box Company was organized by A. J. Voye, M. S. West and Burge Mason, Mr. Voye being manager. The company purchased the lumber

yard property of Savidge Brothers on South Sixth Street, Klamath Falls, and changed it over to a box factory. In 1920 a single band mill was built on Lake Ewauna and in 1927 a resaw was added. The plant also includes dry kilns and planing mill. Although this company did not contract directly for Reservation timber, it obtained a great deal indirectly under sub-contracts. Logs were obtained for some years from California. Recently the company has logged private lands north of the Reservation and the Sand Creek unit of timber on the Rogue River National Forest.

In 1917 Curt F. Setzer organized the Chelsea Box Company, which built a factory about a mile south of Klamath Falls. In 1920 the plant was sold to the Growers Packers and Warehousing Association. The factory burned in 1924, and the balance of the property was then sold to the Shaw Bertram Lumber Company.

In 1918 E. A. Blocklinger organized the Chiloquin Lumber Company which built a circular mill on the Sprague River at Chiloquin, and also put in a box factory. Later the mill was changed over to a single band plant. This concern had a succession of managers until Mr. Blocklinger finally took over the management himself with the assistance of his son, Arthur Blocklinger, who later took complete charge. Logs were obtained from various small units of timber on the Reservation until 1920, when the Chiloquin Timber Unit was obtained. The company acquired the Weeks unit in 1926 and later the Crooked Creek, the Military Crossing, and the North Marsh units, all on the Reservation.

In 1919 John Bedford and Harold Crane organized the Sprague River Lumber Company, which built a small circular mill on Sprague River, three miles east of Chiloquin. After operating two years, Mr. Bedford sold out in 1921 to William Bray, who later organized the Braymill White Pine Company, in which Mr. Crane retained an interest and became the manager. Part of the logs for this mill were shipped in from Mr. Bray's timber holdings in California and part were obtained from the Little

Sprague unit of timber. The mill was closed down in 1928 and has remained idle since.

In 1920 J. R. Shaw and W. J. Bertram organized the Shaw Bertram Lumber Company and built a single band plant on Lake Ewauna, two miles south of Klamath Falls. In 1925 a box factory was added, and some time later dry kilns and planing mill were built. Logs were obtained from the Solomon Butte unit on the Reservation from 1920 to 1928 and from the Squaw Flat unit after that. The plant was sold to the Southern Pacific Company in 1934, which leased it to the Long-Bell Lumber Company from 1936 to 1938 and sold it to the lessee in 1939. Logs for the Long-Bell operation were obtained from its unit of timber, the logging being done by the Lamm Lumber Company. The plant and the timber lands of the Long-Bell Lumber Company were sold to the Weyerhaeuser Timber Company in December, 1942. The plant was then dismantled.

The Wheeler Olmstead Lumber Company built a single band mill on Klamath Lake about half a mile north of Shippington in 1920. It ran only a year or two before getting into financial troubles. It was operated a number of months in several different years either by the owners or others who leased the plant temporarily, but most of the time the mill has remained idle. This year the mill is being operated under lease by the Klamath Pine Company.

George McCollum in 1920 built a circular mill located on the Klamath River near the Highway Crossing west of Keno. Later the circular head-saw was replaced with a band mill. In 1934 the mill was sold to the Ellingson Lumber Company. Logs, mostly red fir, have been trucked in from various private holdings.

In 1924 the Shasta View Lumber Company, organized by Marion and Wilbur Nine, built a small band and resaw mill adjacent to the O.C. & E. Railroad tracks near South Sixth Street. The plant operated in 1925 and 1926 and was then idle until 1928, when it was sold to the Klamath Pine Lumber Company. The plant burned on July 4, 1929, and was not rebuilt.

In 1925 the Campbell Towle Lumber Company took over a small circular mill located at Sprague River and owned by Edgerton and Adams. Logs were obtained from the Cherry Creek unit of Reservation timber and from private timber. In 1928 the company sold to G. C. Lorenz, who rebuilt the mill completely and operated it under the name of Lorenz Lumber Company, cutting timber from Cherry Creek, Rock Creek, and Whiskey Creek units. In the middle of 1930 the plant was sold to the Crater Lake Lumber Company, for whom Huntington Taylor was manager. In 1932 a box factory was added, and in 1937 the Crater Lake Box and Lumber Company was organized and operated the plant under lease from Crater Lake Lumber Company until December 28, 1942. Logs were obtained from Whiskey Creek, Bly-Brown Creek, Trout Creek, and Squaw Flat units of the Reservation and also from private holdings. On January 1, 1943, the Crater Lake Lumber Company again started operations and continued until the fall of 1943 when the sawmill was shut down and dismantled; the box factory was then sold to the American Box Corporation, which is still operating it. Crater Lake Lumber Company has been selling logs since the middle of 1943 up to and including the present time, part of its logging operations being carried on under contract by the Beatty Logging Company.

After purchasing a great deal of timber in Klamath and adjacent counties over a long period of years, the Weyerhaeuser Timber Company in 1929 built a large modern plant on Klamath River, four miles south of Klamath Falls. The sawing equipment consists of four double cutting band head-rigs and a gang saw; the mill cuts as much lumber as all of the next four largest mills in the county. In connection with the mill are sheds, a large battery of kilns, a planing mill, and a box factory. Ralph R. Macartney is manager with Hugh B. Campbell as assistant manager. The company built a railroad west into Jackson county, and for a number of years obtained all their logs from their own timber holdings in western

Klamath County and eastern Jackson County. Later they built a railroad north from the O. C. & E. Railroad near Beatty to tap their timber in eastern Klamath County and western Lake County. For the past number of years the company has been logging in both districts. The timber holdings are sufficient to operate the plant for thirty years and are being cut on a selective basis, leaving approximately 20 per cent of the timber standing.

Since this is by far the largest mill in the county, it is interesting to compare it was the Moore Mill, the most prominent one of the last century. In addition to the large office building, machine shop, sawmill, battery of kilns, planing mill and box factory, the Weyerhaeuser plant has one large shed 240 feet wide, over 1,200 feet long, and 54 feet high. The Moore sawmill and planing mill were contained in a building just about 24 feet wide, 60 feet long, and 16 feet high. So the Weyerhaeuser shed is ten times as wide, twenty times as long, and over three times as high, thus being over 600 times as large as the Moore mill building.

Early in 1930 Kesterson Lumber Company formerly of Dorris, California, completed construction of a modern saw mill plant on the Klamath River, two miles south of Klamath Falls. The mill consists of a single band head-rig and a resaw; in conjunction are a battery of kilns, a planing mill, and a box factory. In 1933 the company was re-organized and since that time has been known as the Kesterson Lumber Corporation. Logs for the first year's production were supplied from the Long-Bell Lumber Company's timber holdings in northern Klamath County and were transported over the Lamm Lumber Company's railroad and the Southern Pacific Railroad to the mill. Since 1930, logs have been supplied from Walker & Hovey's timber holdings at Scarface, California, and from the Klamath Indian Reservation units—the Modoc Point, the Five Miles, the Antelope Valley, and the Whiskey Creek units. Logging has been done principally with the company's own logging equipment by its subsidiary—the Klamath Timber Company. In 1943 all logging

equipment was sold to G. C. Lorenz, from whom logs are now being purchased.

Harold Crane and Walter Beane organized the Crane Mills in 1931 and built a semi-portable small band mill at Bly, with Mr. Crane as manager. Some years later a planing mill was installed. Logs were obtained from a number of small purchases of timber within trucking distance. In 1934 this company built a circular mill about ten miles northwest of Bly, which was managed by Mr. Beane until 1936, when this mill was sold to the Ivory Pine Company, Ed Ivory being manager. In 1937 Ivory Pine Company installed a band mill; in 1938 it built a planing mill, and in 1940 the plant was electrified. Logs for this mill have been obtained from small purchases of private and Reservation timber in the vicinity.

In 1934 W. E. Lamm organized the Deschutes Lumber Company, which with R. G. Watt as manager, built a small band mill on the Little Deschutes River about one mile east of Mowich, where a planing mill was built two years later. This operation continued until the fall of 1943, logs being obtained from private and National Forest timber. The mill was dismantled in 1944.

After holding large tracts of timber lands in northern Klamath and southern Deschutes counties for many years, the Gilchrist Timber Company completed construction in 1939 of a fine modern mill plant on the Little Deschutes River, two miles north of Crescent. The plant consists of a sawmill with a single band head-rig and resaw, modern power plant, dry kilns, and planing mill, all complete in every respect. For the care of the employees the company built a complete and modern town which they named Gilchrist. Their own timber holdings assure very long life for this plant.

The smallest and most portable sawmill ever in the county was one brought in from the Bend district in 1941 by Nick J. Meyer consisting of a small circular saw and a small push feed carriage mounted on an old automobile truck. By jacking up one wheel of the truck, the saw was run by the truck engine. It was designed and built by

Mr. Meyer to saw lodgepole timber into railroad ties. The mill was placed in lodgepole timber, and logs about eleven to sixteen inches in diameter, eight feet long, were snaked in by horses, not over 200 yards. A log was rolled up on the carriage by hand, and one inch side lumber was taken from the four sides to leave an 8x8 tie, which was placed on a pile beside the truck. Since it required only twenty minutes to move the rig, a few hundred yards and start sawing at the new location, the sawmill was moved from once to three times in a day to shorten both the log haul and the hand transportation of the ties. This little mill averaged better than 300 ties per day (12,800 feet besides the side lumber) and sawed more than 50,000 ties in a season.

In 1943 the E. D. Hamacher Lumber Company moved its small circular mill from Lake of the Woods to their present location on Klamath Lake about a mile north of Shippington.

Affiliated Industries

While a number of concerns have at various times been established in Klamath for remanufacturing forest products for the outside market, only those now operating are mentioned here.

In 1923 Claude Caldwell, Albert Schultz, and Albin Lundell started the Klamath Moulding Company on South Sixth Street, with Claude Caldwell as manager. Later Caldwell left the company, and Schultz took over the management. The company has been the largest remanufacturing concern in the county since organization, obtaining practically all of their lumber from the mills in Klamath and Lake counties. The original plant was sold to Metler Brothers in 1937, and a larger more modern moulding plant was built which has used about ten million feet of lumber annually. This second plant was sold to the Klamath Lake Moulding Company in 1944.

After purchasing the Klamath Moulding Company plant in 1937, Metler brothers changed it over to a cut

stock operation producing all kinds of sash and door cuttings, frame stock, and other miscellaneous items. They normally use about eight million feet of lumber per year.

In 1938 the Kalpine Plywood Company started the operation of their plant located on Klamath River two or three miles south of Klamath Falls. They purchase most of the nine million feet of peeler logs needed to produce the twenty-four million feet of plywood produced annually.

The Conifer Lumber Company, with Carl Huson as manager, built a moulding plant in 1941, adjacent to the Kalpine Plywood Company plant. In 1943 they sold out to the Ralph L. Smith Lumber Company. The plant uses about six million feet of lumber annually in the manufacture of mouldings.

CHAPTER IV.

EVOLUTION OF LOGGING

While the equipment for manufacturing lumber has been improved very greatly to produce better lumber much faster, the basic method of manufacture is still much the same as in the early history of the county, except that band saws have largely, but not entirely, replaced circular saws. The Moore Mill, if still intact today, could be successfully operated.

Logging methods, on the other hand, have changed so greatly and so often that it is interesting to review the history. Prior to 1880 most of the logging was done by oxen, either skidding directly to the mill or into water where the logs were floated to the mill. Where the haul was longer, wagons pulled by oxen were used. During the eighties horses supplanted the oxen, since horses were faster and it cost no more to feed them. About 1900 "stinger-tongue" wheels came into use for short hauls. This rig had two wheels eight or nine feet in diameter, an axle with two eccentrics and a tongue eight or ten feet long. In loading, the tongue pointed straight up while the chain was placed under the logs with the two ends of the chain fastened to the eccentrics. A pair of horses hitched to the end of the tongue with a long chain pulled the tongue down level while the chain over the eccentrics lifted the logs from the ground. The men then held the tongue down while the team was hitched back close to the tongue to pull the load. Going down grade the load would run forward, the tongue would fly up, letting the logs drag, thus acting as a brake. Often the load was hung too high or the grades were too steep, so that the horses and driver would have to run to keep in the clear. Since there was no way of guiding run-a-way wheels,

they would sometimes leave the road and pile up against a tree or stump, too often breaking up the wheels, killing a horse, and occasionally killing a driver.

Bryce McCormick, who provided most of the information herein relative to the early mills in the Keno district, had a peculiar accident in the early days with a set of these wheels. He and his brother had loaded a large fir log, twenty-four feet long, and after the team had pulled the tongue down, Bryce interlocked his fingers over the end of the tongue while his brother pushed down on the tongue, getting ready to shorten the hitch of the horses. For some reason the brother let go, and since Bryce couldn't unlock his fingers, the weight of the log snapped the tongue back, throwing Bryce twenty-five feet clear over the rig, and he landed on his head and shoulder on the rear end of the log. It might easily have been a fatal accident, but Bryce was back at work the next day.

"Slip-tongue" wheels, which came into general use about 1910, were pulled by four horses, with the driver riding one of the wheel horses. These wheels, ten to twelve feet in diameter, carried much larger loads than the old style stinger-tongue wheels. A snap-back team was used to pull the wheels back over the load. An upright Jacob's staff about five feet long was fastened to a shaft located above the axle and carrying two eccentrics from which the chain holding the logs hung. The tongue, 36 feet long, slipped through the axle about eight feet before the bumper on the end of the tongue came up against the axle to pull the load. As the tongue slipped forward, a connecting rod fastened to it pulled the staff forward, rotating the shaft and eccentrics, which lifted the load. On a down grade the wheels would run forward on the tongue, letting the Jacob's staff go back, which let the load down to drag on the ground, thus functioning as an efficient automatic brake.

Using slip-tongue wheels with horses to yard logs back to 1,000 or 1,200 feet from the railroad spur was the most common method of logging for about fifteen years. About 1925 the horses were being replaced with 30 horse-

power gasoline-fueled catapillar tractors. These machines, traveling faster and carrying larger loads, delivered about twice as many logs per set of wheels as horses did and did not require a snap-back team to pull the wheels over the load. Therefore each tractor replaced ten horses and two men.

The 30 HP tractors were superseded about 1927 by 60 HP tractors, which in turn were largely replaced by 75 HP, 95 HP and 115 HP tractors about 1935, 1936 and 1942 respectively. The change in fuel from gasoline to Diesel oil came with the 75 HP tractors, which were obtainable with either a gasoline or a Diesel engine, in 1935. Since then nearly all tractors have Diesel engines.

The slip-tongue wheels, designed for use with horses, were adequate for use with the "thirty cat", but were entirely inadequate to carry the load which a sixty was capable of hauling. Prior to this change from thirties to sixties, all logging had been confined to single length logs, being mostly sixteen feet long. With the increased power, to get maximum loads, it became common practice to log double length logs, largely thirty-two feet long. Several kinds of yarding equipment were tried out, one being the hydraulic wheels built entirely of iron, with large diameter wheels to straddle the load of logs and with hydraulic cylinders to raise the load from the ground. However, the "Athey Arch", built with a very heavy cast iron arch carried on two crawler type wheels and with a fairlead at the top of the arch, through which ran a main line from a winch on the back end of the tractor to lift the load, became the most successful for a few years. This yarder was superseded by those of the present common type, on which a cast steel boom supported by struts or an arch carried the fairlead and supplanted the heavy arch, making a yarder of much less weight with greater strength. All of these yarders lifted the front end of a load of double length logs, letting the rear end of the load drag.

The use of tractors with continually larger scrapers, bull dozers, and carryalls reduced the cost of building

railroad grades and subsequently truck roads to a small fraction of the cost by hand or with horses, which previously were the common methods.

While some automotive logging trucks were used prior to 1920, they really got their start as efficient logging equipment about 1930 and rapidly came into use logging direct to small mills and to railroads. By 1940 railroad logging was changed over from yarding to spurs to the system of yarding to truck roads and trucking to the railroad. Since then truck logging has largely been supplanting railroad logging, except in instances of unusually long hauls.

While many types of power saws for falling timber and bucking logs have been developed over a great many years, none of them proved as satisfactory as the old cross-cut saw. However, the war brought on such a great shortage of man power, especially of fallers, that power saws of various makes have been coming into general use very rapidly, and this demand has encouraged manufacturers to improve designs. While power saw operation has not yet become better or cheaper than hand falling, it seems probable that with continued improvement in design and method of operation the power saw will be used extensively for falling timber. Power saws are not yet satisfactory for bucking.

CHAPTER V.

LUMBER PRODUCTION

Prior to 1928 no record was kept of the lumber produced in the county. By estimating the probable cut of each mill for each year prior to that date the following estimated totals are arrived at and should be reasonably accurate. In 1928 the Klamath County Chamber of Commerce started a record of the total amount of lumber manufactured and remanufactured in the basin. By deducting from those figures the lumber manufactured outside of the county and that remanufactured in the basin, the following totals of lumber produced in the county from 1928 to 1943 are obtained, including log scale used in plywood manufacture. The estimate then of total production since 1863 is as follows:

	Millions of feet
1863 to 1900	90
1900 to 1910	90
1910 to 1920	900
1920 to 1928	2500
1928	441
1929	445
1930	437
1931	351
1932	191
1933	281
1934	330
1935	460
1936	630
1937	692

	Millions of feet
1938	547
1939	704
1940	706
1941	843
1942	856
1943	711
Total.....	12,205

For the production of this lumber, the amount of logs from the National Forests, the Indian Reservation and the O. & C. Lands are quite accurately known. The balance of the logs must have come almost entirely from privately owned forest lands in Klamath, Lake, and Jackson counties and California, except for the Government timber cut in the early years, which is almost negligible. All three of the governmental agencies have supplied figures for inferior species separately from the pine species, not only for the timber cut to date but also for standing timber, which will be presented later. Figures separating fir from pine are not obtainable for either the logging to date or the standing timber on private lands, however, some general information has been of assistance in making the rough estimates shown, concerning private lands. Figures for pine include a small percentage of sugar pine and a very little white pine, almost all being ponderosa pine. Inferior species, herein designated as fir, are composed largely of Douglas fir, with quite a percentage of white fir, and very small amounts of cedar and lodgepole pine. The figures, then, for sources of logs, for the production of lumber to January 1, 1944, are as follows in millions of feet:

	Pine	Fir	Total
Indian Reservation.....	3,608	36	3,644
O. & C. Lands.....	157	45	202
Private Lands	7,399	300	7,699
Totals	11,774	431	12,205

The Klamath Indian Reservation had one of the finest stands of pine timber in the West, combining excellent quality with exceptionally easy logging. While some timber was cut starting in 1913, the heavy cut started in 1918, when both the Pelican Bay Lumber Company and the Algoma Lumber Company started logging on the Reservation. From 1918 to 1930 the Reservation provided just about half of the logs sawed in the county.

The year 1942 was the peak year in production, while with the loss of four mills in 1943—Long-Bell Lumber Company, Algoma Lumber Company, Crater Lake Lumber Company, and Deschutes Lumber Company—that year shows a big reduction in total lumber sawed. Because of the loss of those mills in 1943 and the Lamm Lumber Company this year, as well as curtailment of production at the remaining mills on account of shortage of man power, it appears at this time (October) that the production for 1944 will be about 600 million feet. Continued reduction in the annual volume sawed may be expected for a number of years.

CHAPTER VI.

TIMBER RESOURCES

Relative to timber resources, it must be realized that cruising timber is not an exact science, and that many figures now utilized are based upon old and possibly carelessly made cruises. Most of the officials providing figures for this treatise cautioned that the figures given are the best available and that they are subject to change whenever a careful study may be made. In considering the timber tributary to the county, one must bear in mind that Klamath receives large volumes of logs from adjacent areas of California, as well as from portions of Jackson and Lake counties, which added to Klamath county, comprise what may be termed the Klamath basin.

The Klamath working circle as established by the Forest Service includes part of western Lake County and excludes nearly all lands north of the Reservation, which are included in the Bend working circle. Figures given for the National Forests are for those lands and the O. & C. controverted lands within the Klamath working circle. O. & C. Lands refer to the Oregon and California re-vested lands, which are administered by the General Land Office. Bend operators own quite a lot of timber in the northern part of this county, but as an off-set Klamath operators own approximately as much timber in Deschutes county. The rest of the county will probably lose a negligible volume of logs to be manufactured into lumber elsewhere, while much timber in adjacent counties of both Oregon and California is owned by operators of Klamath, insuring the manufacture here, and is therefore included in the figures to follow.

The Forest Service, the Reservation officials, and the

O. & C. Land Administration have followed plans of selective cutting on lands controlled by them ever since logging on those lands started. Private lands have nearly all been logged on the clean cutting basis, but even that plan has left from five to as high as thirty percent of the timber standing; the variation in the "leave" being based upon the amount of fir in the original stand and the lumber markets at the time of cutting. The average leave on all private lands probably is 10%. These residual stands must be included in resources, since they are valuable not only for reseeding the areas, but all of these trees that have been left will be logged in later years. The timber resources of the basin, as of January 1, 1944, are estimated to be as follows, in millions of feet:

	Pine	Fir	Residual	Total
National Forests..	2,750	1,250	300	4,300
Reservation	2,525	265	1,500	4,290
O. & C. Lands	150	275	100	525
Private Lands	4,606	800	770	6,176
Totals	10,031	2,590	2,670	15,291

To estimate the original stand of timber in 1863, when sawing started, it is necessary to estimate the losses since that date. Fire losses in the timber have been extremely light. The Forest Service estimates the loss due to fire on National Forest lands since 1910 to have been one fourth of one percent, and the Reservation officials believe the loss on their lands to have been no greater. The Forest Service officials have made extensive studies of the loss of timber on National Forest lands due to the pine beetle. They estimate that from 1910, when studies started, to 1920, the growth offset these losses. During the period from 1920 to 1936, this basin experienced very severe beetle activity. The Forest Service estimates that during that period the excess of the beetle loss over the growth on National Forests lands in the Klamath working circle was 430 million feet, being over 10% of the pine timber. The Reservation officials estimate the net loss in the same period on their lands to be 850 million feet, also being a little over 10%. The loss on the O. & C.

Lands is here shown as 30 million feet, being about 10% of the pine timber, and the loss on all private lands in the basin is roughly estimated at two billion feet, since it is believed the percentage loss on these lands was higher. As there is no information nor indication of any other serious losses of timber, it is assumed growth offset all losses for all other years since 1863. By compiling the lumber produced, the present stand of timber, and the beetle losses since 1920, the approximate original stand of timber in the basin is obtained considering that other usage and wastage of timber is negligible.

	Lumber Sawed	Millions of Feet		Original Stand
		Present Stand	Beetle Loss	
National Forests	660	4,300	430	5,390
Reservation	3,644	4,290	850	8,784
O. & C. Lands	202	525	30	757
Private Lands ..	7,699	6,176	2,000	15,875
Totals	12,205	15,291	3,310	30,806

Until recently, lodgpole pine has not been considered merchantable, and practically none of it is included in the foregoing figures. While this timber is small, with a light stand in footage per acre, there are hundreds of thousands of acres of it in the basin. It is now merchantable and will in the future be more so; thus it will be helpful in maintaining production toward the end of the first cutting cycle or afterward.

CHAPTER VII.

CONCERNING THE FUTURE

With more than half of the original timber left, the first consideration is to minimize the future losses. These virgin stands, in general, are just about holding their own in normal years, with the growth about equal to the losses, but it is possible that we will have years of bad beetle outbreaks and also relatively bad fires that will jeopardize this timber. Bug losses of the future can not be as devastating in the remaining virgin timber as during the bad beetle period of 1920 to 1936, since a large proportion of the poor thrift and over-mature timber was killed at that time, leaving a thinned-out and more thrifty forest, in which the beetles do not thrive so well. Then, too, insect control methods have been greatly improved, and the higher value of stumpage induces much more aggressive action by timber owners. The fire losses of the past have been miraculously low, and it is possible that much worse fires will occur in the future. All forest lands are now very accessible by roads, and while this creates an additional hazard from travelers, it facilitates getting fire fighters on the job quickly, which is essential. Moreover, fire fighting organizations have been greatly improved, enlarged, and better equipped. An important safety factor in the prevention of timber losses is that in case of either bad fires or serious beetle attacks, the trees can be logged promptly, and usually profitably, because of the extensive road system and modern truck logging methods.

On account of the rapid depletion of the virgin forests, greater consideration is continually being given to the

view point of trees as a crop, instead of timber as a natural resource, like a mine. The first step in the evolution from a mine to a crop is selective cutting of the virgin timber. Under this method of operation, all of the mature, over-mature, defective, and weak trees are logged, and a predetermined percentage of the stand is left in young, thrifty trees, well scattered over the area. Selective cutting harvests the old trees, preventing further deterioration, takes out the weak trees most susceptible to attacks by beetles, leaves ample thrifty trees for re-seeding the forest, and increases the growth of the trees that are left. The increase in growth as a result of thinning the forest is very material after the first two or three years, which are required to enlarge the root systems, averaging approximately 50%.

The National Forests and the O. & C. Lands are being selectively logged, leaving about 40% of the timber standing, while on the Reservation about 30% is being left. In 1942, the Weyerhaeuser Timber Company established the first Western Pine Tree Farm and was awarded Certificate No. 1 by the Western Pine Association. Since then, it has acquired additional timber lands and cut-over lands, making a total of over 554,000 acres, which is nearly half of the privately owned timber land in the basin. All of these lands are under the care of a special department for tree farming, headed by an expert forester. Since 1942 its logging has been conducted on a selective basis, leaving 20% of the timber standing. It is probable that the average leave on all private lands in the basin will be about 15%. Using these percentages, the total expected leave from the present virgin stands is then figured, and the probable volume of timber available for the remainder of the first cutting cycle is

obtained.

	Virgin Stands	Expected Leave	First Cutting
National Forests	4,000	1,600	2,400
Reservation	2,790	800	1,990
O. & C. Lands	425	170	255
Private lands	5,406	810	4,596
Totals	12,621	3,380	9,241

This expected leave of 3,380,000,000 feet, added to the present residual stand of 2,670,000,000, makes a total anticipated residual stand at the end of the cutting period of 6,050,000,000 feet or about 20% of the original stand, which will be a most valuable asset for providing an annual growth of timber to be harvested continuously. In addition to this total there will be the growth on the cut-over lands. While this stand of timber will not be distributed as evenly as desired over the forest lands because of the extensive clean cutting on private lands in the past, it is encouraging to realize that the three governmental agencies and the Weyerhaeuser Timber Company, all of whom are cutting the virgin stands on a selective basis and practicing tree farming, own or control almost three-fourths of all uncut and cut-over timber lands in the basin, with more than three-fourths of the standing timber. It is to be expected, as time goes on, that most of the balance of the timber lands will be placed upon a tree farming basis, since very little of it seems to be more valuable for other usage, especially since the grazing value of the lands is greatly increased by tree farming.

In this district, nearly all of the mature pine trees range from 250 to 400 years old and from twenty-four to forty-eight inches in diameter. The growth here is very much slower than in most other soft wood regions of the entire country, but the qualities of the lumber are, for many purposes, superior to most of the competitive woods, so that the finished product has a higher market value, which, with relatively cheap logging costs, makes the stumpage of much greater value. It is expected that increased prices of stumpage in the future, together with the grazing fees, will justify tree farming.

The annual net growth of timber in the basin, which may be expected for harvesting following completion of cutting the virgin stands, is of continually greater interest to the community. Gross growth in virgin forests may be assumed to equal the losses due to decay, beetles, and fire, so there is no net growth. There is no growth

at all for a great many years on land which has been completely denuded of timber, since growth for sawlogs is expressed in increased board measure footage of trees twelve inches or more in diameter breast high, and since it requires fifty years or more for seedlings to attain that size. On selectively logged lands, however, the losses are minimized, and the growth of the remaining trees greatly increased, so that the net growth becomes an important factor.

The Forest Service has made very extensive studies of growth over a long period of years; one of their latest reports, made in 1940, covers very completely the growth in the pine regions of Oregon and Washington. This report shows the average annual per acre net growth of ponderosa pine in Klamath county for the first thirty year period after cutting to be as follows:

50% cutting	93 feet
75% cutting	85 feet
95% cutting	39 feet

Since there would be very little growth the first years on stands 95% cut, it is probable that the growth at the end of the period would be about 80 feet per acre per year. Under present forestry practices, the potential per acre-year growth in the basin is expected to be about 130 feet, after a sufficient number of young trees have grown to sawlog size, but most cut-over land will require many years to attain that rate of production. Intensive forestry methods of the future are expected to increase that annual growth materially and possibly even double it in seventy-five years or more. Since nature does not re-seed cut-over areas in this district as well as in many others, it will probably be necessary to plant or re-seed artificially.

The Reservation is a good example of forestry practice in this basin, since selective logging methods have been followed from the start of operations, and since the officials have planned for the first cutting cycle to cover forty-three years from the start of substantial logging in 1918, through 1960. The 1944 production of logs on the

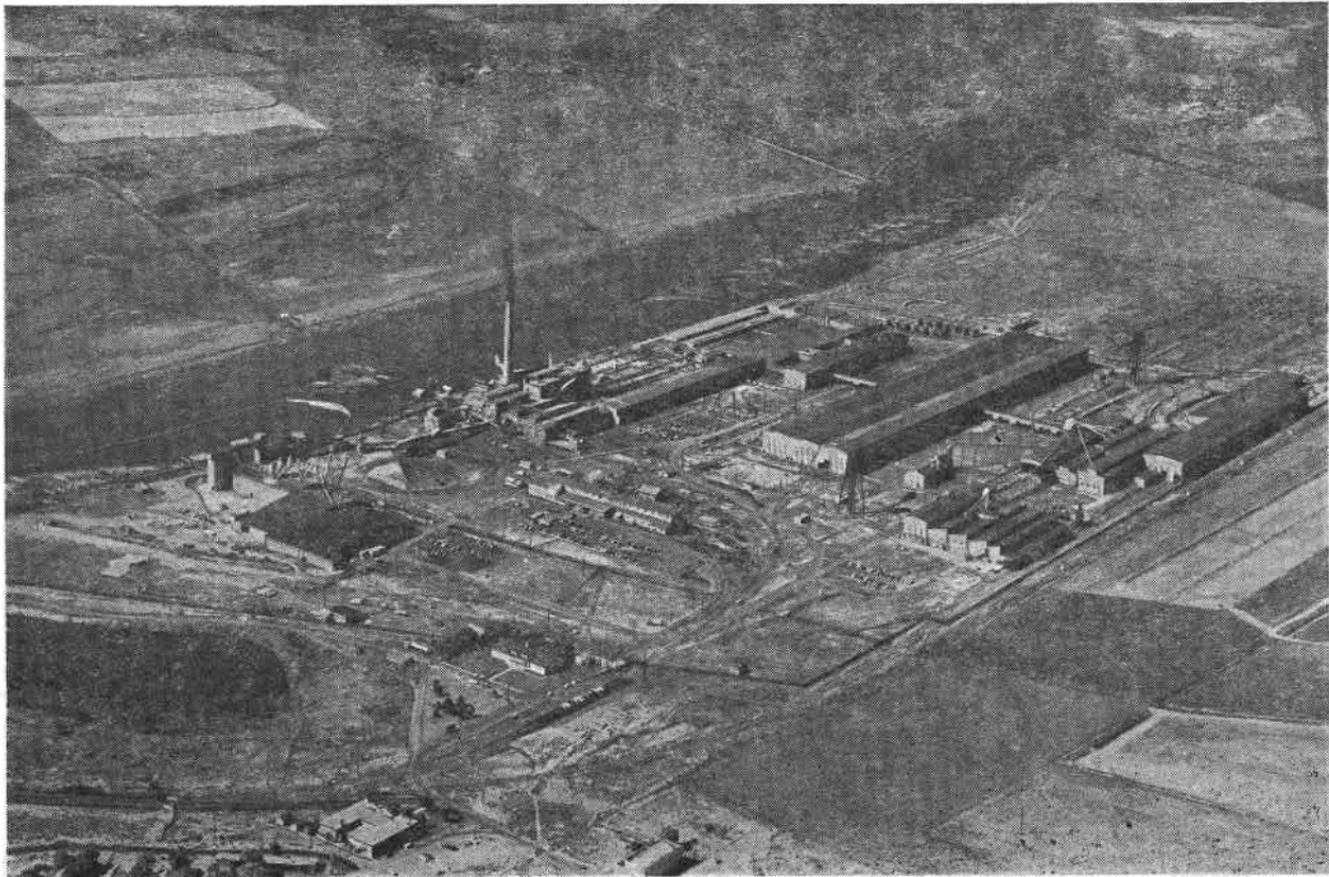
Reservation is expected to be 170 million feet, and it is expected that the annual cut will reduce rapidly for a few years, and after that more slowly to final production, under the first cycle, of seventy million feet in 1960. The officials intend to start the second cutting in 1961 with a production of about fifty million feet, which they expect to increase over some years to seventy million, almost equal to the anticipated annual growth. The approximate timber-land acreage is 650,000 which, at eighty feet per acre, would give a total annual growth of 52,000,000 feet. The second cutting on the Reservation will start long before the first cutting is completed elsewhere, so in this treatise the end of the first cutting cycle is assumed as the average for the over-lapping period.

The previously mentioned Forest Service report gives the estimated potential, annual, net growth of saw timber in Klamath county to be 285 million feet. For the basin, then, including tributary lands in adjacent counties, the potential annual growth is well over 300 million feet. With approximately two and a half million acres of forest land in the basin, the potential annual growth would be 325 million feet at 130 feet per acre, the commonly accepted potential growth rate, under present forestry practices. It cannot be expected that this rate of growth will be attained until a number of years after the first cutting cycle is completed. An average of eighty feet of growth per acre per year, or a total of 200 million feet total growth per year, is perhaps all that can be expected at that time, with a gradual increase yearly to the potential volume expected.

In conclusion, it is apparent that the total annual lumber production in Klamath is going to continue to decrease for a number of years, a better situation for the county in the long run than if the present rate of annual cutting of about 600 million feet were continued until the available 9,421,000,000 feet was exhausted and the annual cut plunged to less than 200 million feet. Indeed it would be better if the annual production would decrease quite rapidly for a few years and level off around 300 million

feet, so that the first cutting cycle would last twenty-five to thirty years, when an annual cut of over 200 million feet could probably be gradually increased to the expected potential growth of over 300 million feet.

It is entirely possible for Klamath to maintain the present volume of business by making up the loss in lumber production with more lumber remanufacturing plants, increase in the farming and livestock industries, and acquisition of new enterprises in various other fields. Let us hope that Klamath will do so.



The Weyerhæuser Plant 1956

