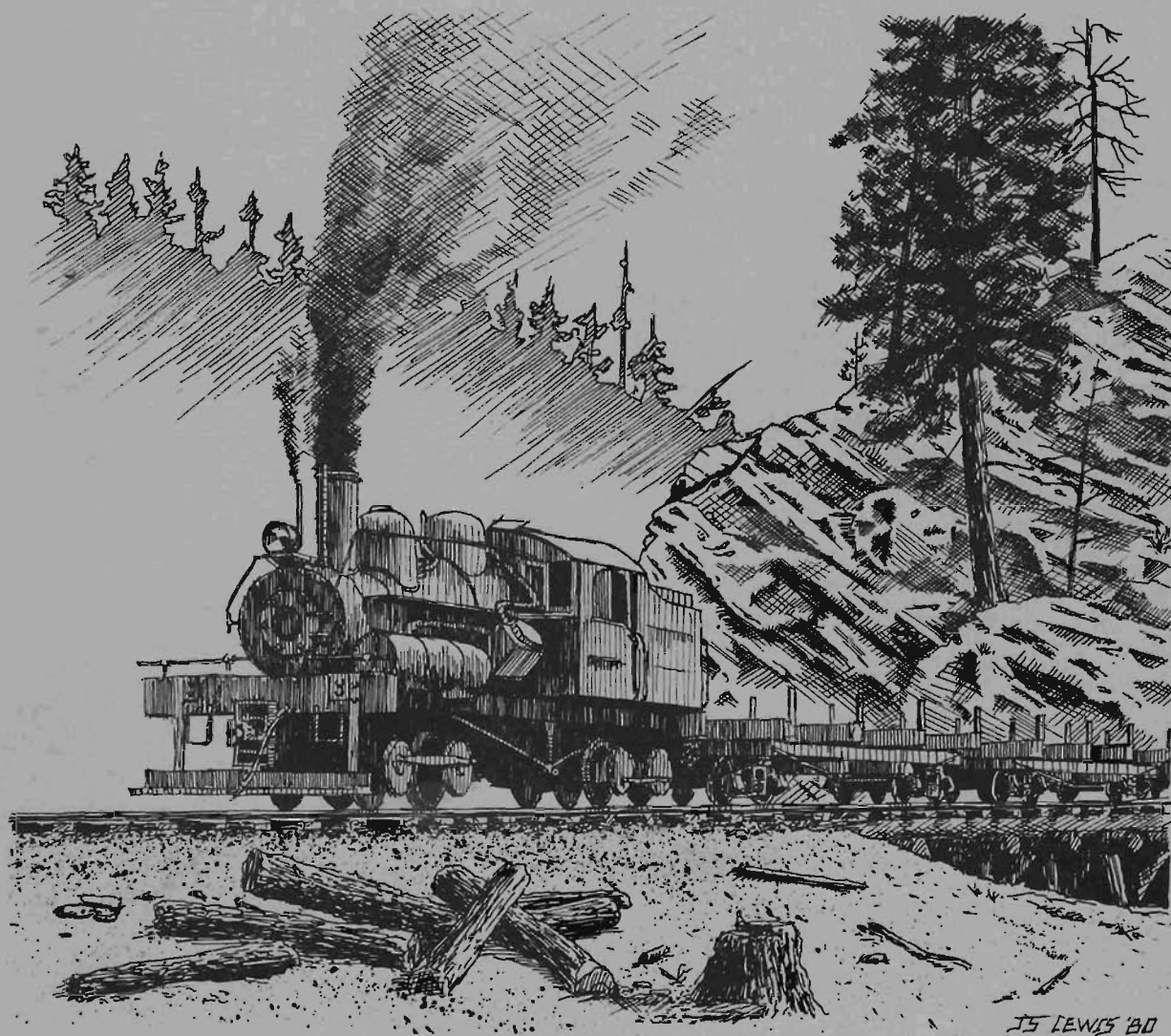


BILES - COLEMAN LUMBER COMPANY'S
RESERVATION NARROW GAUGE

The Last Northwest/Washington State Narrow Gauge Logging Railroad

1921 - 1948



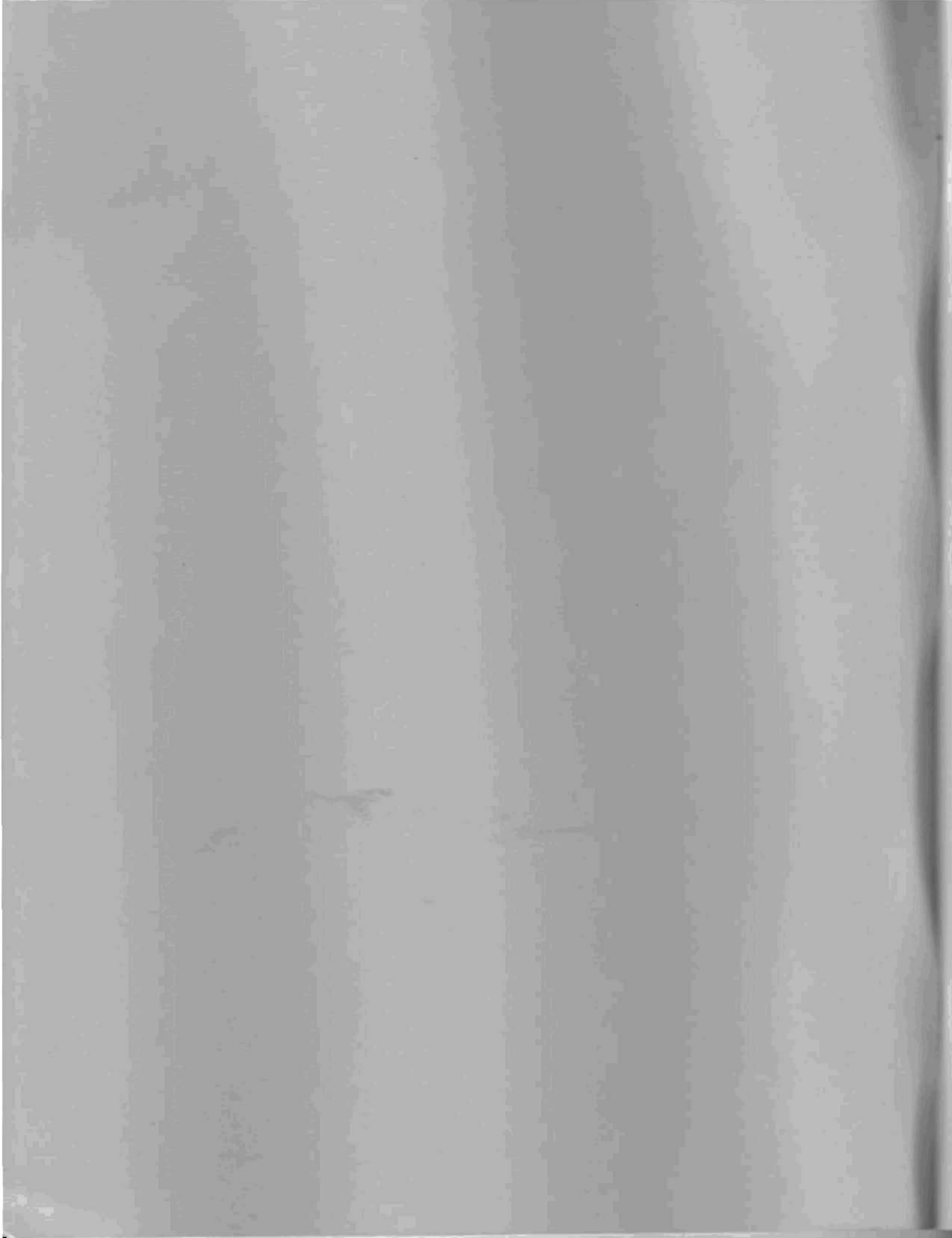
With a Supplement on the

DIAMOND MATCH COMPANY PRIEST LAKE RAILROAD

The West's Most Modern Narrow Gauge Logging Railroad

BY

JOHN E. LEWIS



RESERVATION NARROW GAUGE

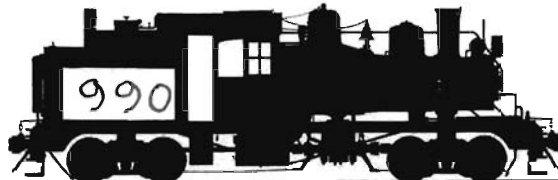
A Chronicle Of
**BILES - COLEMAN LUMBER COMPANY'S
NARROW GAUGE**

OMAK CREEK RAILROAD
(BOW & ARROW SHORT LINE)

The LAST
NARROW GAUGE LOGGING RAILROAD
In Washington State

First Edition

THIS IS
BOOK NO.



OF 2500
PRINTED

By
JOHN E. LEWIS

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FIRST EDITION

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PUBLISHER'S NOTE

. . . Scale equipment drawings used in this book are based upon actual manufacturer's erection drawings (log cars, speeder, Shay, and 2-6-6-2), equipment of the same size, class and approximate year of construction (Heisler), or actual equipment item (log loader).

. . . Any corrections/additions forwarded by readers will be gratefully accepted by the author. Although it seems certain that color photos of the Biles-Coleman line or its equipment were taken by some of the thousands of workers engaged in building the nearby Grand Coulee Dam Project, a search over the years has failed to locate any such photos of this type. If forwarded to the author, together with other pertinent corrections/additions will be included in a revised second edition should demand warrant.

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Completed on June 14, 1979 at York, Pa. by John S. Lewis
Biles-Coleman Lumber Co. Heisler No. 102, C. N. 1516, built 1925 and Shay No. 101 ("Old 2") Lima No. 2190 built 1909 at Disautel Siding, Disautel, Washington about 1928. No. 102 just coming off of "C" line spur and No. 101 ready to go up "C" line with two loads of ballast for new track.

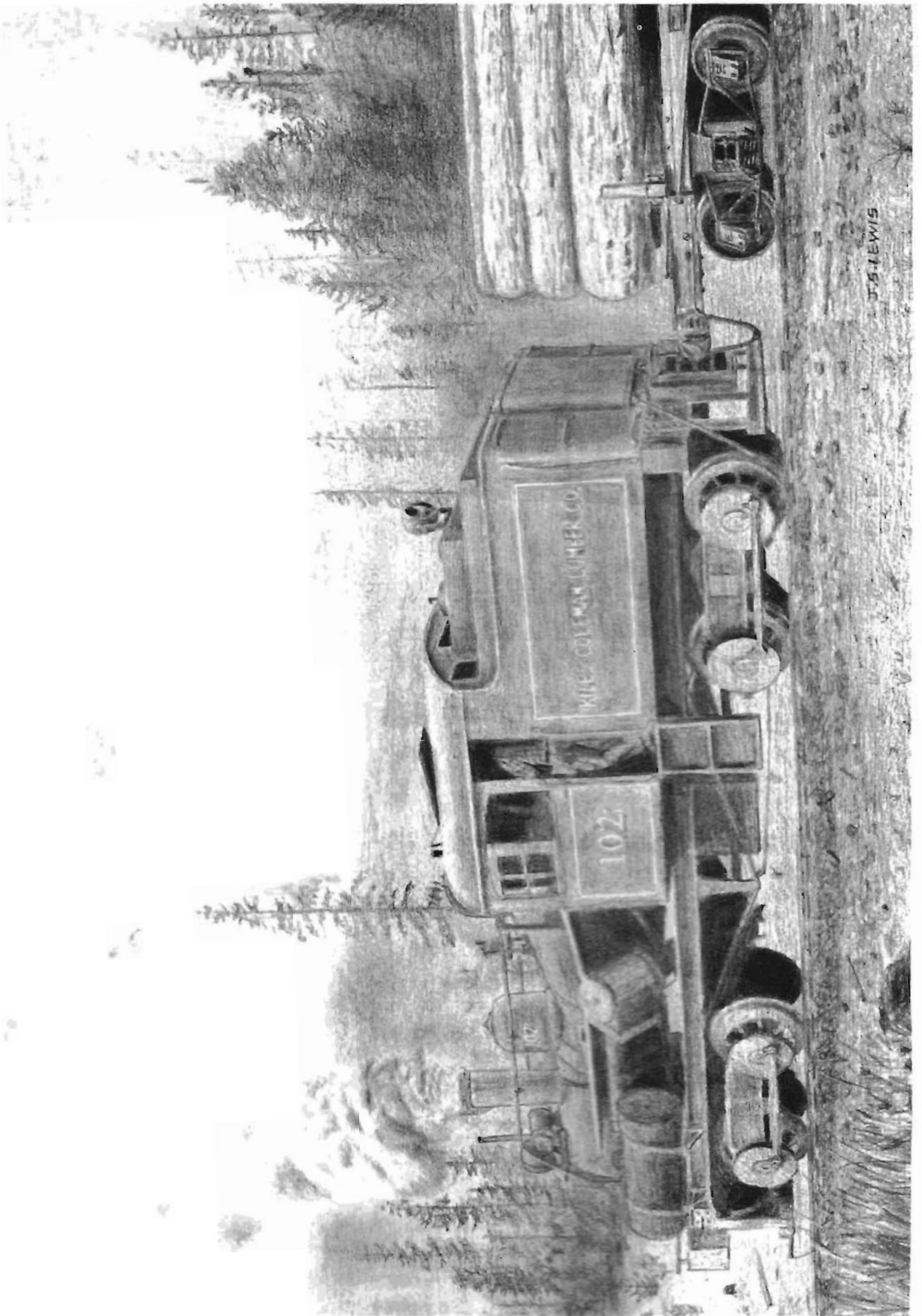


H. Weaver Photo via Forest History Society
Heisler 102, loaded and empty log cars, the loader, and buncher at Landing No. 1 just east of Disautel, Washington during the winter of 1941/1942.

ACKNOWLEDGEMENTS

Collecting and preserving the history of Washington State's last slim gauge logging railroad would have been impossible without the continuing and periodic assistance of Mr. Emmit R. Aston, the long time Logging Manager of Biles - Coleman, who over a period extending from 1956 to 1979 patiently helped the author develop the information required to prepare this brief history. Other individuals/information sources providing valuable assistance during years of research in the form of information, data, and photos include:

- Baldwin Lima Hamilton Corporation — West Coast Records in Seattle, Washington Office — Shay Locomotive Specifications and Data
- Biles - Coleman Lumber Company — Omak, Washington — Information
- Mr. H. L. Broadbelt — Hershey, Pennsylvania and Newport News, Virginia — Photos
- Mr. W. Casler — Corry, Pennsylvania — Information and Photos.
- Mr. P. A. Copeland — "Extra 2200 South" — Diamond Match Company — Roster Information
- Mr. F. M. Cotton — Omak, Washington — Photos
- Mr. J. R. Cummings — Walla Walla, Washington and Winchester, Virginia — Log Loader Data
- Mr. and Mrs. C. DeGroot — Omak, Washington — Photos
- Mr. and Mrs. E. Fulford — Cashmere, Washington — Photos and Information
- Forest History Society — Santa Cruz, California — Photos
- Mr. J. Gertz — Port Angeles, Washington — Heisler Specifications for OL Co. No. 100, BCL Co. No. 102 and S. P. L. & P. Co. No. 1.
- Georgia Pacific Historical Museum — Old B. C. L. Co., and Whitney Engineering Co. — Correspondence and Photos
- Mr. George Hardy — Salem, Oregon — Whitney Engineering Co. Correspondence.
- Mr. Ron Harr — O. L. Co. No. 100 Builders Photo.
- Mr. S. Hauff — Port Angeles, Washington — Heisler Data.
- Mr. Joe Hawley — Priest Lake, Idaho — D. M. Map Information.
- Heisler Locomotive Works — Available records, catalogs, photos and specification data
- Mr. H. D. Lear — Assistant General Auditor, Great Northern Railway, St. Paul, Minnesota — Photos
- Mr. J. S. Lewis — Original art work produced by the author's son during infrequent moments of spare time in a crowded study schedule at Johns Hopkins University, Baltimore, Maryland
- Mr. G. McCracken — Omak, Washington — Photos and Information
- Mr. F. H. Moline — Logging Consultant, Pacific Car & Foundry Company, Renton, Washington — Photos and Engineering Data
- Mr. L. Nelson — Omak, Washington — Photos
- Okanogan County Historical Society — Okanogan, Washington — Photos
- Mrs. A. Purdy — Stanwood, Washington — Photos
- Mr. Henry A. Peterson — Sandpoint, Idaho — Diamond Match Photos and reminiscences.
- Mr. H. Ramage — Sales Department, Skagit Steel & Iron Works, Sedro Woolley, Washington — Photos and Engineering Data
- Timberman Magazine — Various Issues 1919 - 1950
- U. S. Geological Survey — Maps and aerial photographs used to prepare maps of the B. C. L. Co., mill site and railroad route
- Mr. H. Weaver — Jasper, Arkansas — Photos
- Mrs. L. Wilson — Typing of Text
- West Coast Lumberman Magazine — Statistical Review and Directory — various editions



J. S. LEWIS

PREFACE

In Washington State, only one narrow gauge logging railroad survived long enough to operate during the final years of railroad logging era the early post World War II period despite the effects of the depression, the hazards of war time scrap drives and "progress" leading to truck logging. This line owned by Biles-Coleman Lumber Co. of Omak, Washington operated through the late spring of 1948. Although this logging railroad was never officially named, as were some of its contemporaries, and remains little known to this day, it was rather unusual in a number of operational aspects. Further, this line was equipped with the most modern equipment then available, and it pioneered logging railroad/trucking multi-mode transportation operating concepts which were only to receive wide acceptance following World War II. Selection by Biles-Coleman of the most modern equipment then available may have provided the inspiration for equipment purchases made by an even more modern, but shorter lived, Washington State/Western Idaho timber salvage line owned by the Diamond Match Company. This line was the most modern West Coast narrow gauge logging railroad built and will receive passing attention for comparison purposes in Appendix II of this book.

The following narrative will attempt to provide a comprehensive history and description of the Biles-Coleman Lumber Company logging railroads during their years of operation from 1922 to the end of May 1948. It is not an intention of the author to provide a complete and detailed corporate history from its beginnings in 1921 to the final disappearance of the Biles-Coleman name in 1974. Necessarily, many aspects of company operations not directly related to the railroad or activities affecting its operation will be touched upon in the following text. This book is oriented toward exploring the operations of the railroad and its equipment from the technical, operating, and historical points of view. The omission of facts which might be appropriate from a corporate history standpoint but which have no relevance to the narrow gauge will thus be overlooked and hopefully, will be forgiven by the reader.



Chapter 1

A FALTERING START

The Omak Fruit Growers Incorporated, operators of the Omak Warehouse and Storage Company, had been awarded a Contract by the Bureau of Indian Affairs shortly after World War I for timber removal on Omak Mountain. Following the contract award in 1919, the firm, which was a branch of the local fruit growers association, constructed a lumber mill about seven miles northeast of the town of Omak. The new mill which had a daily timber sawing capacity of 31,000 board feet, was built on the west slopes of the mountain during March of 1920 at a site which was picturesquely named Cougarville. Operation of the new mill soon proved to be a financial disaster. Little or no prior thought had been given to solving the problems of, or analyzing the costs associated with getting logs from the stump to the mill. A similar lack of attention was affecting the task of transporting the sawed lumber product of the mill to the firm's box factory in town. Transportation of logs to the mill was accomplished by wagon or by horse skidding during the warmer seasons or by sleigh hauling during the winter, while cut lumber was transported to town by horse drawn wagon or by the primitive motor trucks of that era. Financial difficulties resulting from transportation problems were accentuated by the fact that the mill was not designed for cold weather operation and was forced to shut down until the following spring when warmer weather set in. This problem shortened the mill's annual usage to a five to six month period starting in mid or late May and often ending as early as mid-October. Such a schedule did not lead to the long term retention of experienced employees.

To avoid defaulting on the contract, the Fruit Growers Association decided to get out of the lumber business as soon as possible if a suitable buyer for the mill and takeover of the contract could be found. Shortly thereafter, the Omak Mountain mill together with rights to the timber harvesting contract and the box plant in Omak were sold on February 4, 1921. The buyer of the mill, box factory and rights to the timber contract was a partnership formed by two investors with previous logging experience, Mr. J. C. Biles of Leavenworth, Washington and Mr. Nate Coleman of Wenatchee, Washington. At about the same time, Mr. H. L. Bennett of Seattle, Washington purchased a small mill and box factory at Disautel owned previously by a separate but apparently equally troubled fruit growers group.

Mr. Biles, originally a steam donkey engine logger from Montesano, Washington, had recently been involved with the Peshastin Lumber and Box Company at Blewett, Washington in which he held a two-thirds interest. In 1914, Biles had teamed up with Mr. J. T. McDonald who held the remaining one-third interest to start the first motor truck log hauling/lumber milling operation in the Northwest. Mr. McDonald and Mr. Biles logged for the Peshastin Lumber and Box Company and transported logs to the mill with early model Knox trucks hauling iron-wheeled trailers devised by McDonald. This operation continued until 1920 when the firm was sold to Sawyer and Johnson who later moved the mill from Blewett to Peshastin, Washington.

Temporarily idled, J. C. Biles soon joined up with Nate Coleman to form the partnership which purchased the Omak Mountain operation. Mr. Coleman, who had originally come west from Missouri, and his sons, Abe, Jos and Carl, had extensive previous lumber mill operating experience. The resulting partnership combined both logging and sawmilling operating and management experience in a team capable of turning the disastrous Omak lumbering operation of the Fruit Growers Association into a financial success.

Under terms of the agreement reached between the new partners and the Association, the mill structure and equipment were to be paid for through delivery by the new owners of a quantity of apple boxes, in shook form ready to be nailed together as finished boxes equivalent in value to the investment of the former owners in that property. The government contract for the harvest of timber on Omak Mountain was assigned by the sellers to Biles-Coleman at no cost.

The new owners acted rapidly to correct the problems which had beset the previous mill operators. After changing the name of the logging/milling operation to the Biles-Coleman Lumber Company, the new firm started construction of a short narrow gauge logging railroad which would solve the problem of economically transporting logs from the forest to the mill. Construction of the railroad started in the fall of 1921 and by early 1922 operations had commenced. The firm's Omak box plant began the season's cut on May 18, 1922, employing a total of 35 workers.

The delivery of rolling stock and motive power for the line from the nearest siding on the Great Northern Railway at Omak proved to be a challenging and rather spectacular task. Since the new narrow gauge track was not even remotely close to the standard gauge main line, the first Biles-Coleman locomotive had to be transported by road to the mountainside mill after being delivered to Omak by standard gauge flatcar. The route to be traversed during transfer of the newly delivered 20 ton Class A Shay locomotive to the narrow gauge covered a distance of more than seven miles to the east northeast while rising more than 1850 feet in elevation. The locomotive was partially disassembled in Omak prior to the start of the trip up the mountain, to minimize the amount of weight which the underpowered and limited capacity trucks then available would have to transport. The trucks were removed and the boiler-cab-tender-frame assembly was loaded on, and was carried up the mountain on a solid tired truck and a four wheel, steel wheeled wagon provided by the Daly Brothers in such a manner that the trucks operated in the forward direction while the four wheel wagon placed under the other end of the locomotive was towed.

Two additional trucks connected to the lead truck by cable provided extra power. On steep portions of the route traversed, an additional team of horses was added to this caravan to provide extra pulling power. This entire procession presented a somewhat interesting visual spectacle during the three day period that was required to traverse the twisting dirt road to Cougarville. This spec-



Shay No. 2 being trucked from Omak up Omak Mountain to Cougarville, early September 1921.

E. R. Aston

tacle was made more unusual by the fact that the rear or tender end of the locomotive was placed on the bed of the rear most of the three truck procession thus making the new machine travel to the narrow gauge in an inelegant backward direction. The two trucks of the Shay were carried up the mountain individually on a single motor truck in subsequent trips one at a time.

Log cars to be used on the new line were also carried up the mountain by motor truck one at a time. The entire process of moving the Shay and six sets of disconnected trucks purchased for the new line provided an unusual sight to the residents of Omak and local inhabitants of the adjoining Colville Indian Reservation. Both the mill and the new logging railroad were located entirely within the boundaries of the Indian reservation. When railroad operations on Omak Mountain were finished in the late summer of 1924, the railroad equipment was transported back down to Omak over the same route and by the same method used to accomplish its initial delivery.

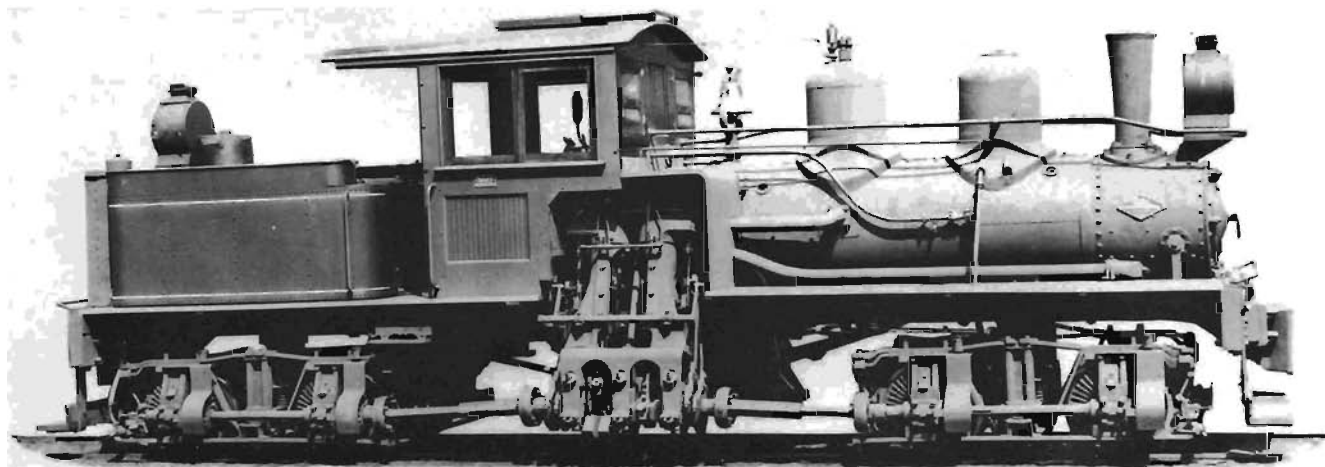
The "new" two truck Shay locomotive and the disconnected trucks had actually been purchased second hand on July 9th and 13th, 1921 respectively from the

Puget Sound Machinery Depot, of 318 First Avenue South, Seattle Washington. The Shay had been built in 1909 as locomotive number 1 for the Dawson Electric Light and Power Company of Dawson, Yukon Territory, Canada. Some doubt exists as to whether this machine ever reached the property of its purchaser in the Yukon Territory but Mr. J. C. Biles did witness the arrival of the Shay and cars at Seattle aboard a barge from some unknown point to the north. Originally designed to burn coal fuel at Dawson, this Shay had been converted to burn wood by the time that it was purchased for use on Omak Mountain. After being delivered, still bearing a mysteriously acquired spot number 2 on the smoke box front, this two cylinder Shay went into operation on the line of its new owners fueled by slab wood scraps left over from lumber manufacturing operations at the mill. At some subsequent date, perhaps while the initial Biles-Coleman line was still in operation, the Shay was reconverted to use coal fuel. Wood fuel had proved to be unacceptably hazardous for use during the dry summer months as the rapid, high velocity exhaust of the Shay literally showered the adjoining countryside with potentially fire starting red hot embers.



"Old No. 2" pauses for a moment after the start of its trip to Cougarville as Daly Brothers teamsters check the transport vehicles.

E. R. Aston

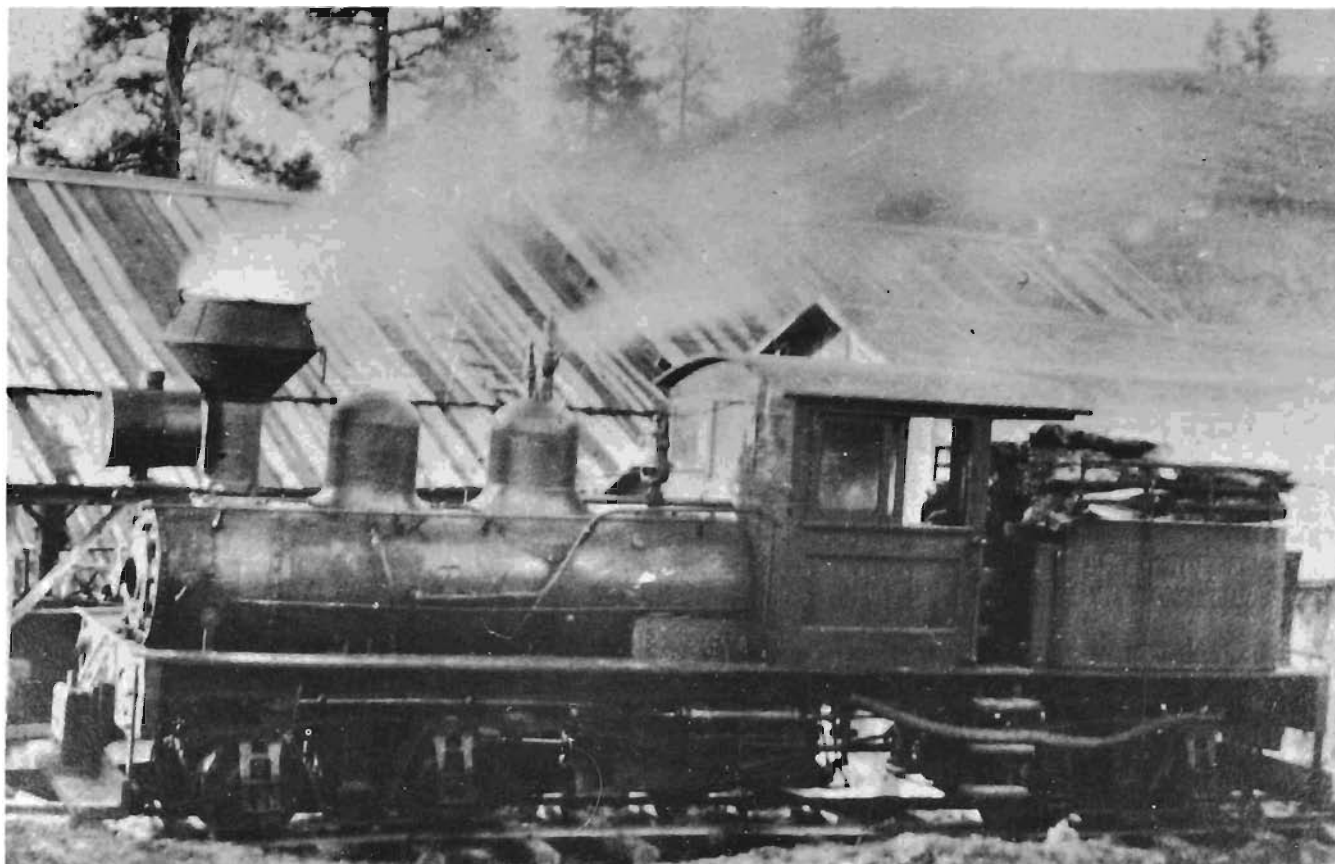


Builders photo of a 20 ton Class A Shay similar to Biles-Coleman No. 101. This particular machine although identical in appearance to the No. 101 was standard gauge. C. W. Mendenhall Collection

The Shay was equipped with a standard Lima Locomotive Works diamond type spark arresting smoke stack topped by a wire mesh spark retaining screen. In the early summer of 1923 the Shay was fitted with a new Radley Hunter spark arresting smoke stack which remained on the locomotive until it was scrapped. At about the same time, the company mounted an extra water tank on the rear of the tender tank to lengthen the time that the locomotive could operate away from sources of water supply on the relatively dry slopes of Omak Mountain.

Biles-Coleman also equipped the Shay with a steam powered water pump which, when attached to a short length of hose tipped by a nozzle, could be used to pump water from the tender tank of the locomotive to put out track side fires. At a subsequent date, the Shay was fitted with a second supplementary water tank system composed of three 55 gallon steel drums mounted on the right side front walkway just in front of the cylinders.

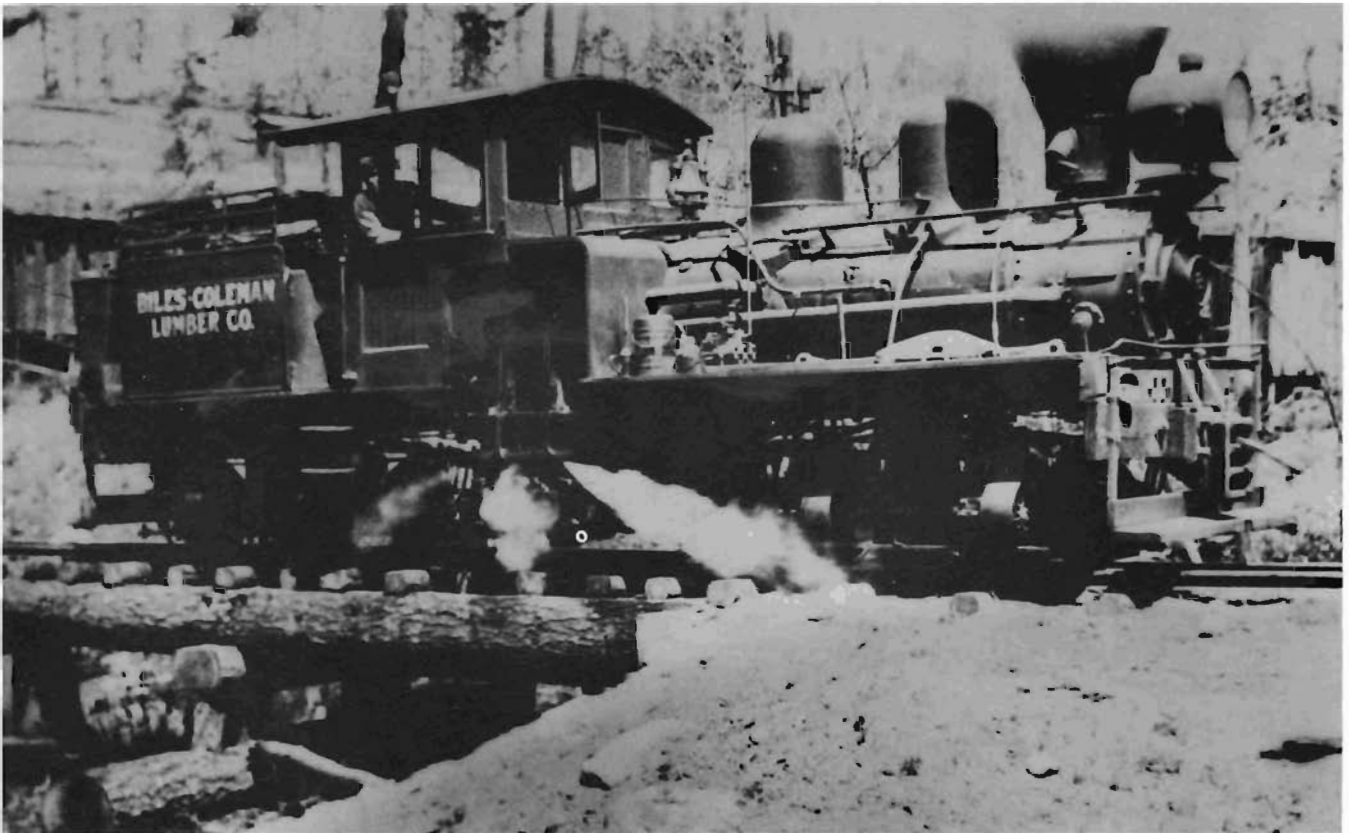
Although the Shay was lettered boldly with the name "Biles-Coleman Lumber Co." on the sides of the tender tank shortly after arrival, no number was painted on the



Shay No. 2 simmers at the end of the track beside the Cougarville sawmill after entering service on the narrow gauge in 1921. E. R. Aston

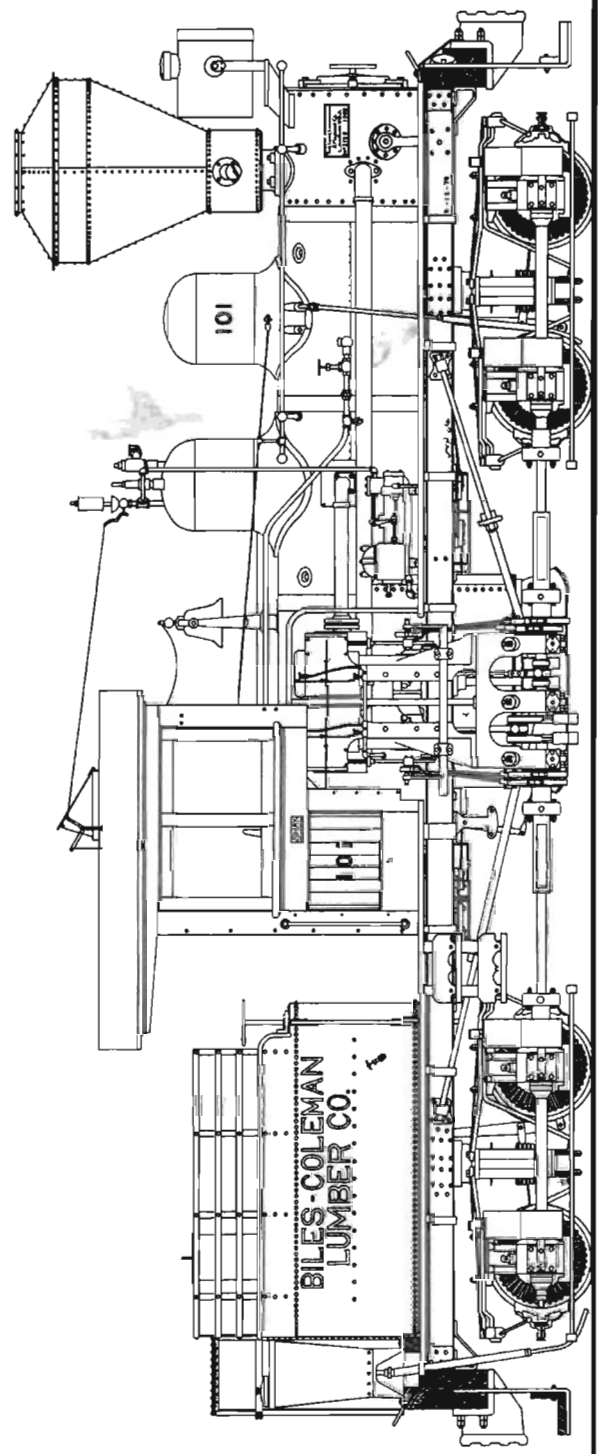
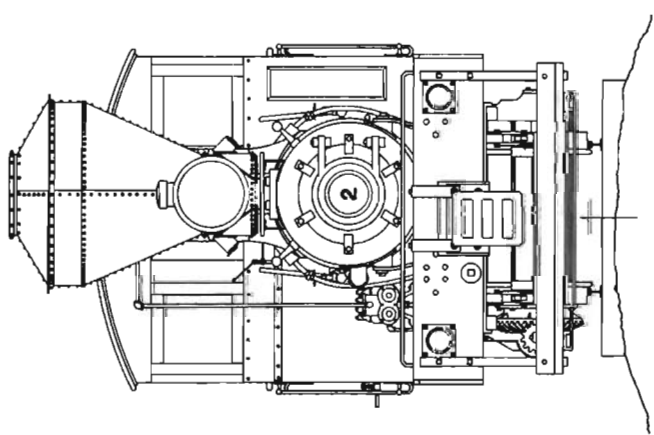


Okanogan County Historical Society
"Old No. 2" and a three car log train at the Cougarville sawmill during the winter of 1921/1922.



Georgia-Pacific Museum
"Old No. 2" with Carl Coleman as engineer pauses on a trestle at Cougarville, Washington in 1924.

SHAY
BILES-COLEMAN LUMBER COMPANY
NARROW GAUGE
LIMA 2190
BUILT 1909
CLASS A-20
GRAPHIC SCALE



sides of the cab or sand dome. This locomotive continued to carry the mysterious number "2" on the front of the smoke box until after a second locomotive was purchased in 1925 when it was formally assigned the number 101. A. B. Coleman was the first locomotive engineer on the Omak Mountain narrow gauge and after he was subsequently promoted to the position of mill foreman, his brother Carl succeeded him as the Shay's second engineer.

Logging continued on Omak Mountain at a fairly rapid pace during 1922 and 1923. During this time the narrow gauge track was never more than five miles in length, and its location was constantly changed as timber cutting proceeded. Construction of these constantly changing portions of the route within the timber cutting area was rather crude and temporary in nature. These portions of the track were built with hewn ties which were poorly ballasted and very light rail. Most of the rail used on the Omak Mountain Line weighed 35 pounds per yard although a few lengths of 45 pound rail were used in locations requiring a stiffer rail or where the rate of wear on track built using the smaller rails had proved excessive.

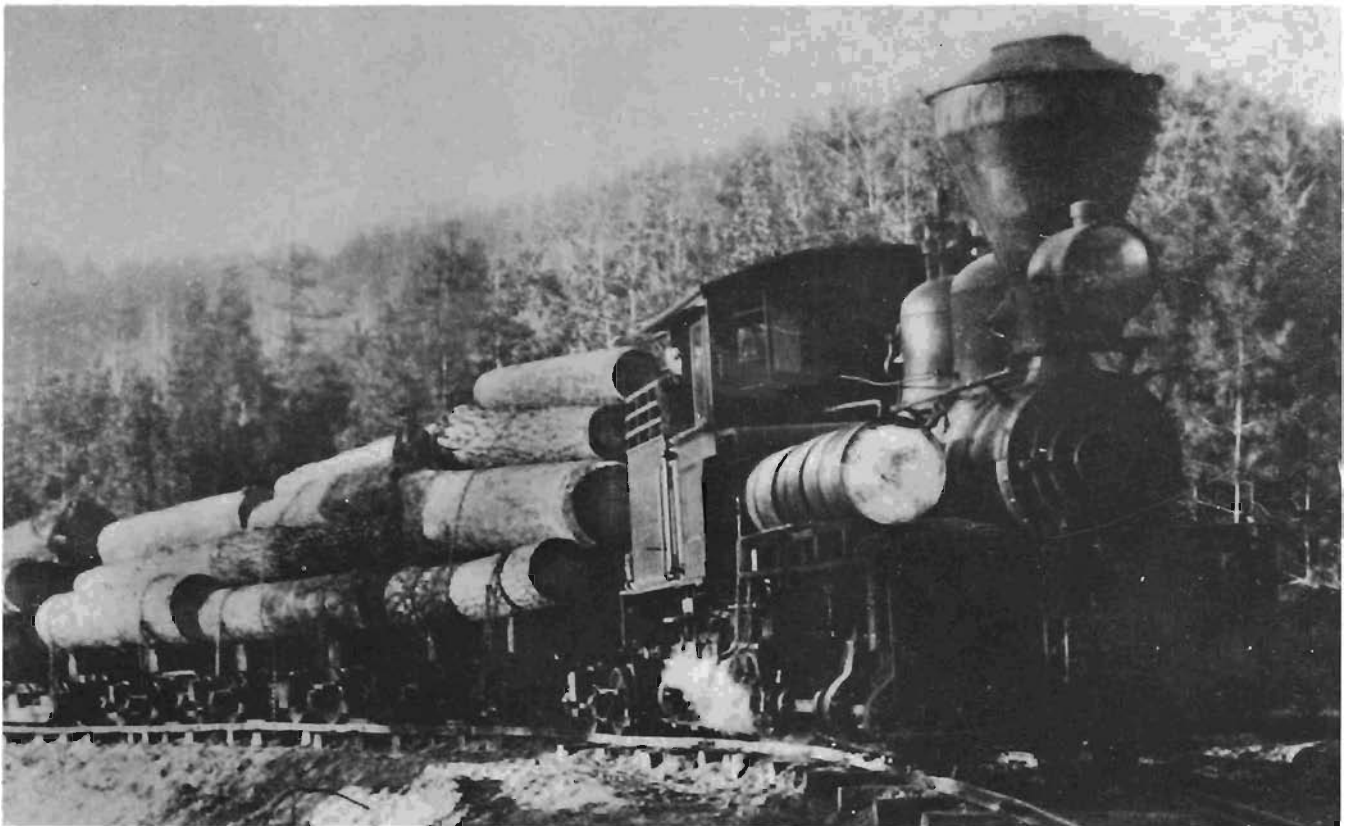
Trestles on the Omak Mountain Line were built in either one of two different designs. The conventional four-post bent and log stringer design was used in some spots while in others, the log crib style which had found wide acceptance on some of the earlier logging railroads built on the west side of the Cascade Mountains was used.

The initial well designed track layout proved to be very successful in every day use and operating problems

encountered on this trackage had proved to be negligible. Construction of the first new track, a spur line, without engineering supervision was not so successful and almost ended with tragic results for the then inexperienced operators of the railroad.

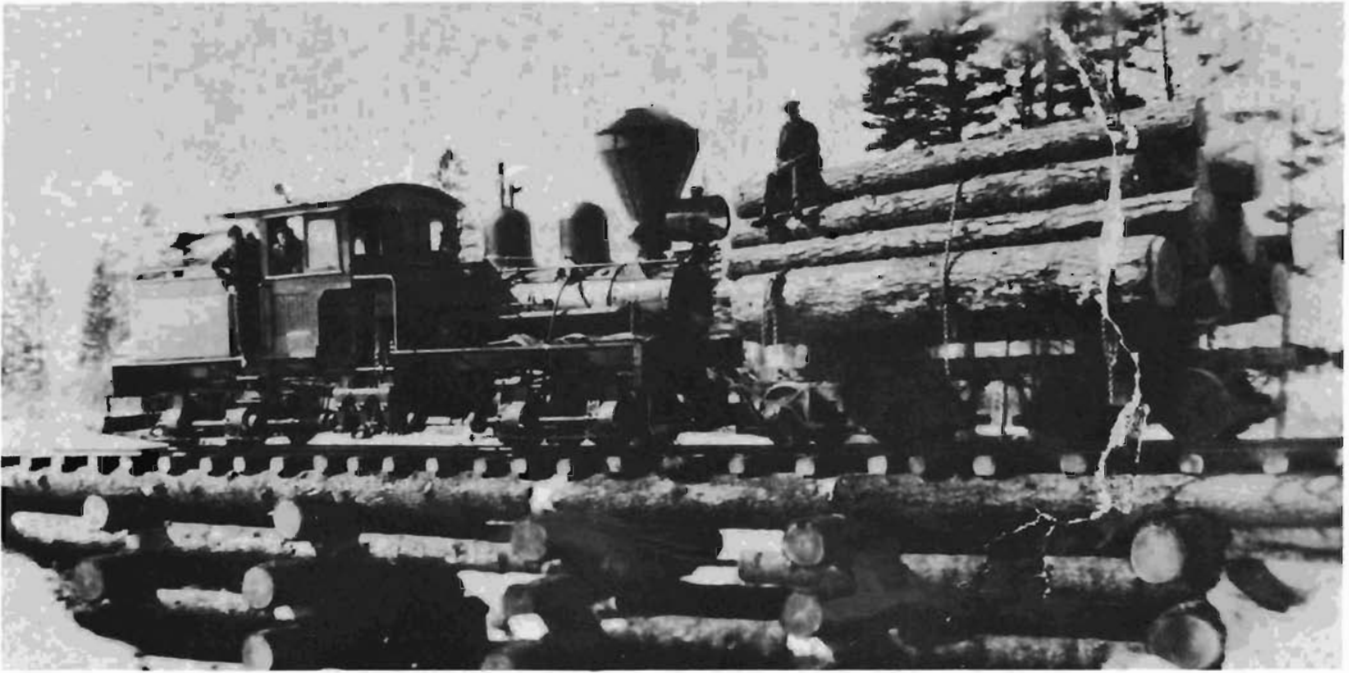
When this spur was planned, one ambitious company official volunteered to do the route survey and track layout for the new branch. Such a plan promised to save the company the expense of costly surveying fees. Unfortunately, the would-be surveyor was not completely familiar with the use of surveying instruments or railway engineering practice. As a result, the new spur was laid out with a six degree instead of a six percent grade. Not realizing that a six degree incline is equivalent to a grade of 10.51 percent, the grading and track laying crew soon finished their work by spiking the rails in place. The first trial run of the Shay up the spur proved that something was drastically wrong. The little locomotive could only push two empty cars up the grade at a time. Little thought was given to this problem until two empty cars were loaded at the upper end of the grade. At this point one observer began to worry that it might be difficult or even dangerous to take the loaded cars down the grade. Another observer suggested that it might be safest to lower the cars down the new track by gravity without the locomotive, using their hand brakes to control speed and thus avoid a runaway situation.

The new spur was built with a switch-back approximately half way down its length. While preparations were being made to lower the loaded cars down the upper leg of the incline, the locomotive was switched to



Shay No. 2 operated by Carl Coleman pulls a log train on Omak Mountain, 1923.

E. R. Aston



Georgia-Pacific Museum

Biles-Coleman Shay No. 2 rests briefly on a log crib trestle Northeast of Cougarville during 1923.

a safe position on the lower leg just below the switch. The first trip of the cars down the grade proved that hand brakes were not sufficient. As the cars gathered momentum, the brakes were desperately tightened to the point of locking the wheels. Even then, the cars slid on downgrade with increasing speed, finally coming to a stop only after sliding up the stub leg of the switch-back to a point near its end. Several similar trials proved beyond doubt to the train crew that the spur was unsafe for regular use. Hearing of the trouble, but still reluctant to abandon the new but apparently unusable spur, Nate Coleman decided to try lowering two loaded cars down the grade by himself. As the cars started rolling, Coleman tightened the brakes. Soon the brakes had been cinched up so tight that the wheels locked yet the cars continued to gain momentum as they slid down the steep grade. In desperation, he jumped off of the moving cars and bent over to grab a piece of slab wood to jam under the sliding wheels. As Coleman stood up, one of the overhanging log bunks of the following car hit him in the back, knocking him to the ground. Suffering a broken rib and a cracked lens in his glasses as a result of this sudden tumble, Coleman reportedly stated, "boys, it's just too steep". The spur was abandoned without delay, the employees responsible for route selection and track layout having learned an important lesson about what was and was not acceptable in track and grade design.

As loggers felled the trees, the trunks were branched and cut into car length logs which were then skidded to trackside for stockpiling or loading on the cars. Skidding and car loading was done with horse teams. Once loaded and chained to the log cars, the logs were soon rolling down the track in a train on its way to the mill. On spur lines built subsequent to the initial unacceptably steep branch, and even on the "main" line to Cougarville, loaded log trains were forced to operate on the steeper grades with the brakes cinched up so tightly that friction between the wheels and brake shoes soon made the brake

shoes reach near glowing temperatures. Shards of hot metal worn from the brake shoes which dropped on the dry ties and usual accumulation of bark fragments and pine needles found between the rails caused frequent



E. R. Aston

"Old No. 2" and the train crew pose on the Cougarville switchback stub in 1923. Crew includes: Barney Moran (on footboard), Nate Coleman (seated), Carl Coleman (engineer in cab), and Ben Holcomb (fireman in tender).



Standard two bunk short log car used on the Omak Mountain line in 1924.

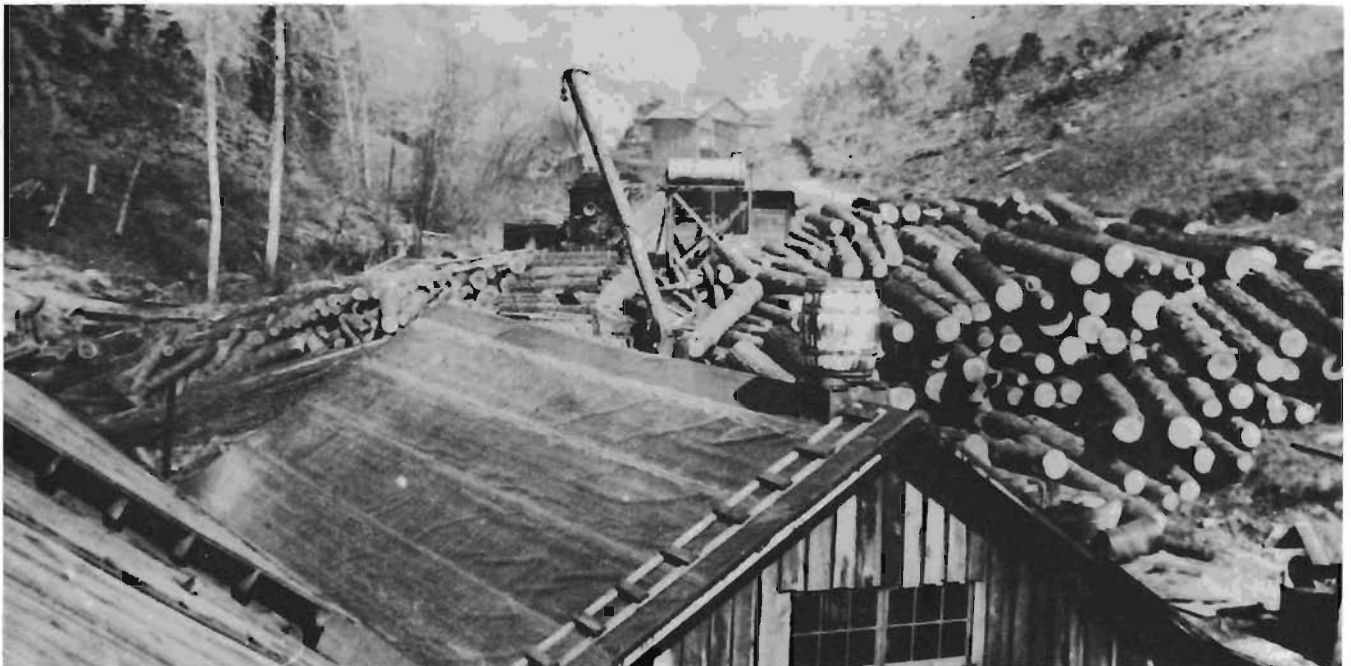
E. R. Aston

minor fires to erupt after the passage of a loaded train during the dry season. To prevent a destructive outbreak of fire from destroying the surrounding timber not yet harvested, a fire partolman mounted on horseback always accompanied the loaded trains downgrade to the mill during hot dry weather. The fire patrol rider always carried a shovel and large canteen of water, both of which were used to douse the majority of the train set blazes before they became serious enough to require additional attention.

The log cars used on the Omak Mountain line were all constructed in shops at the mill located on Mill Creek at the lower end of the railroad. These cars were built,

after some fruitless experimentation described in more detail in Chapter Six, by Biles-Coleman from old disconnected trucks. These trucks were connected by a new set of center sills and assembly of two bunks to form short two truck, two bunk log cars similar in design to the factory designed and built cars used on many other logging railroads.

The Cougarville mill, operating under the dynamic leadership of J. C. Biles and the Colemans achieved increasing levels of productivity during each succeeding year following its purchase. In 1922 the first full year of operation, the mill cut and shipped the equivalent of 115 standard gauge box car loads of box shooks and



U. S. Indian Service Photo, Authors Collection
Cougarville mill, log storage, and Biles-Coleman narrow gauge log train during 1923.

lumber. In 1923 production was increased to the equivalent of 410 car loads. Production figures for 1924, although at an even higher monthly level than in 1923 are incomplete as the mill did not operate for the entire year. The intensity of the work activity at the Cougarville mill is verified by a notation in the January 10, 1924



E. Fulford
End view of loaded short log car along Omak Creek in 1924 with Pete Clough atop the log load and Pierce Aston scaling the load.

issue of the Omak Chronicle which stated that "The Biles Coleman saw mill on Omak Mountain lost only 37 hours to various causes out of a total of 2598 worked." This yearly work total is only two hours less than 2600 hours which is the equivalent of 50 hours of work per week during all 52 weeks of the year. Obviously, the holidays and vacation periods which form such an important part of the work year for our nation today were totally absent during that earlier era.

By the end of 1923, the end of work on the Bureau of Indian Affairs logging contract was in sight and by mid summer of the following year work had started on the dismantling of the mill and removal of the rails. Mill machinery, the Shay, log cars, and rail was trucked back down the mountain to Omak.

An opportunity to bid on the exploitation of additional timber on the Colville Indian Reservation came up as the Omak Mountain operation was being phased out. Mr. J. C. Biles decided to bid on the new sale but Nate Coleman felt that lumbering in the vicinity of Omak did not have much of a future. As a result Coleman sold his interest in the mill and moved on to apparently greater opportunities at Kinzua, Oregon where a big new pine mill was being set up by Mr. Lansing D. Wetmore, a wealthy Pennsylvania lumberman. As subsequent events were to prove, the Coleman name would continue to be used as a prominent part of the firm's corporate title for fifty years after his departure from Omak.

The Coleman boys stayed on at the mill job after the departure of their father. After working several years on the new job, Coleman found the task of setting up the big new mill was bigger than he had bargained for. The elder Coleman called for help and soon Joe Coleman departed Omak to assist his father on the new job. Eventually, Joe was followed by his brothers Abe and Carl. The departure of the Coleman brothers marked the end of a Coleman family presence in lumbering activities at Omak. In the years following the departure of the Colemans for Kinzua, Oregon, the three brothers would later fill important managerial positions in the Kinzua Pine Mills Company.



U. S. Indian Service Photo. Authors Collection
Cougarville village and mill site during the winter of 1922.

R27E R28E

T34N

JOHN LEWIS

OMAK MOUNTAIN NARROW GAUGE

BILES-COLEMAN LUMBER COMPANY

LOGGING RAILROAD 9/1921 - 8/1924

GRAPHIC SCALE

MILES 0 0.1 0.2 0.3 0.4 0.5 1.0

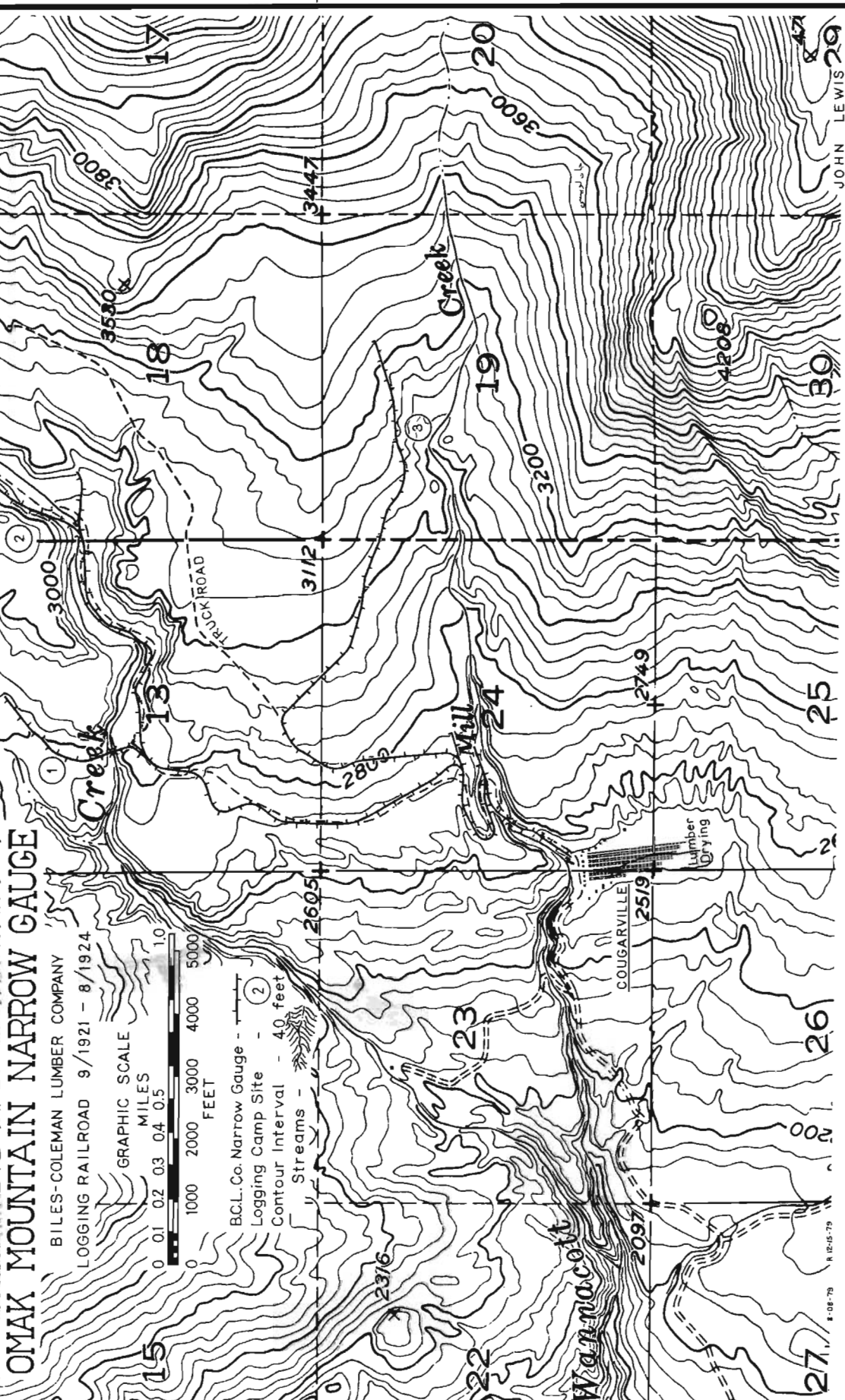


B.C.L. Co. Narrow Gauge - (1)

Logging Camp Site - (2)

Contour Interval - 40 feet

Streams -



8-08-79 R 12-05-79

Chapter 2

TEMPORARY NARROW GAUGE

Success in completing the Omak Mountain contract led the owners of the Biles-Coleman Lumber Company to the decision to stay in the lumber manufacturing business. This decision forced the owners to seek new and undeveloped sources of timber to the east of Omak in the vicinity of the village of Disautel on the lands of the Colville Indian Reservation.

At about the same time, the Bureau of Indian Affairs, having been well satisfied with the results of the small Omak Mountain timber sale decided to open up a really major tract of timber land for exploitation on the reservation near the village of Disautel. The successful bidder on this timber sale, which was designated the "Moses Mountain Unit", was the J. C. Biles Lumber Company. This firm was formed by Mr. Biles as a result of Nate Coleman's reluctance to involve the Biles-Coleman Lumber Company in a large, long duration timber harvest contract. Shortly after the new timber sale was consummated, Nate Coleman sold his interest in Biles-Coleman to his partner. Mr. Biles then expanded capitalization of the company to \$500,000.00 during the last week of December 1923 and made a portion of the newly acquired stock, previously held by Mr. Coleman, available to each of the principal company department heads including the three Coleman boys.

In a subsequent "paper" sale, the "J. C. Biles Lumber Company" sold the "Moses Mountain Unit" timber harvest contract to the Biles-Coleman Lumber Company. Although Nate Coleman was no longer in the firm, his name was retained as a part of the company title until the firm name disappeared in 1974.

Under terms of the "Moses Mountain Unit" sale, the final papers for which were filed in Olympia, Washington on December 27, 1923, a large quantity of timber conservatively estimated to total at least one-half billion feet (board measure) was to be harvested over a period of 25 years. Biles-Coleman was contractually obligated

to harvest at least 25 million feet of timber each year and to pay the Bureau of Indian Affairs for the actual amount cut, but not for less than the specified minimum quantity, if actual timber cutting figures fell short of that value.

Provisions of the new contract gave Biles-Coleman the right to route the right-of-way for the planned logging railroad any place determined to be necessary within the boundaries of the reservation for the transportation of timber to be harvested in the sale area. Right-of-way crossing privately owned land within the reservation was leased from the owners for a nominal fee while right-of-way over reservation land was granted free of charge. In either case, Biles-Coleman was obligated to repair any damage caused during construction to the satisfaction of the owner. Verification that renovations or repairs had been so completed was accomplished by an inspector working out of the office of the Reservation Forest Supervisor at Nespelem, Washington.

Reservation inspectors were to verify the performance of Biles-Coleman on all aspects of the Moses Mountain Unit contract. Initially, non-Indian inspectors and log scalers provided by the Bureau of Indian Affairs performed these tasks under the control of the Nespelem Forest Supervisor. A training program for the integration of reservation Indians into these jobs was started simultaneously with the start of work on the new contract. Soon a significant degree of actual Indian control over the removal of timber from reservation lands was being exercised.

To be successful, this new timber harvest venture would have to be able to economically transport logs from the forest to the proposed location for a new mill to be constructed at the mouth of the Omak Creek canyon a short distance southeast of town. Accordingly, the decision was made to build a new standard gauge logging railroad from the mill site to the woods. Construction of the roadbed for this apparently more sensible wide



Authors Collection

Distant view of the mouth of the Omak Creek Canyon near St. Mary's Mission looking toward the East. The right-of-way of the Omak Creek narrow gauge railroad of the Biles-Coleman Lumber Company can be seen emerging from the canyon mouth one-third of the way down from the summit of the center hill.

gauge line started in January of 1924. The route to be followed closely paralleled the banks of Omak Creek from the mill site in an eastward direction toward Disautel. The most difficult portion of the route to be built, from the construction standpoint, was located in the mouth of the Omak Creek Canyon a short distance southeast of St. Mary's Mission. A hard rock excavating crew provided by Ole Rue, a Spokane contractor arrived in Omak on Saturday the 5th of January 1924 and promptly established a work camp at Mission Falls on Omak Creek. Initially, this crew which had to blast and excavate about 10,000 cubic yards of rock to permit construction of the right-of-way, consisted of seven men. Later this force was expanded to a total of thirteen before the task was completed.

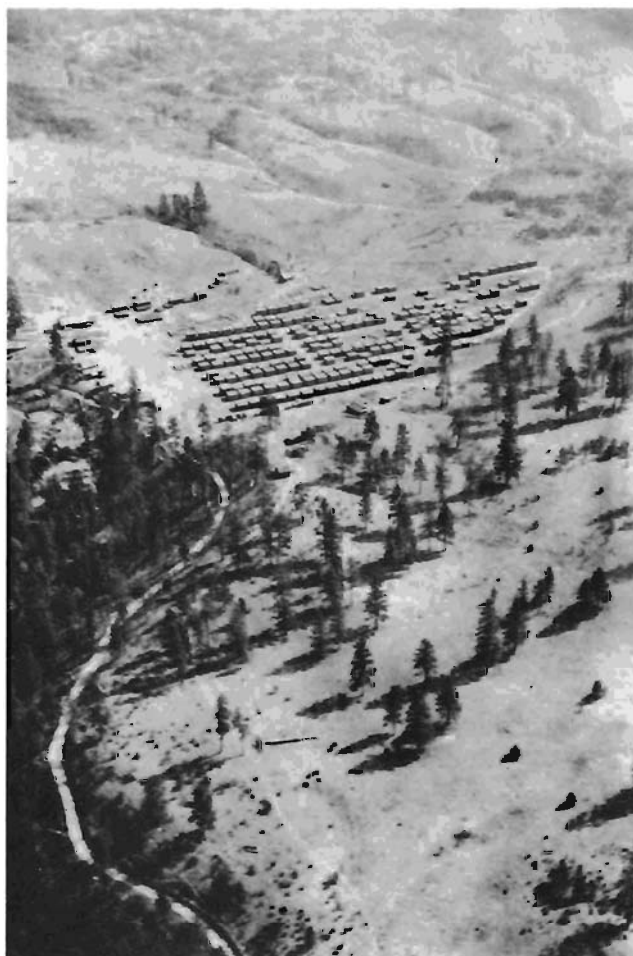
Construction of the right-of-way for the new line continued at a steady if not spectacular pace during the first half of 1924. Grading on the initial portion of the right-of-way leading east out of Omak together with the construction of needed bridges had started shortly after the rock crews commenced work east of St. Mary's Mission. By February 7, 1924 the first of the newly constructed bridges had withstood the strain of being battered by the ice break up on Omak Creek resulting from the usual mid-winter warm spell.

The log pond being built at the site of the new mill to be served by the railroad was completed on March 13, 1924 when the new 18 foot high dam, which had been started on October 22, 1923, was finished. The new pond was 22 feet deep at its deepest point and covered an area of about 3 acres. On about the same date that the log pond was finished, the railway grade had been completed from the box plant to a point near St. Mary's Mission. Simultaneously, a contract to provide ties for the new railroad had been negotiated and a crew of five men was hard at work cutting timber, hewing out the ties and delivering them to the new right-of-way.

While construction of the new line proceeded, operations of the Cougarville mill continued without pause. The Daly Brothers were fully occupied with the task of trucking cut lumber from Omak Mountain to the manufacturing plant in Omak according to the April 17th issue of the Omak Chronicle.* On the 8th of May the same paper featured a photo of logging railroad operations on Omak Mountain showing the Shay and a six car log train.

During the first week of August 1924, the Bureau of Indian Affairs offered the timber on the block of land to the west of the "Moses Mountain Unit" up for bid. This block of timber was called the "Mission Unit". This tract covered an area of 8,000 to 10,000 acres from the west boundary of the Moses Mountain Unit to a point just east of St. Mary's Mission where the last significant quantities of standing timber on the west side of the reservation were to be found. Biles-Coleman was high bidder and was awarded the contract for this timber sale. Since the lands of the Mission Unit would be the first to be traversed by the rails of the new line, the timber standing within its boundaries was destined to be cut before any logging started in the Moses Mountain Unit.

As operations of the Cougarville Mill and Omak Mountain logging railroad were being terminated during the late part of August, Mr. Emmit Aston brought an



E. R. Aston
Cougarville village and lumber drying area from the air, 1923. The mill is located to the left of the lumber drying area but is not visible in this photo.

advance crew of workers down from the mountain. A tent camp was established above St. Mary's Mission on the banks of the creek near the mouth of the narrowest part of the canyon. Work started without delay on the cutting of trees/ties and on the skidding of logs to stockpiles along the right-of-way of the new line which was being rapidly graded up the lower Omak Creek Valley.

As construction progressed, the roadbed and all bridges were built to standard gauge width while all ties were cut to standard gauge length prior to being scattered along the roadbed in preparation for the start of rail laying. Since the company still owned the narrow gauge Shay and log cars used previously on Omak Mountain, it was decided to utilize this equipment as an expedient measure in building the new logging line. Biles-Coleman purchased ten miles of "new" 56 pound relay rails from the Great Northern Railway for use on the first section of main line extending eastward from Omak past the

*By this date, the original box factory had been expanded to allow the manufacture of various types of mouldings, and casket shook as well as box shook. The expanded box factory was subsequently referred to by the company as the "remanufacturing plant".

difficult terrain in the vicinity of St. Mary's Mission and into the mouth of the Omak Creek Canyon.

Track laying started in the early part of May. The first mile of standard gauge access track from the Great Northern Railway to the mill site was in place and ready for use on the 15th of the month. By this date, two thirds of the ties that were required for the construction of the logging railway to be built during the balance of 1924 had been cut and were ready for distribution along the right-of-way. During the first week of June, machinery for the new mill began to arrive at Omak from the east by rail. Throughout the remainder of June a small crew continued laying track on the right-of-way up the Omak Creek Valley to the East of the mill site. Old rails salvaged from the Omak Mountain line were only to be used in building spurs off of the main line. As construction proceeded, first the supply of heavy rails was laid in place followed by the salvaged rails as supplies of the new rail were exhausted. Both the new 56 pound rail and the old salvaged rails were spiked down to the new standard gauge ties but to narrow gauge spacing. These rails were fastened down in a manner which would permit easy conversion to the planned standard gauge width. This conversion would be facilitated by spiking down the rail on the left hand side of the track going out of town on the full length ties in the final standard gauge position. The right hand rail was then spiked down at a position near the center of each tie to provide the temporary 36 inch track gauge required for operation of the equipment to be used during the track building effort. Final plans called for this rail to be moved outward, and to the right, to its final standard gauge position after track construction to the woods had been completed and when the new standard gauge motive power and rolling stock was delivered.

Late in June, J. F. Coleman announced that construction of the new mill in East Omak would start during the second week of July and that the company was in a strong financial position, being capitalized at a total value of \$500,000.00. Work on the new mill, which was designed to have a daily cutting capacity of 120,000 board feet, was proceeding rapidly while all grading on the first 8 miles of the new logging railroad right-of-way was complete. Track laying was proceeding rapidly, the Omak Chronicle noting somewhat cryptically on August 7th that "the track laying crew is pushing ahead of its work schedule everyday so this standard gauge railway will be completed to the first timber well before completion of the mill." Obviously neither Biles-Coleman nor the newspaper were yet willing to advertise the fact that the new track was, at least temporarily being laid down to a narrow gauge width.

Construction of the first six dry kilns to be installed at the new mill started during the week of September 22nd while machinery from the old Cougarville mill which had just been shut down was being trucked down the mountain for reinstallation at the new mill site.

The Company began to run short of funds after grading and track laying work had been in process for several months. Since some timber, made available by the Mission Unit Sale, was available along almost all of the right-of-way leading to the east along Omak Creek, the company decided to start some limited log hauling with the narrow gauge equipment being used for track construction as soon as the new mill could be

placed in operation. The narrow gauge would provide a supply of logs to the new mill and thus a supplementary source of income to the company. During the fall of 1924 track building proceeded at a leisurely pace while logging of the Mission Unit timber block continued. By the end of October 1924, over ten miles of track were in operation from Omak to an interim end of line at Camp "One" and doubts about plans for conversion of the line to standard gauge had started to arise.

At about this time, Biles-Coleman officials learned that a standard gauge railroad crossing the reservation could be required to become a common carrier and as such would have to haul produce and even livestock for people living along the right-of-way. Such responsibilities would have seriously interfered with the log hauling activities of the railroad and might have required the operation of an additional locomotive and certainly would have required special cars. The company had no desire to enter the public transportation business and this fact played an important part in influencing company officials to decide to keep the railroad narrow gauge.

A celebration excursion to the end of track at Camp One was held on Thursday the 6th of November 1924. This excursion marked the formal completion and operational opening of the new line. Company guests and local businessmen were able to view the newly constructed track up the rugged Omak Creek Canyon and could appreciate with satisfaction the fact that investors funds had been well and conservatively utilized. Several temporarily converted log cars pulled by Shay number 2 served as open passenger cars on this historic occasion. The train left Omak at 1:30 p.m. and after a trip lasting more than an hour arrived at the end of track 8½ miles east of, and 895 feet higher in elevation than the site of the new mill. Although many sections of track with steeper grades existed at points on the new line, the overall track grade was equivalent to a continuous 1.99 percent. Senator Horace E. Smith, the company construction engineer provided expert commentary to the travelers on the engineering details of the new railroad and explained future construction plans. The trip back to town was made by gravity without the locomotive with Carl Coleman manning the brakes of the lead car to control the rate of speed downgrade back into town. On this occasion the locomotive remained in the woods with several carloads of ties as track construction work continued without interruption.

Carl Coleman had been named superintendent of the new railroad by the date of this excursion, a position he held until he left the firm in 1927. Emmit Aston succeeded Coleman in this position and continued to run the line until it was abandoned. The railroad was tentatively named the "Omak Creek Railroad" at this time but the name failed to take hold. Another name for the railroad used occasionally and informally but never officially adopted, was the Bow and Arrow Short Line. Equipment on the new line was always lettered in the name of the Biles-Coleman Lumber Company until the neglect of years and the rain of many winters finally washed all traces of the lettering away. By the date of the celebration excursion, the Shay had been reconverted to burn coal fuel and it continued as a coal or briquette burner until being retired.

During the last week of November workmen were in the final stages of preparing the machinery installed



Ladd Photo from E. R. Aston

First excursion train on the Omak Creek narrow gauge, 8½ miles East of Omak, Washington on November 6, 1924.

in the new mill for the start of operations. The steam power plant installed to satisfy power demands of the new mill was capable of developing in excess of 1000 horsepower. The formal opening of the new mill occurred on Tuesday the 16th of December 1924. Mr. J. F. Coleman commented on that occasion that, "Omak's big new saw mill had been formally opened only 3 months and 19 days after construction had started."

A few days before the mill opened, the Omak Chronicle noted that 60 men were working at Camp 1 a few miles east of the Mission cutting and skidding timber to trackside which would be carried out over the new line to the Omak Mill.

In a transaction that would have an unexpected significance to future Biles-Coleman saw milling operations, Mr. H. F. Bennett sold his mill at Disautel and the associated box factory to Mr. Harry Wall during the last week of December 1924. Mr. Wall renamed the enterprise the Wall Lumber and Box Company. This mill had a daily timber cutting capacity of 50 to 60 thousand board feet.

By the end of February 1925, the Shay and original log cars were in regular use carrying rail and ties out to the end of track where work was continuing toward Disautel. On the return trip to town, the same train carried logs to the mill, cut from trees previously felled adjacent to the right-of-way. Lumber cut from the interim supply of logs was soon providing an ample and most welcome source of income that was essential if track construction to the major stands of timber located to the east was to be completed. As time passed, plans for conversion of the line to a full width, main line logging railroad passed further and further from the minds of company officials.

The Omak Creek logging line was laid out by Senator Horace E. Smith, a former Great Northern Railway surveyor. The route selected by this gentleman, and the road bed/right-of-way design used proved to be excellent in all respects except one. Forgetting the slow operating speeds common on logging railways, the curves on the new line were laid out with superelevation or "banking" adequate for high speed operation. The fallacy of this

design became suddenly apparent on a curve one day when a log car near the back end of a heavily loaded westbound log train derailed and fell over. The sudden loss of brake line air pressure resulting from the severed air hose connection with the derailed car actuated the air brakes which automatically braked the train to a sudden stop. As the train screeched to a halt, the crew watched in stunned amazement as each car on the curve gently tipped off the rails and rolled over one by one on the inside of the curve like falling dominoes, sending their loads of logs rolling like giant rolling pins. This orderly process of tipping off of the rails stopped finally at the point where the super elevation ended. Fortunately the locomotive remained on the track, although the crew fearing the worst, had by that time abandoned their posts. Immediately following this incident, track gangs were assigned the task of removing all but a minor amount of super elevation from the curves.

Anxious to expand upon the income already being received from the new venture, the company concluded in an almost preordained decision that the "temporary" use of the old narrow gauge equipment in log hauling would continue. Track widening would not occur until the new, but as of then unordered, standard gauge equipment was delivered. During the months that followed, the little narrow gauge train shuttled constantly to and from the mill and woods over the narrow gauge rails resting upon the standard gauge ties and roadbed.

Routine operations on the narrow gauge were occasionally upset by unexpected accidents. At dusk on Saturday, December 27, 1924 one of the axles on the Shay locomotive broke while the train was out at the woods end of the line. In a speedy and well coordinated repair action, which can only be looked upon with wonder in these days when machinery breakdowns are hardly ever repaired over a week-end period, the broken parts were removed from the locomotive, and rushed by truck to Wenatchee to catch the G. N. Ry's No. 1 westbound express to Seattle. In the meantime an order for a new axle had been placed with the parts supplier by telegram. Upon arrival in Seattle, the broken axle was replaced in the wheel and axle assembly rushed from Omak, and the



J. Larison/Authors Collection

Great Northern Railway "1100" class 2-8-0 Consolidation type locomotive of the variety used on the Wenatchee-Omak-Oroville line during the days of the Omak Creek Railroad. (No. 1106 shown at Interbay Yard, Seattle, Washington in 1948).

repaired assembly was dispatched east on G. N. No. 4 in time to reach Omak on a connecting train from Wenatchee on Monday evening the 29th of December. After working all night to carry the repaired assembly to the locomotive and complete its installation, train crews had the Shay back in operation on Tuesday morning. That same day a ten car train load of logs hauled into the mill by the Shay was being dumped in the log pond before noon.

During the week starting February 23, 1925 a late winter thaw resulted in a flood which raced down Omak Creek causing minor damage to the right-of-way. Train crews working to repair resulting damage lost only one scheduled round trip to the woods as a result of the repair work required.

The first item of Biles-Coleman equipment to be powered by an internal combustion engine was a modified 1924 Ford Model "T" pick-up truck which was fitted with flanged wheels to permit it to be used on three foot gauge track. This vehicle, nicknamed the "roust-about", was used for track inspection tasks as well as the delivery of mail, lighter items of perishable freight, and transport of personnel to the logging camps.

The entry of this unique machine into service on the narrow gauge was colorfully described as follows in the Omak Chronicle on November 11, 1924: "*Local Railways First Private Car a Success — Carl Coleman and C. D. Chidester have proven that it is only a short step from a perfectly road going Ford Delivery auto to a real good railway car. They took the rubber tires off last week and substituted a set of lightly pressed steel flanged railway car wheels at the Godfrey Service Station shop. After being so fitted said Ford walked off down the muddy street and headed over the river for the new Omak Creek Railway as gaily as you please.*" The same article noted that the rail



Okanogan County Historical Society
Model "T" Ford rail auto in the Omak yards posing for a photograph in November of 1924 with Nate Coleman, Jr., son of A. B. Coleman.

auto would be used to transport men and supplies up to 1500 pounds in weight between town and logging operations up Omak Creek. Not noted was the fact that the modification work also had required that the axles be shortened to allow operations on 3 foot gauge track. The sight of this machine lurching through the muddy streets on its initial trip from the garage to the tracks of the narrow gauge must have been interesting indeed. The need for the "roust-about" was a direct result of lack of state maintenance during that era on the primitive roads leading to the Disautel area. During bad weather such roads became difficult if not impossible to traverse. Only after the State assumed responsibility for maintenance of the road leading to Disautel did the need for the "roust-about" end. The modified little Ford served as a speeder until replaced in 1929 by more sturdy equipment which had been specifically designed for the rigors of railroad operation.

As realization came to company officials that the plans for an early change to standard gauge track operation might be overly ambitious, the decision was made to purchase new equipment which could not only replace the aging Shay and short log cars but also increase the daily log delivery capabilities of the line. Early in 1925, initial orders were placed with the Pacific Car and Foundry Company of Renton, Washington for the first four of what would eventually become a series of twenty-four, four bunk narrow gauge log cars. Each of these cars was readily convertible to standard gauge if so desired. On February 14th, a new 42 ton Heisler locomotive having sufficient power to handle the new equipment, and also readily convertible to standard gauge with minimal effort, was ordered.

After the new equipment had been delivered and proved successful in operation on the line, the plan to widen the track to standard gauge was finally forgotten. The inside rail which was to have been moved remained in the position where it was initially spiked down. Soon, even the standard gauge length ties began to disappear as routine replacements of the untreated timbers were made with shorter length narrow gauge size ties.

After Heisler 102 was placed in service, Shay No. 2 was taken out of operation for the start of a complete overhaul which included the installation of air brake equipment. The number 2 was returned to active service following this overhaul during the second week of May 1925. The newly overhauled Shay was assigned to work the woods end of the line where it would be used in the construction of both main line and spur trackage, as well as woods switching, while the Heisler

handled the main line log haul to the mill at Omak. When the Shay re-entered service, the company announced that five miles of main line and five miles of spur line trackage was scheduled to be built during the balance of 1925.

Construction and operating cost had obviously been a major factor in making the final decision to continue operations with the narrow gauge. Coincidentally, these factors may have had a major impact upon insuring the relatively long life of the Biles-Coleman line into the rapidly changing post World War II period without suffering the usual abandonment which was the fate of so many other Northwest logging lines in the early years of that conflict.

Shortly after the company had finally settled its apparent identity crisis over the question of which track gauge was to finally be adopted by the railroad and had firmly settled upon a 36 inch width, a series of annual picnic excursions was held on the line to familiarize both employees and their families with company operations. Preparations for the first company picnic excursion were initiated by Mr. J. C. Biles on August 15, 1927 who issued the following statement:

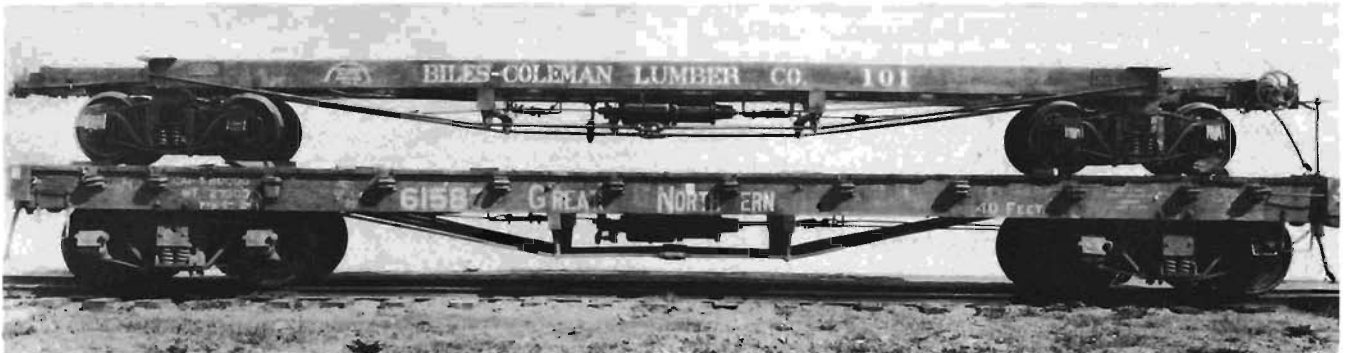
"For the past three years we have been trying to arrange to make an excursion over our railroad for all employees and their families so that all may be more familiar with our entire operations. We have never felt that we could make such a trip as interesting as we like until the present time. We are planning to fit up our cars to carry such an excursion to the woods on next Sunday, August 21, and we cordially invite every employee and their family to take this trip with us. The cars will be fitted up so that the trip can be made safely, provided, everyone will remain seated. That there will be no running about, it will be necessary that all children under 16 years of age to be accompanied by parents or guardian.

You may take your own picnic dinner and tables will be prepared at Camp 6 and hot coffee and cold lemonade will be provided by the camp.

Games will be played for a time after which the train will continue on to the end of the track in the woods so as to give an opportunity to see the standing timber and the method of logging."

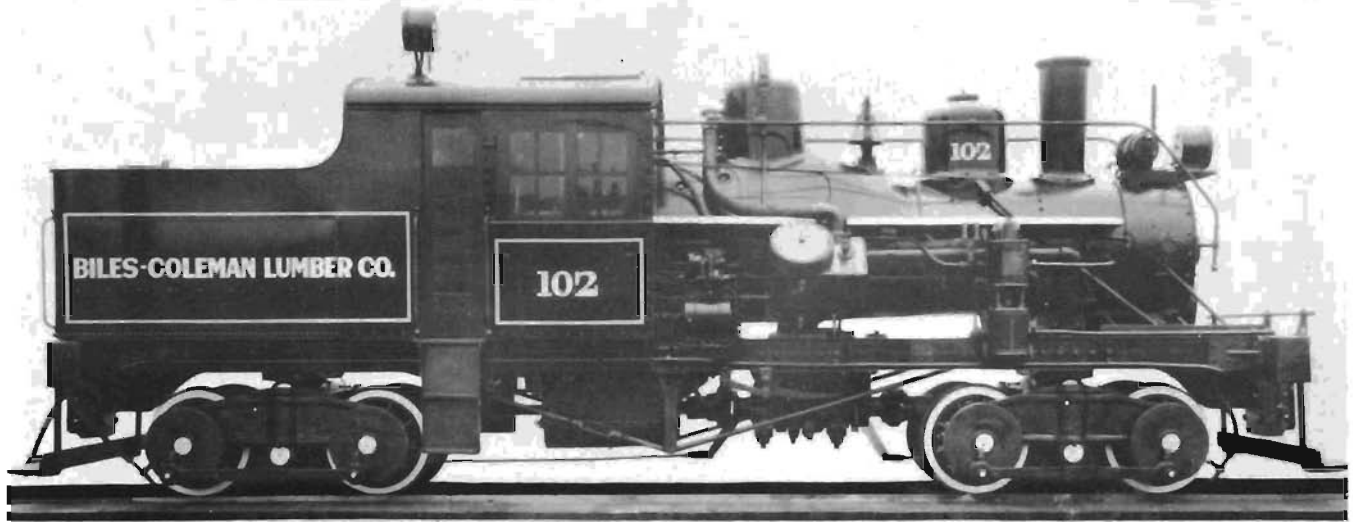
Following this invitation, the planned excursion trip was held as scheduled on Sunday the 21st of August with Heisler No. 102 stationed on the down grade end of the six car train to safely push it upgrade into the woods to the picnic site.

The description of this first excursion made over the recently "completed" narrow gauge which was printed in the August 25, 1927 issue of the Omak Chronicle pro-



F. Moline

Builders photo side view of the first long log car built for the Biles-Coleman Lumber Company by the P. C. & F. Co. in March 1925.



Builders photo of Biles-Coleman Lumber Company Heisler locomotive 102 built in 1925.

L. Nelson

vides a unique eyewitness account of the day's activities:

"Feasting, fun and a new appreciation of the methods and extent of Biles-Coleman Lumber Company operations was featured on the first annual picnic of Biles-Coleman employees at Camp Six Sunday.

Four hundred twenty-five employees and their families, and a few invited guests, left Omak at 9:36 A. M., on a special train composed of six logging cars fitted with passenger bodies and in charge of Carl Coleman, Biles-Coleman railway superintendent, conductor Judd Crowell and engineer Donald Dean.

No. 102, Heisler geared locomotive and larger of the two in service hauling logs from the woods to the mill,

was behind the train and although it poured out much black smoke and condensing steam often sprayed passengers on the nearer cars, it roared away steadily on the long up grade, the center of interest for many of the youngsters and many not so young.

It was comparatively easy going most of the way, but when the steeper grades came, engineer Dean "hooked her over a little" and with deeper growl she buckled down to the grind, steaming freely from the briquets which two firemen alternated in passing through the fire door.

The first thrill of the out bound trip came at Omak Creek Canyon, four miles out. Here the rails do a serpentine about the face of a ragged cliff which lifts its basaltic head high on the one hand and drops on the other far below where trickles a sparkling little stream pitching from rock to rock as it seeks the level of the valley below.

Passing through the canyon, the train followed up-stream, hills on each side marked with occasional outbreaks of rocks which here and there assumed magnificent proportions and straggling trees which elicited facetious remarks from the passengers out to see the forest. Here and there the valley broadened out to reveal a hay or grain farm, though for the most part these have been deserted because of the drought of the past few years.

The trip was punctuated by several stops for the Heisler, thirsty from the long push under heavy draft, to draw water from the creek into which a hose was dropped by the engine crew, in lieu of water tank installation.

Above the old Camp Five skidways, the track was skirted by greenery and nearby could be seen the trees which make possible the local lumber industry. It was not long then until the rails turned southward, rose sharply and a blast of the whistle announced that Camp Six, dinner stop, was at hand.

At Camp Six the Woods Department had set up tables among the trees and these were soon spread with the lunches brought by the ladies. In addition the Woods Department served coffee and lemonade and a supply of cakes and sandwiches for the bachelors who might have had insufficient food with them.

While dinner was being spread the sawmill men pulled a tug-of-war with the factory, the former winning a substantial victory. In a second set-to the woods crew de-



E. Fulford

Right side of Biles-Coleman's American log loader shortly after being delivered in 1927.



E. R. Aston

Heisler No. 102 switching loaded log cars to the log dump at the Omak mill pond, fall 1925.

feated the sawmill by a margin of a foot and a half in a surging struggle lasting a minute and a half.

Then came the feasting. After dinner one of the caterpillar tractors was brought from the shed and demonstrated for the benefit of the visitors. The "cat" turned here and there, spun about in its own length, climbed over fallen logs and otherwise showed how it could work under adverse transportation conditions found in the woods.

A. M. Aston, office manager, for the Biles-Coleman Company, then mounted the caterpillar and after inquiring if all had been fed, outlined the further program. He then introduced J. C. Biles, president and general manager, of the company. Mr. Biles explained that the picnic was the culmination of three years of hope and effort leading to establishing a day upon which all branches of the company service could unite for acquaintance and a good time.

The crowd was then invited to witness the loading of one of the company's air wheel Moreland logging trucks by the old fashioned cross-haul method. E. Wise acted as send-up man, Art Watkins as top-loader, and Ben Rainey, driving a span of big gray Percherons, as cross-haul teamster.

The process consisted of placing skids to the side of the truck, throwing a cable over the log on the roll-way and then with a hook on one end driven into a log on the truck and with the horses attached to the other the log was easily rolled into position on the truck.

Moving toward the train the truck became unmanageable for a moment and threatened to over turn, but accident was averted, and the day continued unmarred.

The visitors from Omak, joined by a considerable portion of the population of Camp Six, boarded the train, which proceeded up the hill south into the timber which is just now being tapped by the woods crews.

As the train moved away from camp, the caterpillar climbed a 40 percent grade in view of those aboard. It was enroute to the woods where it later demonstrated its part in log hauling.

The first stop out of Camp Six was at the point where the American loader was stationed and here the train was held while a car was loaded with logs with E. Raub as machine operator and Frank Graves as foreman. The visitors saw how the loading crane, equipped with hooked cables, lifted the logs easily and swung them to the cars.

Further on, the train again came to a stop to permit passengers to see the caterpillar drawing a "bummer" laden with two whole trees downhill to the track side. Dragging the trees alongside, the Caterpillar turned about, put its nose against the load and started to push it off of the "bummer", which might be described as a cart with caterpillar tracks instead of wheels. The chain on the trees did not release and then the "cat" spun on its toes, ran along the tree trunks, around the end and alongside until it came to a point opposite its first attack on the trees. Turning its nose against the trees, it boosted them back to relieve the tension on the chain, which was then taken off the load. Again, demonstrating its agility, the caterpillar trekked about the tips of the logs and back to its proper place at which it again put its nose against the two whole trees. As the train pulled away, it was backing around in a circle to hook on the bummer again.

The train proceeded to the end of the line, and there remained while two tree felling crews showed methods of bringing the trees down and working them up into logs.

During this time most of the passengers left the train, many of them visiting a cave nearby where there had been discovered a moonshine still — not in operation, however.

Shortly before 4 o'clock the train dropped back down to Camp Six where much water was consumed by the passengers and the journey resumed toward Omak where the train arrived at 5:50 PM to close an interesting day."

The 1927 picnic/excursion trip proved to be such a success that it was duplicated the following summer. On Sunday, the 2nd of September 1928, Biles-Coleman Lumber Company woods operations were viewed by a crowd of six hundred employees and their families who rode a



Scenery at the mouth of the Omak Creek Canyon looking West toward St. Mary's Mission viewed from the log train. Mark Purdy Photo Courtesy of Mrs. A. Purdy



B. C. L. Co. No. 102 trudges up-grade through the Omak Creek Canyon in the middle of an empty eastbound log train. M. Purdy Photo from Mrs. Purdy



E. R. Aston
Caterpillar tractor and hydraulic log lift high wheels being demonstrated at the first company picnic on August 21, 1927 near Camp 6 located on the "B" line.



Ladd Photo from E. R. Aston
Moreland solid tire log trucks carried logs over 5 to 6 mile runs to the narrow gauge. Photo taken near Camp 5 with Emmitt Aston sitting on top of the first loaded truck, 1927.



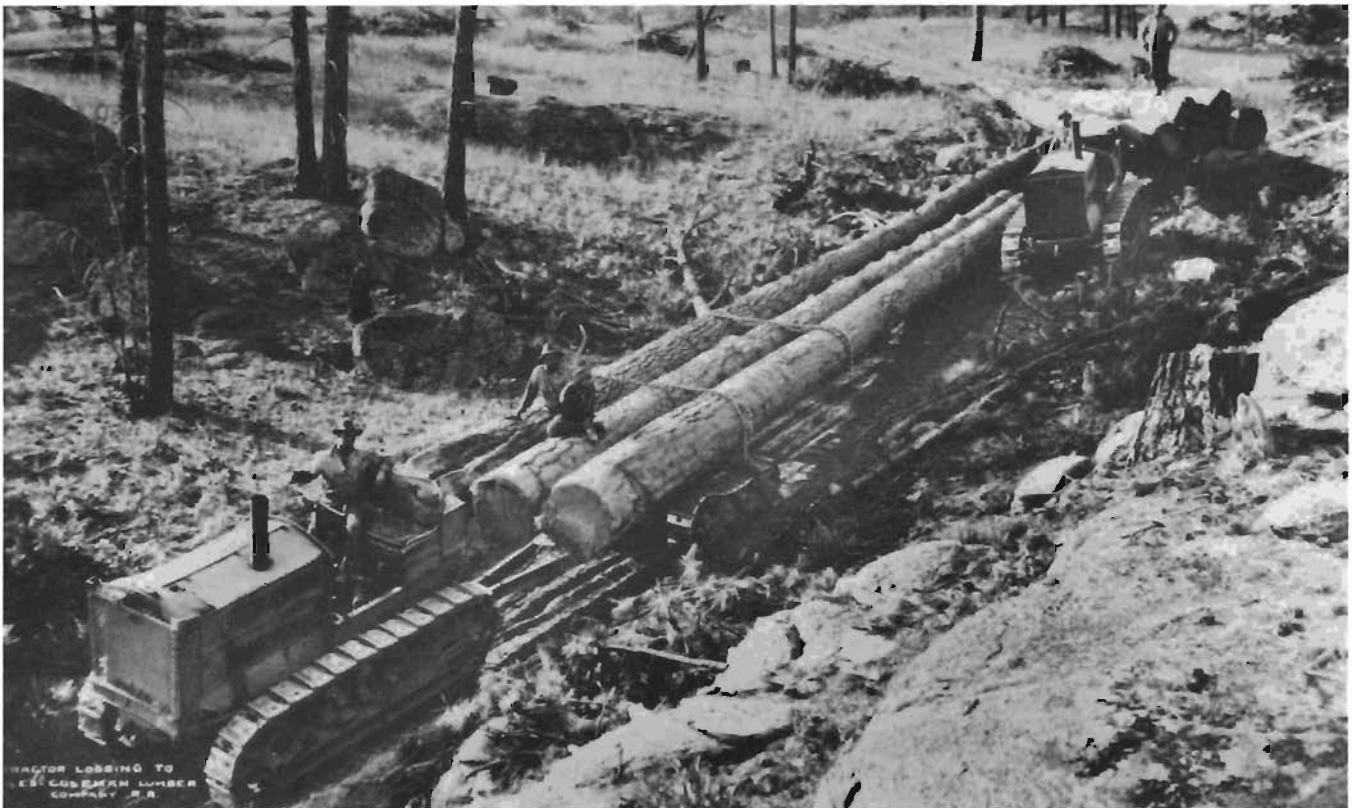
Log loader, visitors, and "passenger" log cars during the First Company Picnic on August 21, 1927.

E. R. Aston



A. H. & D. log loader demonstrating its capabilities at the first Company Picnic on August 21, 1927.

E. R. Aston



Ten ton Holt tractors and "bummers" being used to yard tree-length logs to the narrow gauge "B" line, 1927. Ladd Photo from E. Aston



The "buncher" demonstrates its efficiency in mechanized log handling at the First Company Picnic at Camp 6, August 21, 1927. E. R. Aston



C. DeGroot

Excitement runs high at the First Company Picnic at Camp 6 on August 21, 1927 as the new log loader displays its capabilities.

special excursion train from Omak to Camp 8. On this occasion, the train consisted of seven logging cars temporarily fitted with passenger accommodations, consisting of wood plank floors and seats, again powered by Heisler No. 102. The train left Omak at 9:05 a.m., and proceeded eastward over the scenic line past the switch where the "B" line branched southward to the site of the preceding year's Camp 6 festivities and onward on the newly built "C" line to Camp 8 which had just been established. As during the previous year's trip, demonstrations of company logging equipment gave the onlookers a thrill. Special conveniences and refreshments for the visitors were provided by the company while the forty residents of Camp 8 served as willing hosts.

Both the 1927 and 1928 excursions were major social occasions for the community of Omak. New acquaintances, friendships, and relationships were formed during these trips which were to have a lasting influence upon future events.

Unfortunately, the successful 1927 and 1928 picnic excursion trips were destined to be the last such trips to operate over the narrow gauge. Economic conditions which developed during the subsequent depression period, followed by the austerity of World War II, and the post war predominance of automobile transportation all discouraged the planning of any additional excursion trips.

The track and right-of-way of most logging railroads was usually very temporary in nature and was often poorly constructed and maintained. The Biles-Coleman line presented a pleasant contrast to this image. The right-of-way was properly cleared, and the road bed was

well graded and constructed. Track work on both the main line and on spurs was well aligned although numerous curves existed. Crushed rock or gravel ballast was not used but the ties were well ballasted with a sand/earth/gravel mixture. The ties were not treated with creosote to prevent decay. However, this policy was not wasteful as the mill cut ties from timber which was usually unacceptable for further processing into salable lumber. The rails were spiked directly to the ties without the use of supporting tie plates to cushion and distribute train loads to the underlying timbers, a practice common to most logging railroads. The track of the Omak Creek line, although never standard gauge as originally planned, was constructed to standards equal to those used on many of the better short line railroads of that era.

Maximum grades used on the main line were limited to 3.2 percent with the exception of one short segment of 4.1 percent a short distance out of Omak on the "S" curve near St. Mary's Mission. Maximum grades on spurs were limited to 7 percent. Track curvature on the main line was limited to a maximum of 18 degrees (319.63 foot radius) while spur track curvature was limited to 30 degrees (193.18 foot radius), a value well below the 60 degree maximum (100 foot radius) that both the cars and locomotives were designed to negotiate.

The main line started at an elevation of about 915 feet above sea level at the mill pond at Omak. The line rose to an elevation of about 2520 feet at Disautel and to 2940 feet a short distance to the East at the final log reload used at the time the line was abandoned in 1948.



Ladd Photo from E. A. Aston
 "C" line roadbed ready for the start of track installation in 1927 just to the North of the point where the right-of-way crosses the present route of Washington State Highway 10A.



Track of "B" line Southwest of Disautel, Washington, 1927.

Ladd/BCL Co.

This increase in elevation over a 22.85 mile track length resulted in an overall average adverse grade of 1.68 per cent which had to be overcome by east bound empty log trains. Grades on some segments of the line equaled the maximum values noted previously, while sections of level or near level track were also to be found at various locations on the main line.

Bridges were built with an average span between supporting bents of 15 feet center to center. Bridge stringers were 8"x16" timbers which were 15'3" long. Three such timbers were used to support the ties under each of the two rails on either side of every bridge. A total of 19 bridges existed on the main line when operations were terminated in 1948. Ties used in track work, after the plan to convert to standard gauge had been dropped, varied in length from 6 to 7 feet with a few cut as short as 5 feet. Tie cross sections in the later years usually averaged 6"x9" while some of the older ties were all but round in cross section, having been hewn to shape from poles. Switches were built with full length switch ties, a practice uncommon on most narrow gauge logging lines where staggered individual ties were usually laid down for each diverging branch from the switch points onward until the tracks were completely separated.

As the timber harvest proceeded during the years following 1925, a number of "spurs" or branches were built off of the main line to tap new stands of virgin timber. The first spur turned south from the main line about six track miles east of St. Mary's Mission. This branch, designated the "A" line, had a length of 5.67 miles. Excluding the rails and ties, the "A" line cost \$20,139. When the rails were removed after all logging had been completed in the fall of 1927, company records revealed that a total of 32,500,000 board feet of logs had

been carried out to the main line over the track of the "A" line.

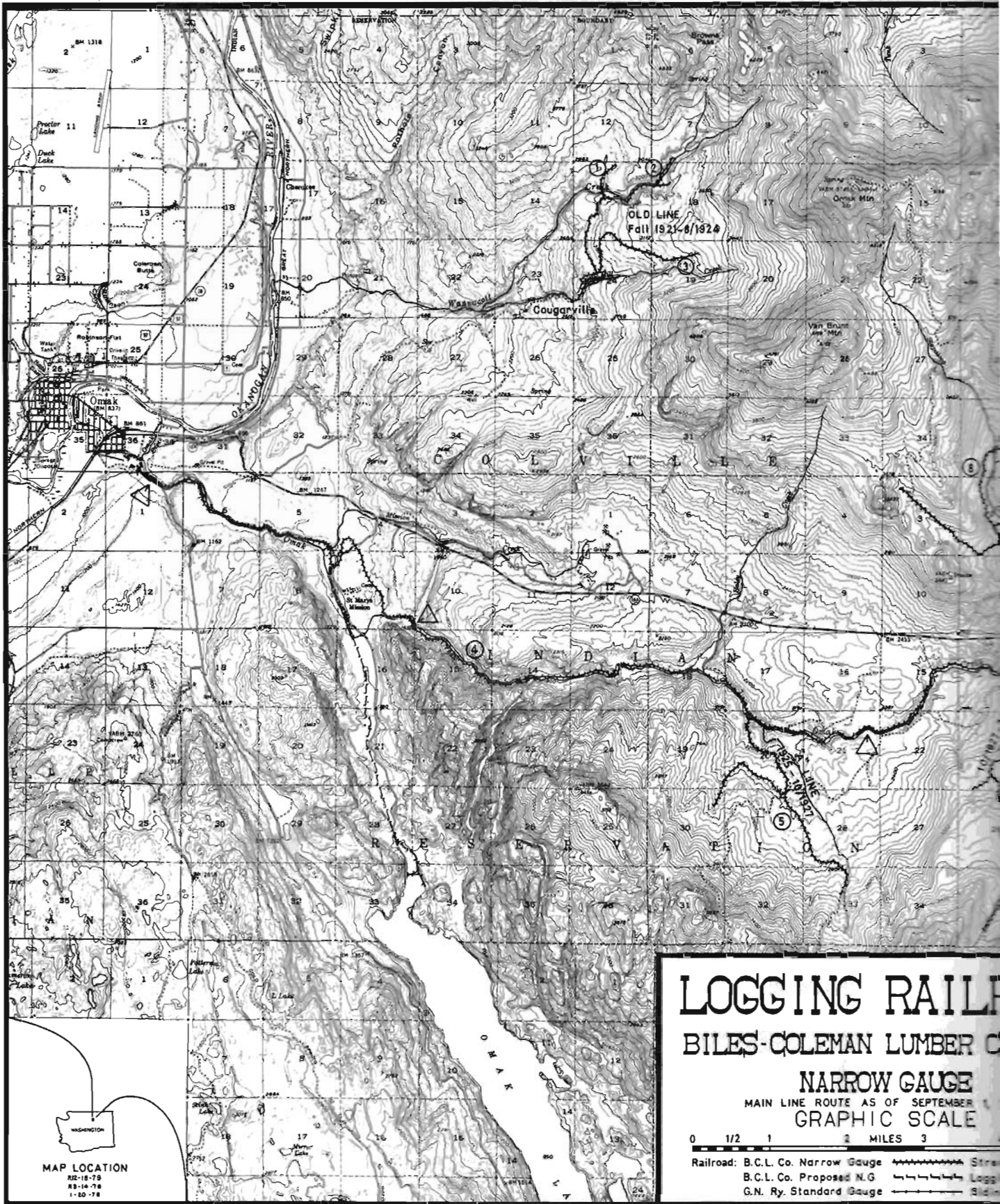
The second spur turned south about one mile west of the Disautel switch. Construction of this spur, designated the "B" line, was started in the late fall of 1927 and when completed had a total length of 6.84 miles. The "B" line was built at a cost excluding rails and ties of \$29,804. A total of 33,868,000 feet of logs were carried out over the rails of the "B" line before it was pulled up early in 1930.

A third spur called the "C" line which was eventually to have both east and west branches turned north off of the main line from a point about two tenths of a mile west of the Disautel switch. Construction of this line started in 1928 and continued into 1931. A total of approximately 65,000,000 feet of logs were carried out over the rails of the "C" line before logging was completed and the rails were removed at the end of 1933. The west branch of the "C" line was built first but the east branch had the distinction of being the first to be built by Biles-Coleman with mechanized excavation equipment. The company purchased a one cubic yard capacity American Hoist and Derrick gasoline powered "Gopher" crane/"steam" shovel during August of 1928 to speed excavation work required during construction of the east branch. This shovel was to prove to be a valuable asset during subsequent years in the construction of logging truck roads which would serve as feeders on the railroad.

A fourth spur led directly into the Disautel town-site. The Disautel spur was constructed immediately after the destruction by fire of the Omak Mill on September 23, 1928. The small mill and box factory of the former H. L. Bennett Lumber Company owned by Harry Wall, already operating at Disautel, was purchased by Biles-Coleman immediately after the fire to permit lumber pro-



Shay No. 101 and ballast train being loaded by the A. H. & D. "Gopher" shovel on the "C" line in 1929 or 1930. U. S. Indian Service Photo



LOGGING RAIL

BILES-COLEMAN LUMBER CO.

NARROW GAUGE

MAIN LINE ROUTE AS OF SEPTEMBER 1917

GRAPHIC SCALE

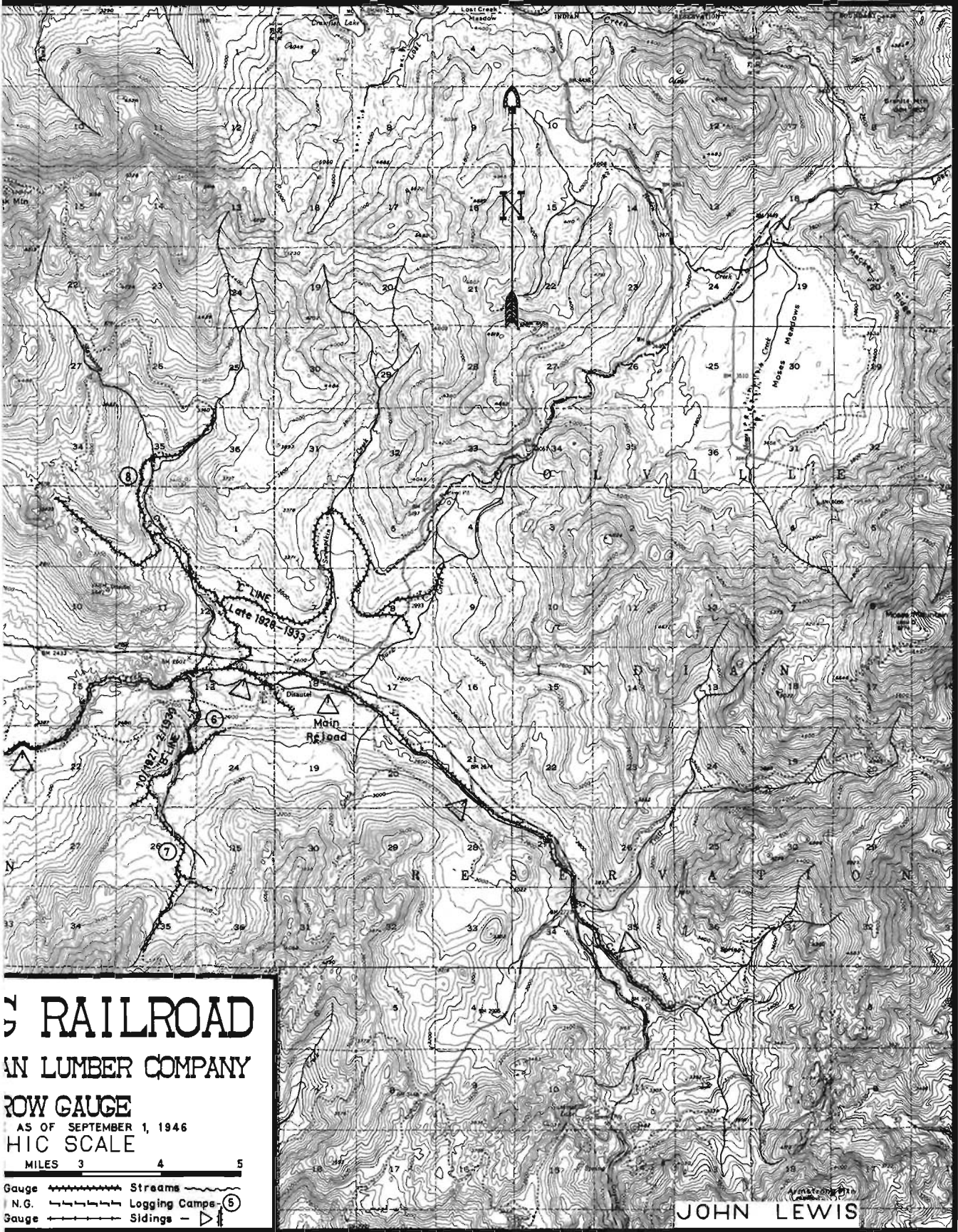
0 1/2 1 2 MILES 3

- Railroad: B.C.L. Co. Narrow Gauge Street
- B.C.L. Co. Proposed N.G. Log
- G.N. Ry. Standard Gauge Side

MAP LOCATION
 12-15-79
 13-14-78
 1-20-78

R28E

R30E



T34N

T33N

T32N

RAILROAD
AN LUMBER COMPANY

ROW GAUGE
 AS OF SEPTEMBER 1, 1946
CHIC SCALE

MILES 3 4 5

- Gauge Streams
- N.G. Logging Camps
- Gauge Sidings

JOHN LEWIS

R29E

duction to continue while the Omak Mill was being rebuilt. This small mill had no previous connection to, nor relationship with the railroad so a spur line was built Southeast from the main line to the mill. This spur allowed the direct delivery of logs from the woods to the saws by rail as well as the transport by rail of the mill's output of rough cut green lumber to Omak to supply the needs of the undamaged remanufacturing plant.

The Disautel mill was operated on an intensive schedule until the Omak Mill had been rebuilt. The Disautel spur continued in use long after the rebuilding of the Omak Mill was completed and the Disautel Mill was shut down and dismantled. The headquarters for woods operations were moved in the summer of 1929 from Camp 6 to Disautel and the village continued as the primary Biles-Coleman logging camp until the end of 1945. An unloading ramp was built at the end of the Disautel spur when the village became the center of woods operations, and this ramp was used for years to ease the unloading or loading of heavy logging equipment used in the woods which had to be shipped in from, or out to Omak over the rails of the narrow gauge. Final abandonment of this branch came only when the main line was abandoned in 1948.

Although not technically a spur, the last section of the main line to be built served in that capacity and extended about two miles beyond the crossing of State Highway 10A some 5.3 miles east of Disautel by road. The final three miles of this end of the main line were laid out personally by Mr. Emmit Aston. Unlike the rest of the railroad which had been formally mapped for the Bureau of Indian Affairs by the company in compliance with the terms of the contract, the location of this last

short segment of track was never accurately recorded on paper. When asked by an inspector from the office of the Nespelem Forest Supervisor about the required map some time after the track had been built, Mr. Aston replied that the line had never been mapped. He then explained to the surprised inspector that this section had not been laid out by an engineer unlike the rest of the railroad. As such, nobody was really sure just where it was located in an accurate surveying and legal sense. No further comment was ever made about the missing map and the location of this section of track remained unrecorded from the day it was finished until it was finally removed. This last section of main line track was used only infrequently during the final operating years of the narrow gauge.

The right-of-way of the first sections of the main line extending East out of Omak, as well as the grades of the original Omak Mountain line, had been constructed by manual labor with the aid of horse drawn scrapers. As time passed, much of the work performed by manual labor was taken over by a gasoline engine powered AH&D built "Gopher" shovel which not only speeded construction progress, but which also helped reduce the costs of right-of-way grading and construction. This shovel was used in construction of the "C" line, as well as in construction of the final segment of the main line.

During the years while logging was still being done by rail from spurs off of the main line, work train requirements for track construction, maintenance, and rail removal after logging was completed were usually handled by Shay number 101. This was particularly true on "steel" trains when rail laying on new spurs or removal of steel on old logged out spurs was in progress. In later



Builders photo of the Biles-Coleman Lumber Company "M. A. C. 4-30" speeder built by the Skagit Steel and Iron Works in February 1929. In this photo the speeder was equipped temporarily with standard gauge width axles for tests at the factory.

years, when log hauling operations had been modernized to provide a coordinated multi-mode main line reload and haul transportation system, the Shay was relegated to the scrap line.

A new Skagit Steel and Iron Works M. A. C. Model 4-30 speeder was purchased in February of 1929 to take over most of the track maintenance and work train switching requirements previously handled by the Shay. The new speeder was supplemented on heavy assignments by the Heisler.

The Skagit speeder was frequently used to pull a trailer having the capacity to carry a track maintenance crew of up to 30 men or a large quantity of track materials and maintenance equipment. This machine could also serve as a lightweight but capable yard switch engine. Knuckle couplers were not fitted on the ends of the speeder but link and pin drawbars were provided. When connected by one of these drawbars, it could easily shunt three or four empty log cars around the relatively level trackage at the Omak Mill. Purchase of the speeder eliminated any justification for keeping Shay number 101 operational for light track repair and shop switching work. Like most similar M. A. C. machines used on the west side of the Cascade Mountains, the Biles-Coleman speeder was eventually equipped with a cab or protective enclosure. The reason for the initial lack of protection for the operator and load or passengers has been attributed to the fear that the speeder might possibly tip over when heavily loaded. The desire of all riders to escape such a disaster is easily understood. The lack of restraining walls or roof on this machine as built were intended to facilitate such an escape. Experience proved that an escape capability was not needed. After several years, a

homemade cab was fitted on the speeder and was retained until it was scrapped. The Skagit was never given a number but was casually referred to as the "MAC".

Track maintenance was further improved in later years when two small 12 man Kalamazoo speeders with 12 man trailers were purchased to provide improved mobility for track section and logging crews. Like the "MAC", the Kalamazoo speeders remained unnumbered for the entire duration of their service on the Biles-Coleman narrow gauge.

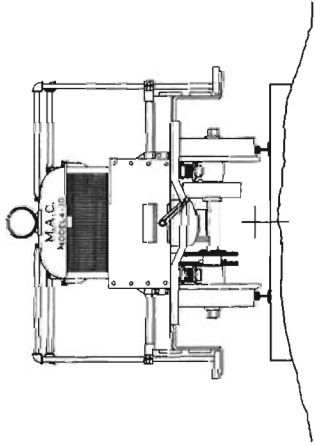
The motorized equipment complement of the Omak Creek line was filled out by a homemade speeder which was used for fire patrol. This speeder followed empty and loaded log trains from and to the mill during hot dry weather to permit smoldering fires resulting from passage of the train to be extinguished before a disastrous forest fire could develop.



G. McCracken
Biles-Coleman's homemade fire patrol speeder with Bill Ostoff at the controls.

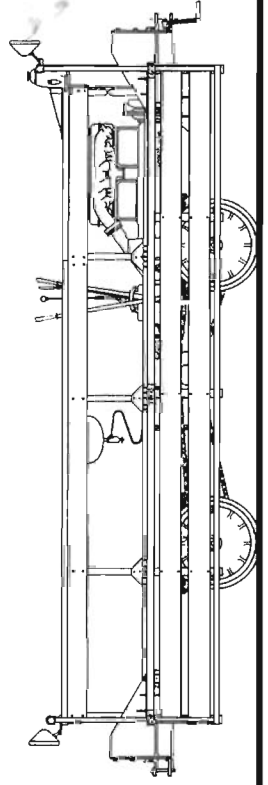
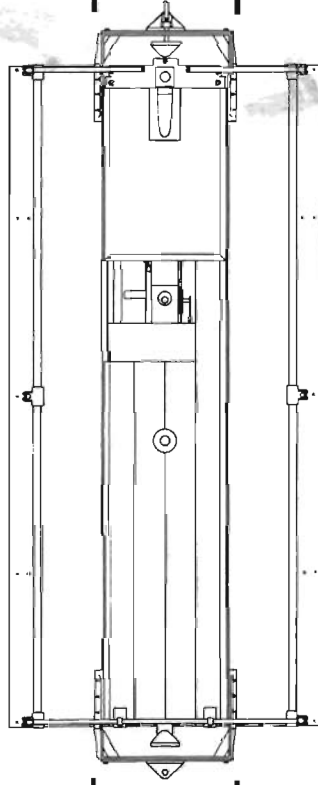


Mark Purdy Photo
M. A. C. 4-30 speeder after being fitted with a cab. Crew identity from left: Fred Ostoff, Mark Purdy, Bill Ostoff, and Maurice Gadeberg. Bill Ostoff later became section crew foreman while M. Gadeberg subsequently became logging foreman.



SPEEDER
BILES COLEMAN LUMBER COMPANY
SKAGIT 114
BUILT 2-1929
MODEL M.A.C. 4-30
NARROW GAUGE

GRAPHIC SCALE



Chapter 3

THE NARROW GAUGE MATURES

The years following construction of the new main line into the Disautel area and the decision to drop plans to standard gauge were busy times for the narrow gauge and its operators.

Having had practically no experience with modern railroad equipment and in particular air brakes, Biles-Coleman questioned the Whitney Engineering Company (West coast distributors for the Heisler) during the last week of February 1925 upon the advisability of fitting their newly ordered but not yet delivered Heisler locomotive with a steam as well as air operated brake system. Whitney advised that they had only had new locomotives fitted with a combination steam jamb/air brake system on two occasions during the preceding twenty years. These installations were performed in such a manner as to permit brake air to be routed into the steam jamb cylinder but never vice versa. Brake system modification to permit the injection of steam into air brake cylinders had never been accomplished in conjunction with Westinghouse E-T equipment. Whitney further reassured Biles-Coleman that the E-T equipment was the most efficient air brake system then made.

Such assurance satisfied the company and further attempts to have the new locomotive fitted with steam brakes were dropped, the Heisler being delivered in early April to Omak fitted with only the standard E-T equipment. The new two truck 42 ton Heisler numbered 102, took over the main line operation of the railroad imme-

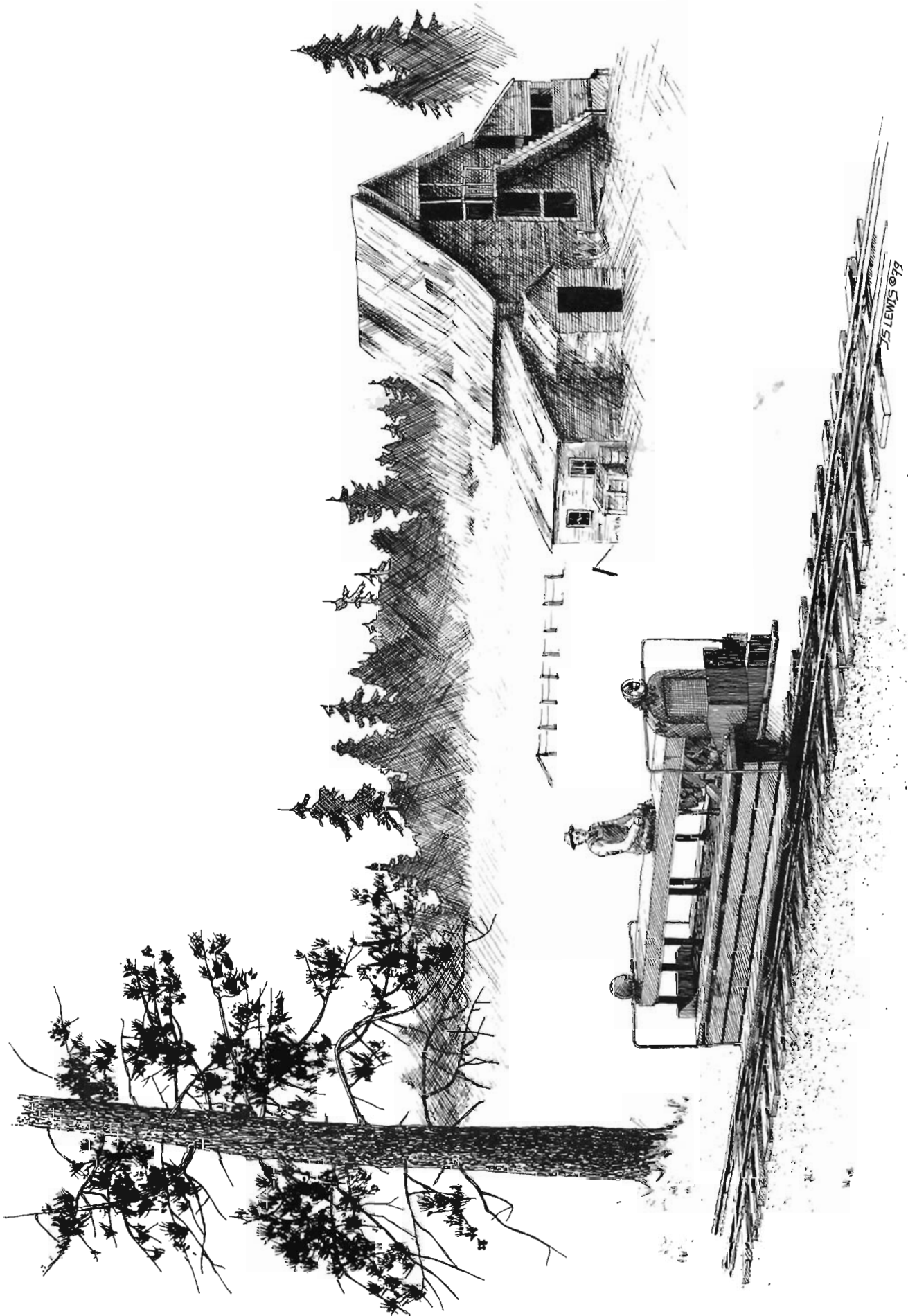
diately after being delivered. One of the first and probably most important equipment modifications to the Heisler occurred when the single stage air pump provided as original equipment was replaced by a much larger, higher capacity, two cylinder cross compound air pump. This pump had been installed by the start of the 1927 summer season, and it completely satisfied all requirements for the provision of high pressure brake air to safely control the speed of the log train on the long grade from the woods to the mill.

Shay number 101 (old "No. 2") had been relegated to a standby status following arrival of the Heisler and was used as required in yard switching and construction work. The Shay was occasionally used as late as 1929 for main line power but it was not suited for use with the new larger four bunk log cars. Initially, use of this machine with loaded trains of the new cars on steeper grades of the new line was a risky proposition since air brake equipment was not installed and its steam jamb provided the only source of braking power instantly available to the engineer. Soon after the new cars were purchased in 1925, the Shay was equipped with air brakes to supplement the steam jamb. These brakes enabled the Shay to be safely used with either the new cars or in work train service with the old cars which were not equipped with air brakes. In 1929 the Skagit speeder was purchased to take over occasional yard switching and light construction work duties. The speeder reduced further

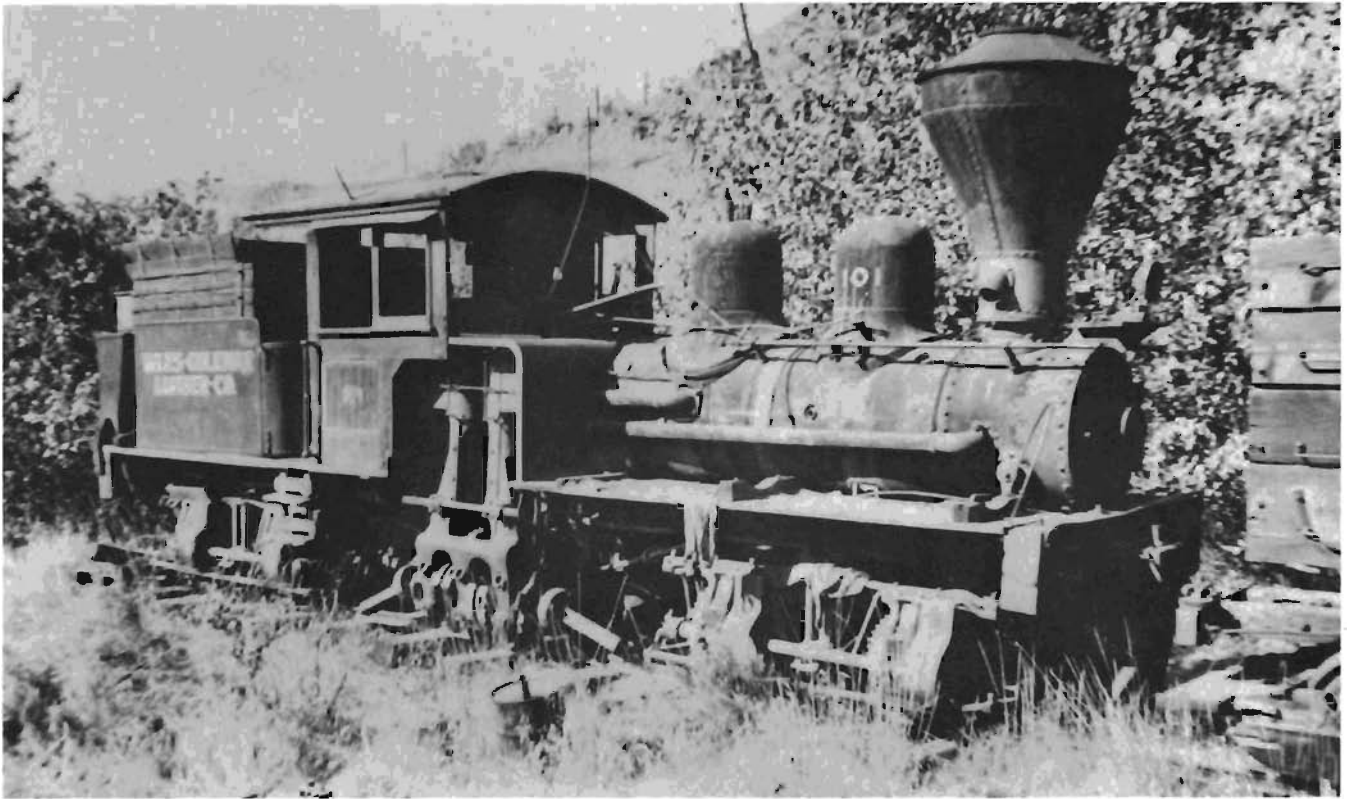


E. Fulford

No. 102 and admirers on a trestle crossing Omak Creek near Disautel, Washington. Courtney Riley and the now Mrs. Art Fulford pose in front of the lokie which had just been refitted with a cross compound air pump in 1929 or 1930.



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H. D. Lear

Shay No. 101 ("Old No. 2") lying derelict on a spur just east of the Omak mill in 1940.

the already limited requirements for the Shay and it was permanently retired shortly thereafter. By 1940, the Shay was quietly rusting away at the end of a little used siding at the east end of the Omak yard.

Although the Heisler was not equipped with a spark arresting smokestack, it had been built to burn either

wood or coal fuel. In initial operations following delivery, the Heisler was fueled with briquettes. The use of this fuel continued through the late fall of 1927. Conversion of the 102 to use oil fuel occurred sometime in late 1927 or early 1928 and it continued to use oil fuel until it was scrapped after the railroad was abandoned.

Since wood fuel was readily available at practically no cost in the form of slab wood cuttings from the mill, the selection of oil fuel for the 102 had important safety and supply considerations. The combustion of oil in the firebox did not produce the unwanted storm of glowing sparks and hot cinders raining down over the countryside out of the exhaust as did the combustion of wood or coal. This fact eliminated most of the need for special protective measures necessary to prevent the start of forest fires in dry timber and grass land areas during the heat of summer and the subsequent dry autumn period. Despite the improved fire safety resulting from the use of oil fuel, the Heisler was fitted with a conical shaped wire mesh spark arresting screen attached to the top of the smoke stack. This screen was connected to the stack by a hinged fitting which allowed the screen, which was not normally used, to be swung into place during abnormally dry and fire hazardous conditions. The spark screen was designed to contain any occasional particles of hot carbon which might be swept up the stack by the high velocity exhaust characteristics of a geared locomotive. The risk of accidental fires starting along the right-of-way from all sources ranging from cigarette smoking to "hot box" or journal box fires was well recognized by Biles-Coleman. To combat this threat, the 102 was fitted with a steam powered fire pump mounted atop the tender oil tank. This pump was fitted with a flexible hose tipped by a fire fighting nozzle which could be



M. Purdy Photo Courtesy Mrs. A. Purdy
The crew of Heisler No. 102 poses in front of their newly delivered mount on dual gauge track at the Omak mill. Crew identity from left: Mark Purdy, Harley Purdy, and Don Beam. Man at right probably from Whitney Engineering Co.



M. Purdy Photo Courtesy of Mrs. A. Purdy

No. 102 grinds up the winding track through the Omak Creek Canyon pushing a log car loaded with bridge timbers while pulling a string of log cars which will be loaded at Disautel. Note the cone shaped wire mesh spark arrestor folded down to the right side of the smokestack which could be raised into position in high fire risk weather.

used to direct water pumped out of the tender tank to put out fires starting along the track when the train was in transit either to or from the mill.

During the late 1920's, a typical log train consisted of the Heisler and between 18 and 22 log cars, the other cars not in use being serviced or repaired as necessary. The train crew was usually composed of four men consisting of an engineer, fireman, switchman, and conductor.

The efficiency of any logging line was dependent upon holding operating costs to the minimum. Biles-Coleman minimized the labor portion of operating costs by having the regular sawmill shop and maintenance crew double its responsibilities by maintaining the railroad equipment including the locomotives. Unlike many logging railroads, Biles-Coleman never hired a separate master mechanic just for maintenance of its railroad equipment.

The construction of wyes or provision of turntables for turning the engines around at either end of the line was considered to be expensive and unnecessary. As a result, both engines spent their entire operating careers on the railroad facing in the same direction. Locomotives ran forward on the eastbound uphill trip from Omak to Disautel and backward on the return trips with loaded log trains to the mill. Heisler and Shay geared locomotives were designed to operate equally well in either forward or backward directions.

The Biles-Coleman logging railroad operated during both winter and summer. Winter operations presented many problems to the company since Omak is noted as being one of the coldest spots in the state of Washington.

Heavy snowfalls are not uncommon at Omak and are quite frequent in the Disautel area.

Weather conditions prevalent in this area are well illustrated by an incident which occurred during the winter of 1928. Extensive logging activity was being carried out close to Disautel at that time. Daily train operation was being severely restricted by the fact that air brake failures were becoming increasingly frequent. Inspections revealed that ice was somehow gathering in the air brake lines, reservoirs, and cylinders freezing moving parts in place and jamming triple valves. A possible explanation as to the cause of this situation was offered by one worker who suggested that water vapor in the highly compressed brake system air was condensing and freezing in the cold air brake lines and equipment. This idea did not receive serious attention until the train crew mounted a thermometer on the pilot beam of Heisler 102. Temperatures observed in the Disautel area on that trip reached 44 degrees below zero thus eliminating any doubt that the water vapor was indeed freezing in the brake systems of the log cars causing the malfunctions previously noted.

Neither man or equipment functioned properly in the extreme cold temperatures common in the Omak-Disautel area during the winter. The switching of loaded log cars into the Disautel mill was proceeding without incident one winter night until one car derailed. The train crew immediately set to work on the task of placing re-railing frogs in front of the car wheels over which they could be pulled back onto the rails. This task took some time to complete but finally the crew waved a hand signal for the locomotive to move the cars. Nothing hap-

pened and the signal was again given with an equal lack of results. Shouts to attract the engine crews attention to the work to be done also failed to have any effect. Angered over the lack of response to his signaling, the foreman walked up the line to the locomotive. Much to his dismay, he suddenly found that no amount of signalling could have induced the engineer to move the train since he was not even in the cab. Inquiries addressed to the fireman revealed that the engineer had taken the unusual liberty of departing without explanation several minutes earlier for a nearby bunkhouse.

Arriving at the bunkhouse after a cold trek through snowdrifts, the foreman was greeted by a friendly but apparently intoxicated engineer who in a Swedish accent drawled, "you can't fire me, I just quit, it just too cold."

Another winter incident which may have been caused by the embrittlement of steel at low temperatures served more to raise the temperatures of the train and log loading crew than to damage equipment. A cable supporting a load of logs suddenly snapped while the loader was swinging the logs from a trackside landing on the main line about one quarter mile east of the "B" line junction to an empty log car. The loader was facing in a direction nearly at right angles to the center line of the car upon which it was resting when the cable snapped. Reacting to this sudden and unbalancing loss of load, the loader boom whipped upward and to the rear causing the log loader and the underlying logging car to tip off of the

track. The overturned loader and log car came to rest in the deep trackside snow with negligible damage. Several other empty log cars were derailed and pulled off of the track into the snow by forces transmitted through the coupler of the car derailed under the loader. Following hours of strenuous work by the loader, train and woods crews, the cars and loader were righted and restored to their normal upright position on the rails. Log loading then resumed as if nothing had happened.

Not all notable wintertime events on the narrow gauge were associated with the failure of equipment or reluctance of personnel to work in the cold. During the winter of 1930/1931 snows were exceptionally deep east of Omak. Joe Haley, who operated a ranch about five miles to the west of Disautel faced an emergency situation as supplies of cattle feed dropped lower and lower while the deep snow kept his cattle from reaching the natural browse upon which they normally subsisted. Following discussions with Emmitt Aston, Haley arranged to have a quantity of baled hay sufficient to satisfy the immediate needs of the ranch to be delivered to the yards of the narrow gauge line at Omak. The baled hay was loaded on a log car which was then dispatched Eastward at the rear end of a Disautel bound log train to a point near the Haley ranch where it was uncoupled and braked to a halt. Following this brief pause, the rest of the train proceeded on toward its destination while the grateful rancher rapidly unloaded the log car's life saving cargo and transported it to the needy livestock. The westbound loaded log train that evening paused briefly to couple onto the now empty car and then returned it to Omak from whence it was dispatched eastward in the next morning's empty log train to resume its normal log hauling duty.

During the period in which the narrow gauge track was being built successively closer to Disautel first through construction of the "B" line, and later the "C" line, the village was prospering from its own lumber industry. In 1927 the Wall Lumber and Box Company at Disautel had an annual payroll of \$150,000 and during peak activity employed 80 men. The annual lumber output of this mill was between six and seven million board feet. One third of the mill's output was shipped to customers in the form of door and window sash and frame material while the remainder was manufactured into boxes for the prosperous Eastern Washington fruit industry. Some of the better grade lumber produced at Disautel was also resold to the Biles-Coleman Lumber Company of Omak.

In January of 1927, 61 children were enrolled in the Disautel school. The Disautel mill shut down each winter during the most severe weather conditions and reopened each spring after a stockpile of two to two and one half million board feet of logs had been built up during the course of the winter. On the 1st of April 1927, the mill had been overhauled and was ready to reopen for the year. By the 5th of May the mill was in its third week of operation for that year and its daily output of lumber had reached 65,000 board feet. Supplies of logs required by the mill were provided by a fleet of up to 8 log trucks which operated over routes averaging three miles in length.

The community supported by the Disautel mill included two grocery stores, a post office, a meat market, hotel, bunkhouses and dining room for single loggers



E. R. Aston
"Oops!" Slideback log loader and car No. 101 tipped off of the track
1/4 mile East of the "B" line junction.

and mill workers, and thirty-two residences for men with families. While student enrollment at the Disautel school varied drastically due to seasonal and employment related fluctuations in the population of the village, 41 students were enrolled during the first week of May 1927 while the average enrollment for the entire 1926/1927 school year totalled 20 under the direction of school-mistress Nellie Hayes McMurray.

During the middle and early portion of the late 1920's while the Wall Lumber and Box Company was reaching peaks of production activity which would only a short time later provide the means for survival of the Biles-Coleman Lumber Company during a time of adversity, the Omak firm was continuing its vigorous development program. This progress was temporarily slowed during the latter part of March 1927 when deep snows in the vicinity of Camp 6 slowed track building work to new stands of timber. The resulting shortage of logs forced the company to cancel the night shift at the mill for a period of about 60 days.

In April of 1927 the company set aside \$50,000 to commence a major program of replacing steam powered machinery in the mill and remanufacturing plant with electric motor drive. Output levels of the Omak plant complex continued to increase, and during the first part of June 1927 the company was shipping thirty to thirty-five standard gauge boxcar loads of lumber products per week to its customers. By August of 1927, the installation of band resaw equipment had raised the 120,000 board foot daily capacity of the mill built in 1924 to new totals of 150 to 160,000 board feet daily.

The dynamic and community spirited leader of the firm, Mr. J. C. Biles ran for, and was elected to the office of Mayor of Omak during December of 1927.

Company plans for the future were based upon solid



E. R. Aston

Mr. J. C. Biles, the founder and promoter of the Biles-Coleman Lumber Company, about 1928.

footings. During the summer of 1927 the company outlined its plan for future operations covering eighteen years of timber harvesting which, although temporarily centered at Camp 6 sixteen miles east of Omak at that time, could be expected to sweep eastward up Omak Creek to the summit of Moses Mountain and beyond. This effort would proceed using an impressive array of modern mechanical equipment and the skilled manpower of the company's extensive organization.

The increasing rate of productivity demonstrated by Biles-Coleman in 1927 continued into 1928. During the latter part of June, the company was shipping between ten and twenty standard gauge boxcar loads of lumber products to its customers every other day. Monthly lumber products shipments during 1928 averaged nearly 3.5 million board feet, a significant increase over the monthly average of about 3.0 million feet shipped in 1927.

In July, the company announced plans to construct a new lumber remanufacturing plant adjacent to the mill which would replace the old remanufacturing facility situated about one half mile to the west adjacent to the G. N. Railway tracks. By mid-August, the new plant, the appearance of which was accentuated by a "saw-tooth" type roof design with sky light windows facing to the north to provide even diffused natural daytime interior lighting, was being erected at a rapid rate.

Working hours for employees of the mill complex extended from 7:00 a.m., to 12:00 noon and from 1:00 p.m. to 6:00 p.m. Monday through Friday, while Saturday working hours were shortened to only eight hours when the mill whistle called out the end of the work day at 4:00 p.m.

In the first major management change to occur in the prospering firm since the 1924 reorganization, J. F. Coleman became the first of the Coleman boys to leave Omak when he resigned his position as Superintendent of company operations during the week starting December 26, 1927 to take a job as superintendent of a new mill being built at Keazie, Oregon. Mr. R. L. McNett, who had been in charge of the remanufacturing plant was named to replace Coleman. In his new job, McNett assumed the added responsibilities of General Superintendent for the mill while retaining his prior responsibilities for the remanufacturing plant.

Carl Coleman, superintendent of the logging railway resigned from the firm during 1928 shortly after the departure of Joe Coleman. Emmet Aston was named to replace Carl Coleman as railroad superintendent and he held that position, as well as the position of logging superintendent, until the railroad suspended operations at the end of May 1948.

A descriptive and timely account of all of the company's operations appeared in several issues of the Omak Chronicle during the late summer of 1927. Selected portions of these articles, edited to delete extraneous material and annotated as necessary are presented here to give the reader an eyewitness view of company activities during that first key summer in which the pattern of operations which would be followed during the succeeding twenty-one year period became fully defined.

"Seven days from the Pondosa" pine tree standing in

*Pondosa was a contraction of the proper tree name "pondorosa" and was a term commonly used by western pine region lumbermen during the 1920's.

the woods until the manufactured lumber is in the car en-route to the far corners of America is the record of the Biles-Coleman Lumber Company's operations schedule.

Camp Six, 16 miles East of Omak, is the present center of logging operations which spread North and South to the extremities of the Omak Creek basin, and which will creep Eastward to the crest of Moses Mountain, where the present schedule will culminate 18 years hence. Last year 6,000 acres of forest was felled and marketed; this year operations will perhaps exceed those of the preceding period. Every hour of the day the progress map shows, one and seven-eighths acres is covered — trees felled, cut, skidded, dragged or hauled to the railroad and sent to the mill at Omak, after which crews have broken up and piled the brush later to be burned when fall rains minimize the danger to (the) second growth carefully preserved for future logging operations.

Camp Six is the home and workshop of a hundred men, a number of horses half as great, of powerful logging trucks, and Caterpillar tractors which crawl amazingly over steep rocky hillsides, dragging behind them whole trees by the half dozen. At the camp are (the) dining room and bunkhouses. There are homes for 30 families whose heads are Biles-Coleman employees. There too, are the supply houses, blacksmiths shop, tractor repair shop, saw filers shack, and the company (woods) office. Situated upon the "B" branch of the Biles-Coleman railroad, now being extended South from the main line route of the rails along Omak Creek, Camp Six is the home and operating terminal of the crew of five who man the train which each afternoon leaves the woods with 19 carloads of logs, the day's woods cut and the day's requirement at the sawmill at Omak.

Of separate identity, but (important to) Biles-Coleman operations is the forestry department of the United States Indian Service. The lumber cut is (made) largely upon tribal lands and this is checked by government scalers, the company paying for stumpage upon the scale of the United States. Its own costs are figured on the reports of the two scalers employed by the company. There is said to be little variation in the totals run by the two sets of checkers. The Indian Forestry Office, in charge of John E. Cotter, who is responsible to the Reservation Headquarters Office at Nespelem, also supervises the cutting of logs and the proper disposal of brush after the cutters have come and gone.

First in the manufacturing process is the tree itself. In the Biles-Coleman operations, the Ponderosa, a fine textured soft yellow pine, holds premier position, upon it having been built much of the reputation of the company as the manufacturer of a high quality product. Secondary to the pine is the cutting of fir and tamarack ("larch").

The forest contains many trees "four to six feet across the stump, clear many feet into the air, showing the characteristic markings and a heavy stand on the ground."

The tree felling gang consists of two men, a saw, an axe, and a bottle of kerosene to lubricate the saw as it bites its way through an average tree in three minutes time. Supplementary to the felling gang are the filers and sharpeners at the camp who keep the saw (s) and axe (s) sharp. When the tree is on the ground the gang marks it in log lengths and proceed to the cutting, leaving tops for the brush crews who later (gather) them up and pile them according to forestry regulations followed by the Biles-Coleman logging department. The succeeding step is assembly of the logs at the railroad for loading (on) the cars and transportation to the mill.



Ladd Photo from E. Aston
Horse drawn dollies used to skid logs from the stump to rollways along the Biles-Coleman narrow gauge, "A" line, 1927.

If the logs are within a hundred yards or so of the track they are dragged with horses attached to skidding tongs. For distances up to a half mile or slightly more the dolly is used. The dolly is a heavy two-wheeled cart with massive axles and wooden wheels bound with tires of 14 to 16 inch face. The dolly bears the weight of one end of the logs, the other (end) dragging on the ground. The dolly teams collect the logs at small rollways where they have been assembled by the skidding teams, or if necessity arises loading is done direct from the ground to the bolster of the dolly by hitching horses to a cable tied to the dolly run around the log and thence over the dolly, the log rolling up a skid pole onto the dolly.

Long distance hauling is handled by two Moreland, six-wheel trucks which haul from three to four thousand (board) feet of logs at a trip and average 12 miles an hour despite the grade which in some spots exceeds 30 percent downward. The two trucks are working 16 hours daily, driven by two crews, and have their unloading grounds at the roll ways along the railroad.

Two crews with 10-ton Holt Caterpillar tractors are logging . . . an area . . . too steep and rocky to permit truck operations, and too far distant from (the camp) to handle economically with teams. The work of the Caterpillars is even more startling than that of the trucks which exhibit so much power. The "Cats" weave in and out about the rocks, following the washes or picking themselves a way down the precipitous hillsides. Each tractor tows a "bummer", which is a Caterpillar trailer, and on these are loaded the ends of whole trees left by the felling crews in this division. The smaller ends of the trees are left to drag on the ground as do the dolly loads drawn by the horses in the less mountainous sector of present operations. The "two Caterpillars" can descend a 30 percent grade,



E. Fulford
Moreland 2 bunk log truck and crew at a reload along the narrow gauge about 1925.



E. Fulford
Gasoline engine powered "Cat" tractor driven by Fey Erp crunches branches, slash and snow in the woods near Disautel, Washington in 1933.



Caterpillar tractor, hydraulic lift high wheels, log car No. 119, and the slideback log loader highlight this 1927 Ladd Photo. E. R. Aston



Hook tenders attach loading cables to the next log to be hoisted onto log car No. 109.

C. DeGroot

each drawing a load of six trees, which measure above 5,000 board feet and weigh (up to 20 tons). The loads rip great gashes in the hillside, (giving) evidence of the power required to move them.

The Caterpillar demonstrate their versatility by loading and unloading their own bummers. They use the cable and the skid pole to roll the logs on the bummers. At the railroad, (the tractors) swing around and push the load off (of the bummer) with their noses. After being unloaded, the trees are sawed into logs by crews working at the rollways on the railroad.

Skid teams, dolly teams, trucks and tractors all converge on the railroad and for a distance of two miles rollways fringe the rails. As previously indicated, each afternoon a train of 19 log cars leave the woods. These are unloaded at Omak during the evening, the locomotive is (fueled) and the empty train is returned to Camp 6 about 3 o'clock in the morning. The jammer which rests on one of the 20 logging cars operated by the railroad, is attached to the lower end of the train, which is then spotted up grade from the day's loading (site) designated by the logging superintendent. The locomotive is then (uncoupled) and tied up for the time intervening until the call of the . . . afternoon.

When loading begins in the morning, the car furthest downhill is loaded by the jammer which is equipped with hooks attached to a 150 foot cable and which is able to drag logs from that distance to each side of the track, hoist them into the air, swing itself and drop the logs into position on the bolsters of the cars.

As each car is loaded, the jammer by a cable attached to couplings behind it, pulls itself to the (next) car and continues the loading of the train, which is dropped downhill (by gravity) as loading proceeds during the day. When

the 19th car has been loaded the jammer rests on the (20th car at the) opposite end of the string (from where it started) and this car is switched to a siding to await the return of the train the following morning and the loading (activities) of the succeeding day.

The cars are equipped with powerful hand brakes, which with a peevy as a lever make control positive even on the steeper grades of the branch lines. It is possible to run a car the entire length of the railroad by gravity, and such is done on occasion.

The 36 inch narrow gauge railroad is of modern construction throughout with 56 pound steel rails on the main line and 45 pound steel on the branch lines.

The locomotive used in log train service is the Heisler type, with a two-cylinder V-type steam power plant geared to a center drive shaft which propels the two sets of side-rod connected trucks. The gears are enclosed. The locomotive is equipped with the standard air brake and it is of interest to note that the double cylinder (air brake) pump used is of the same size and type as used on large locomotives of the Great Northern Railway.

The cars, manufactured by the Pacific Car and Foundry Company at Tacoma (actually Renton), are built on standard lines and as indicated (are) equipped with air brakes and automatic couplers.

The company also operates in construction work or in emergency an older type of Shay geared engine and has a number of cars not of standard construction which are used in auxiliary service. The Shay carrying a balloon stack, is reminiscent of the days when wood was logging locomotive fuel and the spark arrestor was in vogue. Biles-Coleman locomotives use briquettes for steaming.

The arrival of the train at Omak is followed by 40 minutes of unloading by cable and steam power (and then)

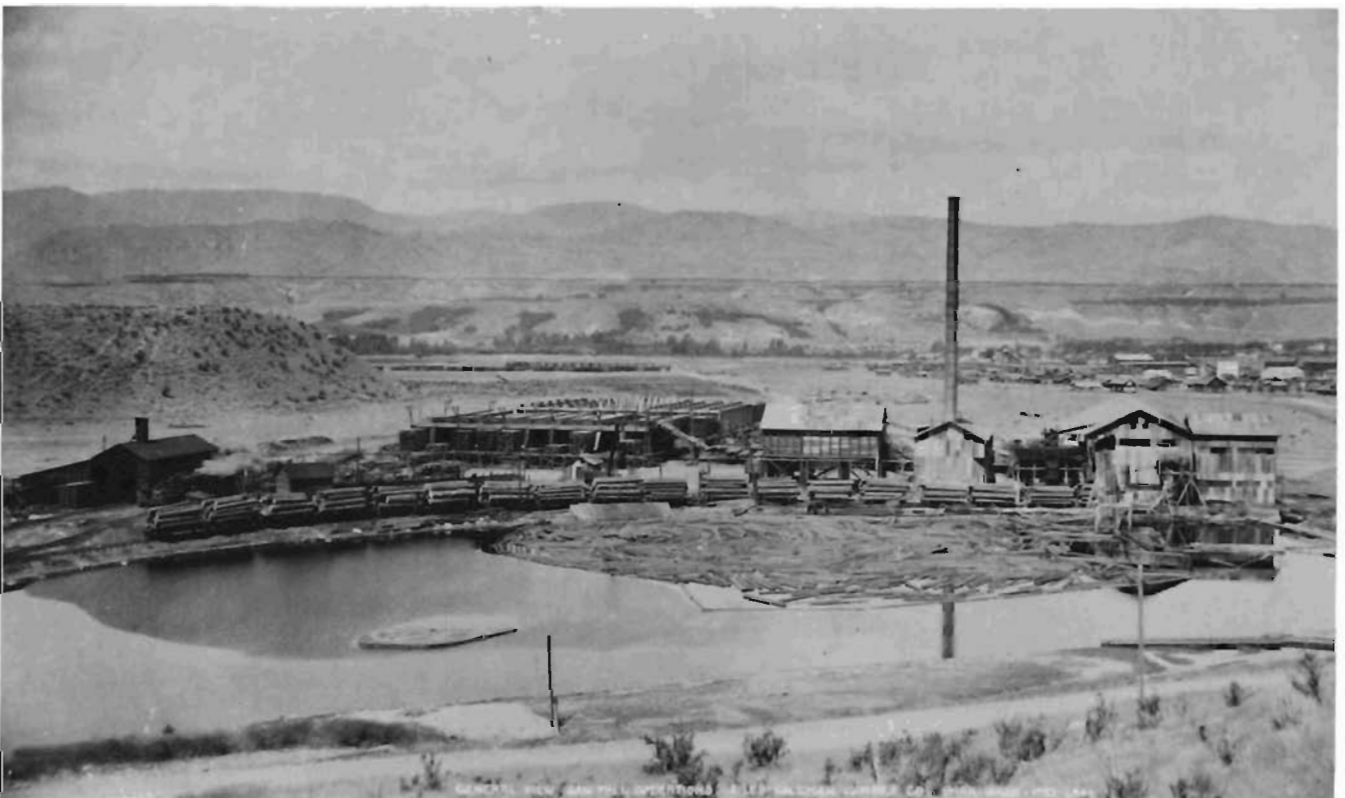


Ladd Photo from E. R. Aston
Log car No. 117 loaded with a typical load of logs for a publicity photo on the "B" line during the spring of 1927.



Heisler No. 102 pulling empty log cars backs into a siding at a reload on the "C" line in 1928.

C. DeGroot



Biles-Coleman Lumber Company's Omak Mill in 1927 looking toward the West. The Heisler, Shay, and nine loaded log cars are visible in this Ladd photo.

Authors Collection

the entire 19 cars are ready for the return trip to camp.

The log which stood in the woods as a tree the day before is now ready to go through the saws that night or the following day.

The second step in the journey of the Biles-Coleman log from the forest to the car, shipped as a manufactured product, is the sawmill in Omak, where daily 150,000 or more (board) feet of lumber is produced.

Dumped into the pond, the log is soon hooked by the pond man and gripped by the log jack, is on its way into the mill.

Enroute it receives its first treatment of manufacture for it rides through a circlet of spraying water which, under pressure from all sides, cuts away the dust and gravel collected in the skidding operations in the woods from whence the logs came.

The log enters the mill; the log jack stops, obeying the hand at the control lever. The log is scaled and at the command of the same hand it is kicked from the log trough by two steam-propelled "kickers" which shoot from below and hoist the log to the skids upon which it moves toward the saw carriage. The log moves down toward the saw intermittently impelled by gravity as the logs below move toward the carriage, or encouraged with a peevy if it fails to advance promptly when the log loader hurls a log to the carriage.

The log-loader is one of two powerful steam-driven mechanisms grouped near the carriage-way to facilitate handling and to speed operations in this, one of the most modern saw mills in the Northwest. The other is the "nigger-bar", drawing its name from its replacement of man-power in turning logs on the carriage while sawing is in progress.

As the log rolls down the skids it comes to rest in the crescent shaped arms of the loader. At the touch of the sawyer who mans the levers and directs sawing, the carriage shoots into position and the loader, revolving with a snap, hurls the log upward so that it falls onto the carriage.

Then the nigger-bar comes into action, again obeying the command of the sawyer stationed among the controls in a little cubby hole close to the 65-foot bandsaw which converts logs to boards. It may move straight from below the log as it rests on the carriage, its dogs biting into the log and rolling it into position against the carriage knees, or it may draw back and slap the log snug against the knees. The dogger on the carriage then pins it down and the log is ready to saw.

The "carriage" known to all who have observed mills as that part of the mechanism which hauls the log back and forth past the saw, is "shot-gun" propelled. In other words, it is shot back and forth by a piston in a steam cylinder. The knees which slide the log toward the saw are operated by steam under control of the "setter" who answers finger signals from the sawyer (making) settings for the thickness of the board at each cut.

The steam connection to the setting mechanism is through two pipes which slide back and forth in a cylinder along with the travel of the carriage, cylinder packing holding the steam from escape(ing) about the reciprocating pipes.

Speed is the characteristic of the Biles-Coleman installation, water tube boilers being used with a view to giving high pressure and ease of manipulation of the various steam cylinders employed in handling the logs.

As indicated, the immediate crew of the saw (consists of) the sawyer, the dogger and the setter. The former is master of the saw, for he must mentally size up the log quickly and decide how it must be sawed to get the most (lumber). Further, he must be able to handle the controls instantly, (and) accurately (to insure) that speed be maintained. In operation frequently a log is thrown from the skids into position by a swift movement of the nigger-bar and is dogged, ready for the ripping off of the first slab, all so quickly that the eye cannot discern that the carriage has come to rest longer than the instant required to reverse its direction of travel.

The dogger and setter, clinging to their tasks as the carriage, flashes back and forth, must be equally instantaneous, the one to pin the log tight, and the other in response to signal of the sawyer who calls for a board of a certain thickness each time the carriage sweeps back, calls for a turn of the log or for dumping it off the carriage onto the conveyors at the rear of the saw.

Only one man in the plant exceeds in importance the sawyer, this is the saw filer. Several times daily, dependent upon the character of the cutting and the amount of (saw dulling) gravel or rocks in the bark of the logs, the saws must be changed. From two to two and a half hours is the (usual operating time before resharpening is necessary). Changes must be made on (both) the log saw and resaws. (Saw) changes are made in approximately three minutes.

The Biles-Coleman mill employs three filers, one chief and two assistants who day and night work to keep the saws cutting swiftly and accurately. The Chief Filer receives the highest wages paid to any worker in the sawmill.

The lumber from the saw may (be directed to) take any one of three routes. The square board may proceed directly to the conveyor which bears the lumber from the mill to the loading platform of the (dry) kilns. The board with bark edges may hit the automatic trip which under its impact causes a cross conveyor to rise from beneath and bear it left to the edger. Or again, the trip may intercept it immediately as it leaves the saw and take it to the big band resaw, where the saw, running horizontally, splits one board into two or more, dependent upon the thickness sought by the resaw operator who sets his machine to meet the demand of each partly sawed board turned out by the main bandsaw and in accordance with the order being filled. From the resaw the board goes to the edger. The edger consists of sets of circular saws, one of the pair being rigid on the shaft, and the other sliding (to either side on the shaft) under control of a lever so that the bark may be ripped from both edges of boards of varying widths. Boards from the main saw are fed through at one side of the edger table and boards from the resaw at the opposite side.

From the edger the boards go to the conveyors which bear them to (the dry) kilns, an endless chain moving incessantly toward the loading platform, which in time is five minutes from the edger. Enroute the trimmings are separated from the lumber by a man who drops them below to the waste disposal system.

Slabwood from the saws are conveyed to a saw which cuts them to lengths suitable for sale as commercial (fire) wood, of which the Biles-Coleman Company has developed a considerable trade. A. B. Coleman, in charge of the sawmill, has constructed a hopper into which the (various) lengths can be segregated and then (are) allowed to drop

by gravity either into the railroad car or into a truck for local distribution.

Endless chain conveyors collect waste from the saws and lumber conveyors and this waste is ground up and carried to the boiler room (where it is used to fuel) two sterling water tube boilers developing 1,000 horsepower, 400 of which is used by an Allis-Chalmers engine which propels the mill machinery. This engine is (rated at) 700 horsepower capacity, but at present (it) carries only a trifle more than half its rated load.

The excess (steam generating capacity of the boiler plant) is used in dry-kiln operation, for which the fuel supply system is in part designed. Together with the development of the local fuel trade, the extra demands of the kilns have removed (the) necessity of constructing an expensive incinerator to care for waste as (has been) necessary in many sawmill installations.

The third step in the advance of the Biles-Coleman log is the battery of ten dry kilns which receive the newly sawed lumber as it leaves the conveyor from the sawmill.

Ultra modern is the (proper description for the) Biles-Coleman dry kiln. Here, as in only a few of the finest mills of the West, lumber is treated (to control) moisture content. Temperature (is controlled) for every moment of the drying period and (is) followed by intricate and delicate instruments controlling comprehensive steam, blower and hydraulic installations operated under the skilled supervision of Robert Smith, (whom) by education and experience (is) an expert in kiln drying.

The drying schedule is laid out with reference to the quality of the lumber; heart or sap, or mixed; to the dimensions of the boards in the charge, and to the use for which the lumber is later to be put. Laboratory tests by lumbermen, manufacturers of dry kiln equipment and scientists of the forestry branch of the United States Department of Agriculture have set up (timber drying) rules which, proved by practical experience, are used as a guide in the Omak operation.

Prevention of breakdown of the wood cell and the longevity of the manufactured product, as well as the non-variation from dimensions of manufacture are considered in the drying schedule. As mentioned these are intimately associated with the character of the board and the product to result from its manufacture. Thus sorting of the boards as they are conveyed from the sawmill forms an important part of the process. A specially selected crew works at the conveyor, segregating the boards for (drying) runs planned according to the production schedule issued at company headquarters where orders are received and operations (are) planned.

Speed of drying varies with the demands made upon the kilns, with an extreme capacity of 175,000 board feet daily (possible). It is to be noted, however, that this is a maximum and not the ordinary rate of drying, it being desirable to reduce the speed of drying to a rate as low as is compatible with the requirements of the remanufacturing plant which draws its supply of raw material from the dry kilns.

The more deliberate the drying process, the less damage there is to the woodcell, and while the drying under controlled moisture (conditions) preserves the lumber beyond the straight steam dried or even the air dried method, Biles-Coleman (management never loses sight of the fact that) high speed drying is fraught with danger and (thus) the rate is kept down as far as possible.

Eight of the ten kiln units are equipped with the Howard blower system adapted to local use by J. F. Coleman, superintendent of operations. Fifteen blowers driven by electric motors provide circulation of air. Situated outside the kiln walls, these blowers are attached to pipe lines which are tapped 36 times to give (the) intake and exhaust (flow) needed to build up (air) circulation.

Near each set of blowers is an external air gate through which a regulated amount of air is taken to expel in turn a similar volume carrying away through roof vents the moisture driven from the lumber by the heat (radiation from) the steam pipes.

Each unit is equipped with an indicator, the dial of which shows the status of temperature and moisture content as the indicator card rotates by clock hour after hour, the inked points of each indicator finger recording indelibly and for future reference the treatment (to) that charge (of lumber).

Control of steam admission is by a valve operated by a diaphragm which is motivated by a column of chemical which reacts to rise and fall of temperature within the kiln. Expulsion of moisture is controlled through setting of the external air intakes near the blowers coincident with regulation of the roof vents.

Two (kiln) units are fitted with the somewhat later (more modern) and more expensive Moore air control installation. Control is by steam and water valves operated by compressed air . . . the blowers are within the kiln and pipeless as contrasted with the external blower and pipe connections of the Howard system. Both are automatic in operation.

As temperature and humidity vary in these two (kilns), the regulating mechanism not only records (their values) on the indicator dial but causes compressed air to operate the valves admitting steam and water. Automatic control goes further (on these kilns) in that connected with the indicator fingers for heat and moisture (recording) are caliper fingers which can be set at any point and when that fixed condition is attained it will be maintained until new conditions are set by the operator.

Air pressure to operate the valves is maintained automatically, an electrically driven air pump being controlled by a pressure diaphragm which operates an electric switch. The pressure in the (reservoir) tank is normally at 80 pounds per square inch, but when discharges to operate steam or water valves have brought the pressure in the tank to 45 pounds, the switch is closed, the pump motor starts and the air pressure is quickly built up to 80 pounds, when again the diaphragm acts to break the circuit and stop the pump.

Under the Moore System a series of blowers within the kilns maintain circulation. The fans operate on a shaft driven by an electric motor set up in the operating compartment outside the kiln. The fans drive a blast of air against the bottom of the lumber charges laid on cross members resting on little tracks used to transport the lumber into and out of the kiln.

The boards are laid with a space between each on slats which hold the layers apart and through this open work the air blast percolates, while the laws of gases bring about a circulation as the air travels down the sides of the kiln to replace that lifted by the blowers.

This (Moore System) may be contrasted with the piped or controlled circulation of the (Howard System) adapted by Mr. Coleman.

After a drying period which approximates two days and two nights, (a variable period) the lumber is removed from the kiln either to be ricked in lots of 3,000 board feet for trucking to the manufacturing plant or if there is excess above the (demand of the) plant in dry months, it may be piled (outside) in the flat nearby to await the later demand of the remanufacturing plant. In operation for the past five months, the Biles-Coleman (dry) kilns, heralded as equal to any in the West, have proved their worth.

Three routes lie before the lumber which is trucked from the kilns to the Biles-Coleman remanufacturing plant. It may go through the shorter path of the general cutting department, be diverted from the planers to the box factory, or it may enter the more complicated process of frame manufacture.

Grade first determines which way a board shall go, and (insures efficient) utilization of the material, (which consists) largely (of making the best use of the most) wood between the knots. Thus in its travel through the plant, material is switched at any stage of the process to another division where its (best) utilization may be continued.

The lumber reaches the (remanufacturing plant) on a truck loaded with 3,000 feet of boards, the cargo being laid upon a rack which slips quickly from the truck, which (when unloaded) is almost instantly on its way again to load another consignment from the dry kilns. Already the boards have been sorted and the arrival is one which will be usable in the run being made that day.

The newly delivered load first goes to the planer which treats all arrivals and then it may go to general cutting or box treatment by conveyors, or to the frame department on two-wheel dollies. Rip saws, resaws and cut-off saws receive the boards from the planer bringing them to dimensions for the standardized products turned out by each department, or to fill the orders of the day.

In the general cutting division the moulders follow the saws, edging and shaping the product which may either go into storage for further treatment, or (be readied) for shipment as moulding, frame members door stock, slash stock, table legs, balusters or numerous other standard and special dimension stock items.

Box material derived from short cuts, goes through a series of rip saws and single and twin resaws (before going) to the Linderman Dovetail Glue Joiner, a comprehensive machine which joints and glues tightly as the pieces go through, boxes of the proper size being built from the smaller pieces. Much of the work done on this machine is for casket shooks.

Leaving the Linderman, the shooks are resurfaced and then run through an equalizer or twin saw, which (equipped with) hollow ground saws cuts(s) the shook to a fine degree of accuracy. Another step in the manufacture of apple boxes is the St. Joe sewing machine, a device which rivets the cleats to the top members, leaving them a unit (ready) for shipment. Then comes the automatic tie machine which bundles the box shooks under pressure and binds them with wire (into packages ready for shipment). The moulders are used on box stock to shape batters for casket shooks and to fill special orders (for) commercial boxes.

An additional machine brought into use (during the manufacture of) commercial boxes is the printing appa-

ratus which puts on the box ends two-color designs to order.

In going from the planer, the door and window frame materials are sized by rip saw and cut-off saw, go through the moulders for shaping, through the Dado machine, which cuts the frame members to the unequal angles required for fitting, are sawed to accurate dimension by equalizers, the mortising machines work the jamb fittings and cut the window frames for pulleys. The pocket cutting machine makes an opening to allow the carpenter to hang weights after the window frame is inserted, and the double end tenancing machines and sill machines, mitring machines and the Morgan nailing machine which drives from one to ten nails at a stroke to complete the pieces (to the point that they) are ready (for transfer to) the assembly room.

In the assembly room, cross members are bundled and likewise the upright members of the frame, which varying in dimension, are bundled according to length. It is thus possible to draw from stock parts for 26 by 30 and 26 by 28 inch frames.

One of the more interesting sections of the (plant) and perhaps the most complicated, is (the) moulder installation of four machines, two with four and two with six multiple knife cutting beads. With a large supply of standard shape knives and also with knives ground to special design, these machines are in operation daily, turning out their endless line of finely finished (specially shaped) products.

The saw equipment which forms such a large part of the mechanical installation is also one to occupy the attention, and these are being (updated constantly to keep pace with) every new step in (the) development of band and circular saws and sawing processes, as (demonstrated by the use of) the latest types of hollow ground saws for all operations requiring accuracy.

Within the last two months the entire plant has been electrified at a cost of approximately \$35,000. Until recently all power was (provided) by steam engines, but the continued growth of the plant involved difficulties in delivery of power, high transmission losses and high up-keep costs. Savings on insurance through removal of the fire-room from the plant, reduction in wage payments and greater convenience in power delivery made it economically desirable to electrify even (when costs of the new installation are considered).

There remains in operation only one boiler (serving the manufacturing plant and) this (is) at a considerable distance from the factory (and it is used only) for heating during the winter months.

Blowers have been arranged to convey the sawdust and shavings (to) where they are being stored pending development of probable consumption as material for (the) manufacture of wood-pulp papers and as fuel for new type burners now being tested in home furnaces by the company. The fuel would also be available for any (new) manufacturing installation which might be added to the community.

All of the products of the remanufacturing plant converge at the shipping platform where weekly 25 cars are loaded (with) the finished product (which has) completed the journey began as a tree in the woods only seven or eight days previously, and which has been completed as goods enroute to the markets of all America.

Changes in the Biles-Coleman plant are constant. Starting four years ago with a few units, the plant has

now grown to a complicated manufacturing establishment. The future will doubtless bring an entirely new plant on the flats east of the Great Northern Railway, when Omak, now (home) of one of the Northwest's most progressive and prosperous lumbermen, will have perhaps its finest re-manufacturing plant of glass and structural steel, and the Biles-Coleman organization from the woods through the sawmill, dry kilns and factory will go ahead with production (using) a system scientifically correct in design and (led by) efficient management."

The prediction of the preceding article about a new remanufacturing plant was to become fact when early in 1929, following the rebuilding of the fire-destroyed mill, the predicted facility became operational on the east side of the G. N. Railway tracks adjacent to the rebuilt sawmill.

The mill at Omak, located at the lower end of the Omak Creek Valley about one and one-fourth miles southeast of the center of town was the terminal for the narrow gauge. The economic impact of the Biles-Coleman Lumber Company upon the development of the community of Omak is revealed by population totals for the years 1920, 1925 and 1926. In 1920, prior to the purchase of the Omak Mountain mill by the firm's partners, Omak had a population of only 525 people. By the end of March 1925, after the new Omak Creek Railroad and new East Omak mill had commenced operations, the town boasted a total of 1512 residents, while twenty-one months later in December of 1926 the population had swelled to 1851. The company payroll during the year ending December 1, 1924 totalled \$1,292,916.68 while company purchases in the community of Omak during 1926 totalled \$308,970.99. By the end of April 1927, the value of the company's annual payroll was estimated to have increased to a value in excess of \$7,000,000. Obviously, the lumber firm played a major and controlling part in the development and maintenance of a prosperous economy for Omak.

On Sunday, September 23, 1928 the mill which was first opened for business on December 1, 1924 was destroyed by fire. The Omak Chronicle noted that the \$250,000.00 blaze, which started at 11:00 a.m., had destroyed the sawmill, dry kilns, green chains and 1,000,000 board feet of lumber. The blaze had been ignited by sparks falling into some oil. While the mill was totally destroyed, firemen did manage to save the "roundhouse". This disaster did not bring company operations to a halt as might have been expected.

Only five days after the Omak mill had burned to the ground, the company announced that it had purchased the Disautel Mill of the Wall Lumber and Box Company. This mill had a daily cut lumber capacity of 100 to 125 thousand board feet. Biles-Coleman immediately moved the Omak sawmill crew to Disautel and within a short time the newly purchased mill was operating on a 20 hour, two shift per day, six day per week basis manned by a crew of nearly 60 men who worked under the capable direction of the mill's previous owner, Mr. Harry Wall.

To provide a reliable and economical supply of logs to the mill, as well as cheap transportation for its product to Omak, the company started construction of an eight tenths mile long branch to the narrow gauge on Saturday the 29th of September. This spur to the Disautel Mill connected with the railroad two tenths

of a mile east of the point where the newly built "C" line turned north from Omak Creek toward Camp 8.

Simultaneously with purchase of the Wall Lumber and Box Company Mill and the start of construction on the connecting railroad, the company awarded contracts for the construction of a new mill at Omak and new dry kilns to Ernest Hubbert and D. C. Warral respectively.

Work on the replacement mill and dry kilns being built at Omak was carried out on a day and night basis. By the 5th of October, foundations for ten new 108 foot length kilns which would replace the 12 smaller destroyed units were ready to be poured. On the 12th of October the 78 foot high smoke stack of the new mill had been erected and the mill boilers were ready to supply steam to the dry kilns as soon as they were completed.

At Disautel, construction of the new branch of the narrow gauge was completed by October 19th and the shipment of cut lumber to the remanufacturing plant at Omak started. Use of the narrow gauge for shipment of cut lumber in addition to the supply of logs to the sawmill posed new problems to management.

The number of log cars available on the narrow gauge did not exceed the number actually being used for log hauling. Consequently the company was forced to use the old two bunk log cars originally used on Omak Mountain, but subsequently assigned to haul rail used in new track construction, to carry lumber out of Disautel down to Omak where it would be processed at the remanufacturing plant. Due to the fact that the Heisler was employed on a full time basis in log hauling while the Shay was being similarly utilized on work trains, the company resorted to the unorthodox and undoubtedly dangerous expedient of operating the lumber laden short log cars down the long grade to Omak by gravity only.

Using hand brakes to control rates of speed rather than the control provided by a locomotive, brakemen found the long down grade trip to be a rather nerve wracking experience. Cars had no whistles which could be used to warn of their approach to the several road crossings which existed on the track leading into Omak, while the presence of wild horses and livestock grazing along the right of way was a continuing hazard. A crew of two men was usually assigned to lower a cut of three loaded cars down to Omak in this manner. Mr. Con DeGroote was one of the crew who braked the lumber loads on the gravity run to Omak and he vividly recalls more than one occasion when the loaded cars attained such speeds on the run that brakemen were seriously debating the merits of abandoning the hurtling consist. Fortunately, control was regained in all instances before the decision to leap had to be made. Empty cars accumulating at Omak after their loads of lumber had been off-loaded were hauled back up to Disautel during the middle of the night by either the Shay or the Heisler after their more urgent daytime tasks had been completed.

As construction of the new Omak Mill progressed, it became obvious that Biles-Coleman was not just merely replacing the burned out facility, but that instead a new and completely modern plant featuring the latest in mechanization was being erected. A steam powered electric generating plant which burned sawmill waste for fuel would provide power for the entire Omak lumber processing operation. Two steam turbine electric generator plants of 600 and 1500 kilowatt capacity respectively were installed. Turbines installed in the new generating

plant developed 3350 horsepower and it was estimated that when complete, the new mill would consume 900 horsepower during continuous operation. The existing remanufacturing plant had previously been electrified and under full load conditions utilized a total of 1957 horsepower. Although some minor discrepancy exists between the kilowatt capacity of the new generating plant and the actual power draw of the mill and remanufacturing plant, it is obvious that the new mill was designed from the outset to develop enough electrical energy to free the company from any dependence on the commercial electrical power network.

Learning from the experience of losing the first Omak Mill to fire, the company installed a modern automatic overhead skrinkler system in the new mill which was supplied by a new 200,000 gallon capacity concrete reservoir which was built on the hill overlooking the plant site. This reservoir was elevated high above the plant site to provide a 100 pound per square inch operating pressure in the sprinkler system. The remainder of the mill yard was given fire protection by the installation of sixteen outside hydrants each of which was supplied by a twelve inch diameter cast iron water main fed by the hilltop reservoir. The installation of such an extensive fire protection system provided a clear demonstration that the company did not intend to allow the new mill to be lost to the ravages of fire at some unknown date.

Work on the new dry kilns proceeded rapidly and by the 26th of October, the installation of the thirteen circulating fans to be installed in each kiln was underway. A total of four of the new dry kilns were in operation by Monday the 5th of November. These four kilns had sufficient drying capacity to handle the entire output of the Disautel mill on a continuous basis. Construction of the four remaining kilns continued without delay with the sixth such unit being completed on November 27th.

Meanwhile construction of the new mill and delivery of the machinery required to equip it continued at an equally urgent pace. The last of the new machinery to be installed in the new mill was delivered from the east on Wednesday the 26th of December. The new mill was completed on Tuesday the 8th of January 1929 and following minor machinery adjustments, started sawing logs into cut lumber the following day. The Omak Chronicle noted on the 11th of January that the loss of the old mill had been covered by insurance and that the new mill had cut its first log only 92 working days after the loss of the old mill. An awe-struck comment in the same article revealed that saws in the new mill had a rim speed of 10,000 feet per minute.

The efficiency minded management of the company, well aware of the advantages of consolidating operations in one spot, were not slow bringing the new mill up to optimum production levels. Starting on the evening of Friday the 11th of January, workers running the second shift of the mill at Disautel were brought into Omak to start a second shift operation at the new mill. Simultaneously the company announced that the former Wall Lumber and Box Company mill at Disautel would be shut down permanently. This decision had already been implemented at 3:30 p.m., on that day when the whistle on the mill at Disautel screeched three long blasts to signal for the last time the end of the days work. Dis-mantling of the recently busy mill started at once, end-

ing permanently the business of lumber manufacturing a Disautel. Mr. Harry Wall, who had formerly owned the Disautel mill, and who had managed its operation during the hectic fall of 1928 was named to head the Biles-Coleman Timber Purchasing Department when the temporary mill was shut down.

Completion of the new mill and the resumption of all milling operations at Omak did not end Biles-Coleman's problems with fire. Late on Sunday the 9th of February, less than a month after the new mill had gone into operation, a fire broke out in the remanufacturing plant located on the west side of the Great Northern Railway track which left only a mass of smoldering ruins by the time that the fire was finally put out just before dawn on Monday. Six standard gauge boxcars spotted on a siding adjacent to the remanufacturing plant were also destroyed by the four hour long blaze. Total dollar losses resulting from this fire were valued at about \$300,000.00.

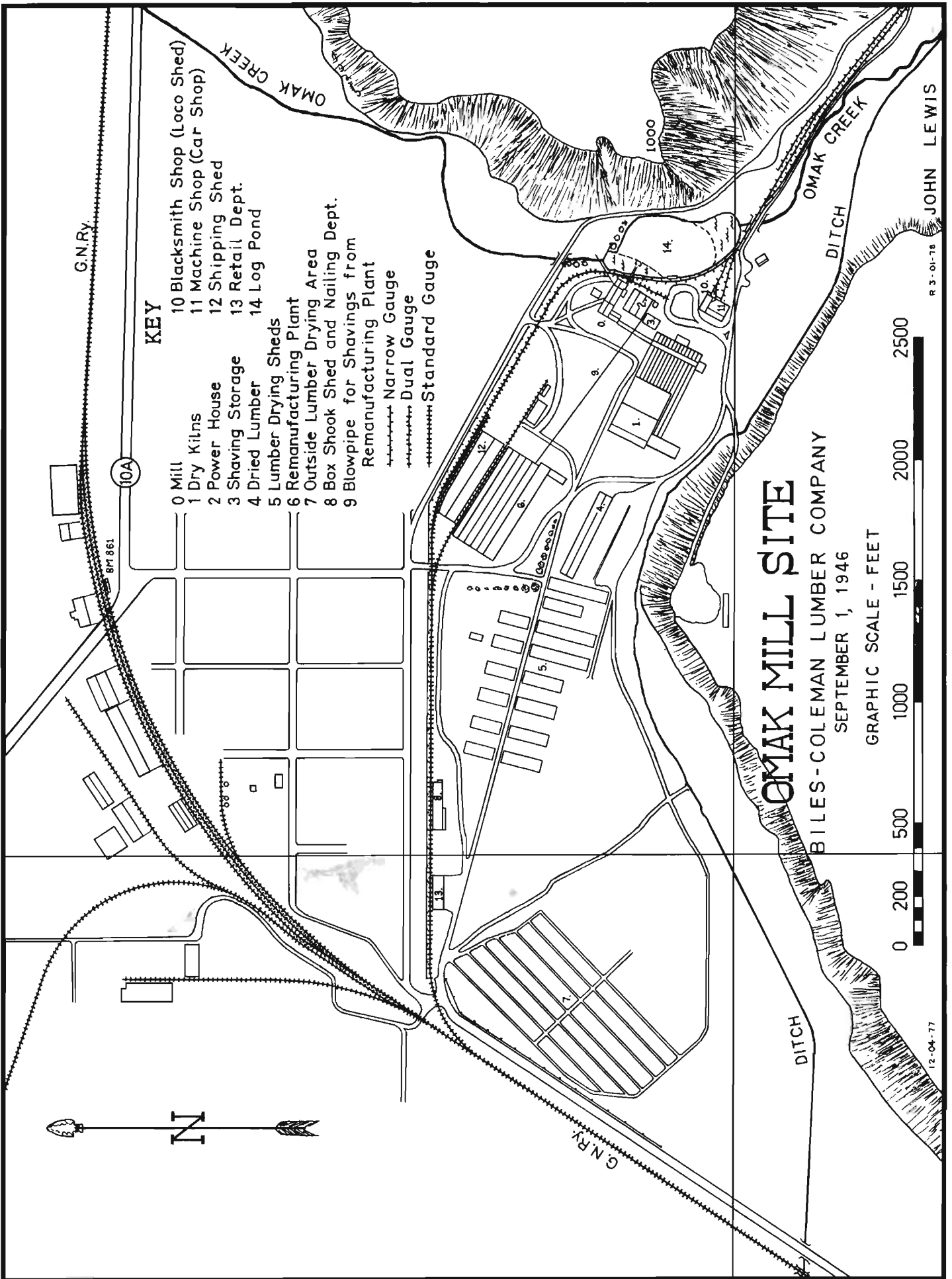
This fire, while proving to be an expensive and production disrupting loss, had far less impact on the company than did the loss of the first Omak mill. The company had previously started construction of a new and more sensibly located remanufacturing plant on the new mill property at the mouth of the Omak Creek Valley during August of 1928. By the time that the old remanufacturing plant burned down the new plant was nearly complete and only ten days later some of the equipment in the new plant was in operation. Newly ordered Linderman machines used to tongue and groove and then glue short pieces of shook lumber together to produce usable lengths of material began arriving from the east on the 1st of March. Installation of these machines was complete and their operation had been started by the middle of the month. The new remanufacturing plant was in full operation within two months of the time that the old plant burned down.

Concurrent with the speed-up in completion of the new mill site remanufacturing plant, the company erected a new storage building adjacent to the standard gauge spur line leading into the mill from the Great Northern Railway. This impressive structure was quite large and measured 110 feet in width by 270 feet in length.

Although the now largely new Omak mill/plant operation of Biles-Coleman cut back its operations between mid April and July 1st of 1929 to a five-day per week, two shift per day operation from the normal six day schedule, the company was employing 320 men at Omak turning out an average of 170,000 board feet of timber products per day by mid September. Average daily output during August had reached peak levels of 215,000 board feet proving that all of the new machinery had been tuned to peak levels of operating efficiency.

On the 30th of August, A. B. Coleman who held the position of sawmill superintendent resigned and was replaced by O. S. Brender thus ending eight years of active Coleman Family participation in the operations of the company. Only three months later, the other namesake of the firm, Mr. J. C. Biles was renominated for and was subsequently re-elected to the position of Mayor for the City of Omak.

The expansion of any dynamic industrial concern in the rapid manner demonstrated by Biles-Coleman from its start in 1921 to the completion of the post fire rebuilding activities in 1929 cannot occur without a cor-



OMAK MILL SITE

BILES-COLEMAN LUMBER COMPANY
 SEPTEMBER 1, 1946

GRAPHIC SCALE - FEET



responding expansion in capital investment. When the new lumber firm took over the properties of the Omak Warehouse and Storage Company in February 1921, its capital assets totalled only \$75,000.00. Following the withdrawal of Nate Coleman from the firm and the expansion of the stockholder base in January of 1924, the firm was capitalized at a value of \$500,000.00. In July of 1928 capitalization was increased by \$200,000 to a new total of \$700,000.00. Half of this increase resulted from the sale of common stock while the remaining \$100,000 was received in return for preferred stock guaranteeing an 8% return on investment. Three and one half months later, while the task of rebuilding the Omak Mill was in full swing, the company announced that capital investment and earned surplus had exceeded \$1,000,000 value for the first time. Shares of common stock in the firm were selling at a value of \$100.00 each, with the promise of a guaranteed five year recall value of \$105.00. While further expansions of capital investment continued in later years, the previous figures amply demonstrate how capital financing was expanded during the growth years of the new firm.

After reconstruction of the burned out mill at Omak was completed in early 1929 a series of subsequent expansions took place rapidly and by 1938 the Omak Mill was recognized as being the largest Ponderosa Pine mill in the West.

When the mill at Disautel was purchased, Biles-Coleman also purchased a portion of the camp site con-

taining 15 family type houses. The company decided to make Disautel the headquarters camp for operations in the woods during the summer of 1929 and built more houses. By the time that the 1930 census was taken, the village had a population of 276 persons and possessed a school house with two teachers, a U. S. Post Office, two general stores and a cook house for the unmarried loggers. About forty families resided at Disautel at that date.

When the State of Washington took over maintenance of the highway from Omak to the site of the new Grand Coulee Dam project via Nespelem in the late 1930's, and improved the road with an oiled surface, most of the families living at Disautel elected to move into Omak. The loggers could now easily drive to work in their own vehicles over the improved road and Disautel gradually lost its importance as the Headquarters Camp. The Post Office soon closed along with the school and stores but about ten families continued to live at Disautel including two State Highway maintenance crew employees.

Unlike many other western logging railroads, the Biles-Coleman line continued to operate throughout the entire depression period. The company had made strenuous efforts to develop a loyal clientele during the late 1920's. This marketing effort provided unanticipated dividends when the depression struck. Few customers were lost in the ensuing panic, probably due to the fact that one of the principal products of the Omak mill was



Biles-Coleman's Omak mill site in 1949. Although the narrow gauge is inactive, its equipment and track is still visible.

E. R. Aston

casket shook. This product, which was used in the manufacture of coffins, undoubtedly contributed to the stable demand for products of the mill during the lean years of the depression era.

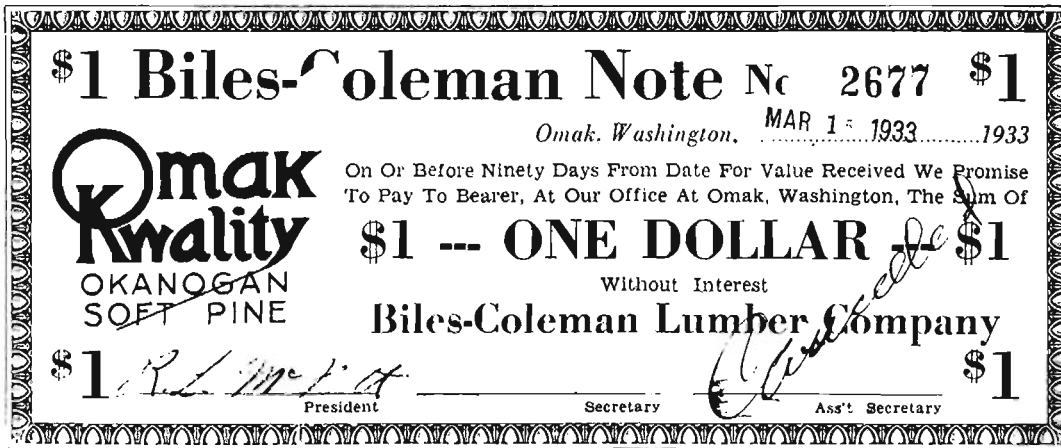
Mr. J. C. Biles was President and General Manager of the firm until his death from pneumonia at age 61 on October 26, 1932. During the remaining railroad logging years and subsequently, the position of President and General Manager of the firm was filled by Mr. Ross L. McNett, a son-in-law of J. C. Biles.

One single event during the depression years of the early 1930's came closer to unexpectedly forcing the cessation of Biles-Coleman operations than all of the other negative aspects of that great economic disaster. After the presidential election of 1932, Franklin D. Roosevelt was inaugurated as the chief executive of the United States on Saturday the 4th of March 1933*. On the following Monday, Roosevelt proclaimed the Bank Holiday of 1933 which effectively closed all banks in the United States until each could be inspected by Federal examiners tasked to verify its financial ability to continue banking activity without undue risk of future failure. While the banking shut-down did much to restore the confidence of the general public and bank depositors in the soundness of these financial institutions, it severely hampered Biles-Coleman's business activities.

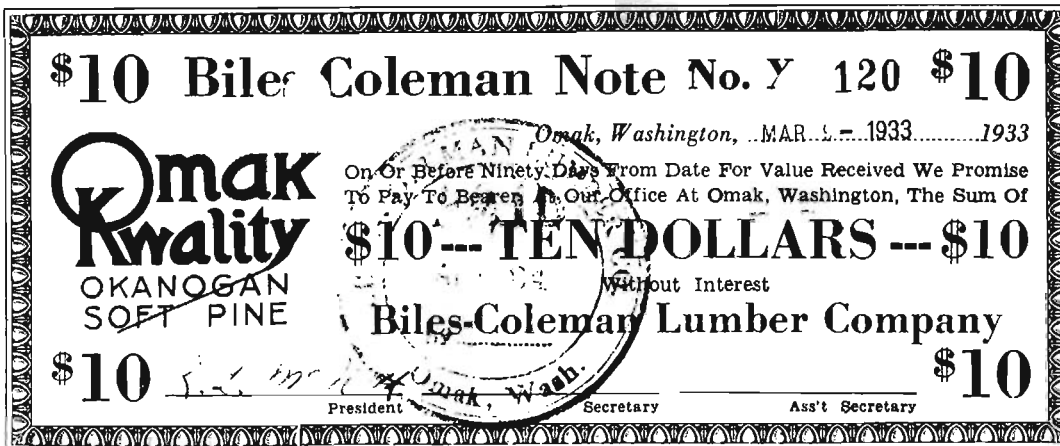
In order to continue business without interruption and meet continuing payroll demands, Mr. A. M. Aston, representing the company in a meeting of the Omak Commercial Club held at the Jim Hill Hotel, proposed that Biles-Coleman should print script to take the place of legal currency for the duration of the emergency if local merchants would accept it. After a brief discussion, Mr. W. S. Shumway, manager of the Omak Trading Company moved that the script be treated as currency. This motion was unanimously accepted by the assembled group without any hesitation.

Encouraged by this endorsement of their proposal for the issuance of company backed script, Biles-Coleman officials lost no time in implementing the plan. Analysis of payroll requirements for several subsequent payroll periods showed that an initial sum of \$20,000 of the new script would be required. A bond for this sum guaranteeing that the company would honor all obligations resulting from issuance of the script was posted with the U. S. Treasury Department. Upon receipt of the necessary governmental approval for the planned script issue,

*The 1933 inauguration was the last to be held on March 4th, the next inauguration in 1937 and all subsequent inaugurations have been held on January 20th.



E. Aston
Biles-Coleman \$1.00 note 2677 was typical of the lowest denomination of interim currency issued by the company following the March 6, 1933 "Banking Holiday" proclaimed by President Franklin D. Roosevelt.



E. Aston
The largest denomination of "Bank Holiday" currency issued by Biles-Coleman during March of 1933 was the \$10.00 bill.

the company assigned the Omak Chronicle the task of printing the required quantity of notes in denominations of \$1.00, \$5.00, and \$10.00 respectively. Each note was individually serialized, dated, signed by R. L. McNett as President of Biles-Coleman, and carried the promise that its face value would be repaid in dollars "without interest" by the lumber company no later than 90 days from the date of issue. The new notes were being issued as early as Thursday the 9th of March, only four days after the banking moratorium had been proclaimed, and issue continued at least through the following Wednesday, the 15th of March.

The new notes were readily accepted by both company employees as well as local area merchants and banks until the moratorium ended. The script was used to purchase all types of merchandise during the period in which it remained in circulation. Mr. Elmer Fulford used script to buy both engagement and wedding rings for the lady who subsequently became his wife. Following the return of normal activity in the banking field, the script notes were all redeemed at face value and were then cancelled and destroyed. Today, only photostatic copies of representative samples of the Biles-Coleman Lumber Company's venture into the field of substitute currency issue exist to help recall the dire events which forced the firm to resort to such an unusual enterprise.

During World War II, the mill supplied 86% of the casket shoo used in the United States according to the comments made to Emmet Aston by a U. S. Government inspector. This inspector, a U. S. Army Officer, had been dispatched to Omak by undoubtedly over zealous superiors determined to prevent unauthorized diversion of lumber intended for the war effort to the civilian market.

An investigation was initiated by the government when it was noted that no cut resale type lumber was being shipped from the mill, while contradictory annual production figures reported a cut of over 50 million board feet. This discrepancy, led responsible officials to conclude that just such an unauthorized diversion of lumber marked for the war effort to civilian users might be occurring at Omak. After arriving at Omak, and learning the true destination of the mill's output, the curious inspector investigated the national output of casket shoo and subsequently advised Mr. Aston of the high percentage of this production that Biles-Coleman supplied to the nation. The specialization of the company in the manufacture of knocked down door and window frames and related items led to the receipt during World War II of orders for door, window and screen frames which were installed in buildings in almost all of the Prisoner of War Camps set up in the United States to house captured axis military personnel.

For more than 29 years the company never shipped any lumber to retail or wholesale lumber yards. The entire output of the mill was routed through the remanufacturing plant where it was processed to make hundreds of different types of items in addition to casket shoo. So diverse was the output of this plant that no one person was ever able to maintain a complete listing of just how many different types of items were being manufactured or were capable of being produced. A significant portion of this production went to the Sears Roebuck Company and the Memphis Lumber and Manufacturing Company for the manufacture of unfinished furniture.

The remanufacturing plant was the major Omak em-

ployer. At the time the original stock holders sold their interest in the firm in 1962, the remanufacturing plant provided steady work for a force of more than 800 people.

The only shut down to occur during these years took place in May of 1936 when a wildcat strike was called. The Biles-Coleman mill had, from the beginning of lumbering activities in the Omak area, been a non-union operation. An "outside" union discovering this situation existing at an operating mill, in those years when most lumbering operations were shut down, determined that Biles-Coleman was a prime target for organizing activities. Following arrival of the outside organizers, whom were viewed as unwanted agitators by responsible Biles-Coleman officials, a meeting of sympathetic mill employees was held one evening in an attempt to secure enough support to form a local branch and call a strike for higher wages. The majority of the mill workers attending rejected both prospects and the meeting was adjourned. Later that night, the advocates of the union reportedly reconvened the meeting and with about 18 vigorous supporters of unionization present, voted unanimously for a strike.

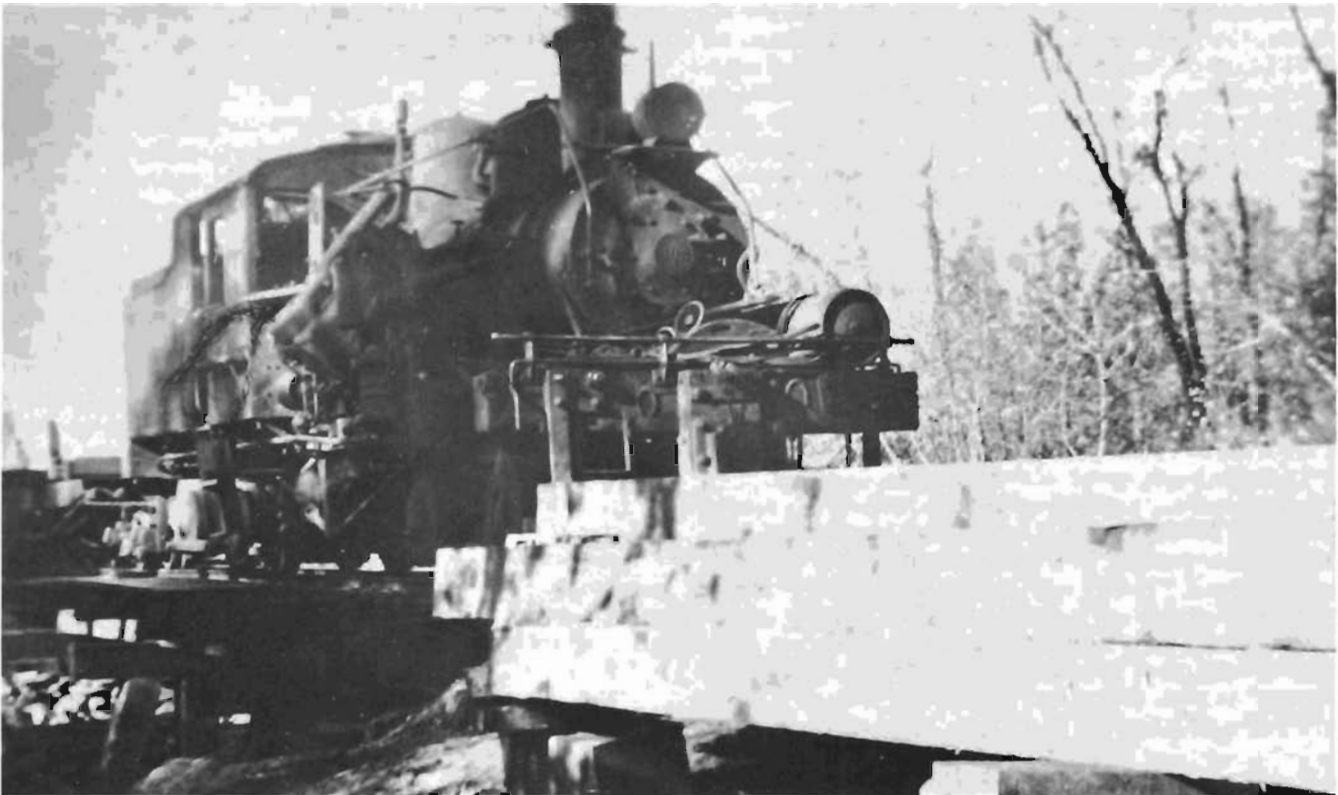
Workers arriving at the mill the next morning for the start of work were met with an unexpected and generally unwanted picket line. Many workers crossed the line subject to the usual cries of "scab" and similar oral abuse and the mill remained in operation on a somewhat reduced basis for several days. Company management soon realized that full production could not be resumed under such conditions. As a result the mill was shut down on Tuesday the 5th of May and all workers were sent home. The strike which shut down Biles-Coleman for the first time in fifteen years of continuous operation was called by the Lumber and Sawmill Workers Union No. 250. At that time, sawmill workers were being paid 50 cents per hour while workers in the remanufacturing plant received 40 cents. The union demanded an across-the-board 10 cent hourly increase in pay. The strike and resulting shutdown affected 600 employees.

Well organized and funded strike funds did not exist at that time. After several weeks, more and more workers expressed a desire to return to work. By May 29th, the Omak Chronicle reported that "the end of the long strike appears near."

After a five week shut down the dismissed workers, most of whom had opposed efforts of the outside union organizers, formed their own local union which was appropriately named "Sawdust Makers Number One". Rapid negotiations between the new union and company management led to the speedy resumption of work.

On the 5th of June, the majority of the idle workers signed up for work again in the mill and remanufacturing plant. Both facilities reopened on Tuesday the 9th of June. By the 12th of June the newspaper reported that over 300 men had returned to work, and by the 19th production had returned to normal. As the days passed, the intensity of work increased and on Wednesday night, the 24th of June, a second shift was started at the mill.

Despite the relatively smooth resumption of work not all of the employees of the firm were happy with the outcome of the strike. These dissidents reasoned correctly that if operation of the railroad could be disrupted, the mill would be brought to a screeching halt, due to a lack of logs. An initial attempt to achieve this goal occurred



No. 102 halts on a bridge crossing Omak Creek during an eastbound trip to Disautel in the early 1940's.

C. DeGroot

sometime late on the evening of Friday, June 27th or in the early hours of Saturday the 28th of June after the log train had returned from the woods when bridge number 13 near St. Mary's Mission was set afire and a 45 foot long section was burned out. Repairs were initiated without delay and no disruption of rail operations occurred. Subsequent to some minor fistcuffs between men working at the mill and a few remaining strikers on the 3rd of July, another bridge burning incident occurred on the morning of Thursday, July 9, 1936. In this act of industrial violence bridge number 8, located about 2 miles east of the mill was found burning early in the morning. The fire was rapidly extinguished and only a minor amount of damage to the 64 foot long bridge occurred. By this time, the strategy of the strikers had become rather obvious and Emmitt Aston and several other company officials started periodic night time patrols of the bridges nearest to Omak armed with rifles to discourage any potential arsonists. This action served its intended purpose although one more minor bridge was set afire before the dissidents eventually gave up this form of industrial protest.

Strike related action gradually decreased during July 1936. In one notable incident, Mr. Ross McNett was involved in a scuffle with a striker and was fined \$1.00 plus \$12.00 court cost in a resulting court action for allegedly hitting one of the strikers. The last apparently strike related incident occurred on the 20th of October 1936 when a Box Storage Warehouse owned by Biles-Coleman located on a Great Northern Railway siding in East Omak was set ablaze. The fire was reported to be of incendiary origin by the police, and a total loss of \$15,000 for 150,000 boxes destroyed was reported by the company. The mill and railroad would not be shut down again for

any significant period until the narrow gauge was unexpectedly and permanently put out of operation at the end of May 1948.

In addition to Ponderosa Pine, Biles-Coleman cut and milled several other species of timber. Included in the list of other varieties regularly processed were Lodgepole Pine, Western Larch and Douglas Fir. A listing of the diverse range of products manufactured by Biles-Coleman from these different types of trees included, by the year 1940: factory lumber, bevel siding, mouldings, industrial cut stock, knotty pine paneling, glued-up stock, sash, doors and door frames, screens, box shoo and crating, casket box shoo, and K-D frames.*

The surprisingly high production of the Biles-Coleman logging and mill operation, in terms which can readily be related to operation of the narrow gauge, can only be easily appreciated when compared to the other Western Pine region mills still using narrow gauge logging railroads during the years from the late 1930's through the mid 1940's. Statistics compiled by the West Coast Lumbermans (Magazine) Statistical Review and Directory reveal that Biles-Coleman cut 44 million board feet of timber in 1938. The nearest mill to still operate a narrow gauge, the Oregon Lumber Company at Baker, Oregon cut only 36 million feet in the same year using a logging railroad equipped with 6 locomotives, 3 of which were in active use versus Biles-Coleman's lone Heisler.** A wider comparison for the year 1939 shows

*Knock-down frames for doors, windows, etc.

**The locomotive totals listed for the O. L. Co. do not include motive power totals for the associated Sumpter Valley Railway.

Biles-Coleman with an output of 52 million feet, Oregon Lumber Company next with 50 million, Stoddard Lumber Company also at Baker in last place with only 28 million feet, West Side Lumber Company at Tuolumme, California in third place with 44 million, and Michigan, California Lumber Company of Camino, California in fourth place with 33 million board feet.*** The true significance of these figures in appreciating the high productivity of the Biles-Coleman railroad can only be understood when related to the railroad assets of the other firms listed. A tabulation of these facts is provided in Table 1.

Obviously if the Biles-Coleman mill produced 51 million board feet of lumber in 1943 supplied by a railroad using only one locomotive and twenty-three cars, while the West Side Lumber Company required twelve locomotives and more than one hundred sixty-five log cars to produce only 41 million feet, utilization and efficiency of the Omak Creek logging railroad had to have been maximized. Even when an adjustment for the differing route mileages used in this comparison is made to yield values having the same thirty mile route length as a common base, West Side still used an equivalent of $3\frac{1}{2}$ locomotives and 47 log cars to transport a timber load nearly 18 percent smaller. In terms of comparative ratios, West Side used 3.43 and 2.05 times as many locomotives and log cars respectively as did Biles-Coleman to do a smaller job.

A similar comparison, based upon daily capacity figures, between Biles-Coleman and the Diamond and Caldor Railway gives corresponding verification of the high equipment utilization achieved by the operators of the narrow gauge route to Disautel. Even in 1948, the Diamond and Caldor Railway used 2.77 times as many loco-

motives and 2.53 times as many log cars as Biles-Coleman to provide an identical log hauling capacity over equivalent track mileages.

Several factors explain the ability of the Biles-Coleman narrow gauge to transport loads equal to or greater than those moved by the other narrow gauge lines still in operation during the 1939-1948 period with only one-half to one-third as much equipment. First, Biles-Coleman hauled larger loads on each car. Average loads of 9,000 board feet per car on the Biles-Coleman narrow gauge were at least one and one-half times larger than those carried by cars of the other lines. Second, grades and curves opposing the passage of loaded log trains were marginally less on the Biles-Coleman line than on the other lines. This factor made it possible for less power to be used to pull a log train of given weight, or for a given locomotive to haul a longer train faster. Third, the equipment utilization philosophy used on the other lines was based upon the concept of having at least two complete sets of log car equipment. On any given day on these lines, one-half of the log cars would be empty and enroute from the mill back to the woods for loading the following day, while the other half were being loaded with logs and moved from the woods to the mill. Biles-Coleman had only one set of equipment which had to make a complete round trip each operating day. Fourth,

***No production figures were included for the only other western narrow gauge logging operation run by the California Door Company of Diamond Springs, California. The Swayne Lumber Co. of Oroville, California terminated narrow gauge operation in 1939.



Loaded log cars ready to be hauled to the mill at landing No. 1 East of Disautel, Washington during the winter of 1945/1946.

H. Weaver

TABLE I
COMPARISON OF RAILROAD EQUIPMENT/TRACKAGE WITH MILL
OUTPUT/CAPACITY FOR WESTERN LUMBER MILLS OPERATING
NARROW GAUGE LOGGING RAILROADS DURING THE DECADE OF
1939 THROUGH 1948

Company	Year	Mill Output Board ft./yr.	Logging/ Milling Ca- pacity daily in board ft. (3)	Track Miles	Locos Active/ Stdby	Log Cars Active/ Stdby
Biles-Coleman Lumber Company	1939	52,000,000	150,000	30 (8)	1/1 (7)	23
	1943	51,000,000	150,000	30	1/0	23
	1948	NA	200,000	30	1/0	23
Diamond & Caldor Ry.	1939	NA (1)	150,000	40	6	84
	1943	NA	150,000	40	5	84
	1948	NA	150,000	33	4/1	84
Michigan California	1939	33,000,000	160,000	25	8	140+
	1943	23,745,000	160,000	30	10	140+
	1948	NA	160,000	25 (5)	3/1	140+
West Side Lumber Co.	1939	41,000,000	300,000	75	9	200+
	1943	42,000,000	160,000	80	12	165/45
	1948	NA	250,000	80	9/2 (2)	165/45
Oregon Lumber Co.	1933	50,000,000	260,000	8	4/2	NA
	1943	41,000,000	260,000	0	3/1	114 (6)
	1948	Truck Haul pre-1945		0	0/2	0
Stoddard Lumber Co.	1939	28,000,000	125,000	4	2/0 (4)	NA
	1943	27,000,000	125,000	4	2/0	NA
	1948	Truck Haul in 1944				

Notes:

- (1) NA — Data Not Available
- (2) Locomotive Unserviceable in addition to totals shown.
- (3) Daily capacity available but not necessarily utilized, ie Michigan California could have produced 41,600,000 feet annually on 5 day/week basis but in 1943 put out 23,745,000.
- (4) Locomotives retained and used as standby mill switchers.
- (5) 1948 was last full operating year. Reduced operations in both 1949 and 1950.
- (6) Quantity estimated based upon numbering series of O. L. Co. cars.
- (7) Standby locomotive unserviceable, speeder used for switching.
- (8) Actual route mileage was 22.85 exclusive of sidings or the Disautel branch.



Peterbilt and GMC log trucks lined up for a publicity photo at the Biles-Coleman Omak mill in 1940.

E. R. Aston

only the Biles-Coleman operation was based upon taking full advantage of higher operating speeds made possible through the use of a Heisler locomotive. While the Stoddard Lumber Company used Heislers, their lines were relatively short. Additionally, the Stoddard operation was based upon the concept of delivering loaded log cars to the Sumpter Valley Railway which then provided the necessary main line log haul from the logging railroad spur to the mill. Thus the speed advantages inherent in the Heisler design were of negligible importance to the Stoddard Lumber Company. Fifth, and perhaps the most important, Biles-Coleman utilized the Heisler and log cars to almost the maximum extent physically possible during each operating "day".

Some argument might occur to the effect that to achieve such production figures the railroad had to have been carrying only a small percentage of the logs actually delivered to the mill and that automotive equipment must have been handling the bulk of the load. Examination of this question reveals that during World War II a small percentage of the logs used at Omak were indeed delivered by truck. At the time that the railroad was shut down in 1948, about 40 percent of the logs were coming into Omak by road. Expansion of the mill had continued after World War II and sixty percent of its log supply was still being delivered by rail in 1948, a figure that is consistent with the transportation trends that were developing simultaneously on the other western narrow gauge logging lines.

During the final years of the narrow gauge, only one daily round trip log train operated over the line as an increasing percentage of the mill's log requirements was being provided by motor truck transportation.

The narrow gauge primarily operated into and out

of the Omak mill yard during night time and early morning hours. Every day the Heisler pulling a train of at least 11 or 12 (but usually the limit of 16) empty log cars departed for the woods at 6:00 a.m. Usually the train arrived at the several log reload points by 10:00 a.m. for the start of the day's work.

By the time that the Heisler and empty cars arrived at the reload in use, the loading of the balance of the line's log cars left in the woods the previous day was nearly complete. The Heisler switched the empty cars brought out from the mill in behind the loader in a position where they could be loaded. If only the usual single trip to the mill was scheduled, the Heisler remained in the woods all day performing switching duties as required to satisfy the demand of the log loader for empty cars which would be loaded to capacity with the seemingly top-heavy loads of newly cut logs. If a more unusual two round trip operation was scheduled, the Heisler coupled onto the cars already loaded. Within minutes a train of eleven or twelve cars was ready to depart for the mill. With little delay, the Heisler was soon drifting down the long grade into Omak where the loaded cars would be rapidly unloaded in the early afternoon only to be immediately routed eastward by the Heisler in its second trip of the day to the woods. Arriving back in the Disautel area in the late afternoon, the Heisler would repeat the car shuffling activities of the morning in preparation for the log loading work which would commence the following morning.

At the end of a day's work in the woods, the loaded train would start its two and one-half to three hour trip back to Omak. Upon arrival at the mill occasionally as early as 8:00 p.m. but often much later, the loads of logs would be dumped into the seemingly every hungry mill



E. R. Aston
Biles-Coleman Lumber Co. slideback log loader loading logs on log car No. 111 near Disautel, Washington on the "B" line during 1927. (Photo 1 of 4)



End view of log car No. 111 being loaded on the "B" line during 1927. (Photo 2 of 4)

E. R. Aston



Loaded log car No. 111 with the A. H. & D. built log loader and empty cars on the "B" line. (Photo 3 of 4)

E. R. Aston



E. R. Aston

Log loading operations pause for a moment while the chain securing the second load of logs on car No. 111 is tightened. (Photo 4 of 4)



Mark Purdy Photo Courtesy of Mrs. A. Purdy

Unloading log cars at the Omak mill pond in the 1940's. The standard gauge tank car used as a fuel depot for Heisler No. 102 is plainly visible in this photo.

pond which was only large enough to hold the equivalent of five mill work shifts consumption of logs. After log dumping had been finished, the locomotive and log cars would be serviced and repaired, as might be required, in rapid fashion by a crew long experienced in the maintenance of the narrow gauge equipment at night. The locomotive was lubricated, watered, refueled, and repaired when necessary, during the hours of darkness. Before dawn, the necessary work was completed and the train headed East along the banks of Omak Creek during the hours of early morning darkness to repeat its performance of the preceding day all over again.

These utilization practices led to the almost complete lack of operating photos of the Biles-Coleman narrow gauge during its final years in a period when most other western narrow gauge logging railroads were extensively photographed by interested railfans. The equipment of the line was far away from the populated areas of Omak and Okanogan during daylight hours.

The previously noted operating policies insured that 22 of 23 log cars could be available in the woods to be loaded with logs every working day. The "23rd" car always supported the loader when log loading was not in process. During peak production periods, a total of at least 22 loads of logs were brought into the mill every working day.

After dusk switching activities in the Omak yard during the summer months offered unwanted hazards to the unwary switchman or conductor. Large and usually irritable rattlesnakes had the unwelcome habit after sundown of snuggling up against the rails which had been baked to a stove like warmth by the daylight sun. On more than one occasion, Con DeGrootte was saved from an unwanted and possibly fatal bite by the wheels of a moving log car which decapitated a venomous reptile ready to strike.

Duties of the conductor also had a lighter side. Indian children attending school at St. Mary's Mission frequently found the idea of jumping aboard the slow moving, east bound empty log trains traveling upgrade on the right-of-way just east of the Mission, to be an attractive temptation. The brakeman's safety platform provided

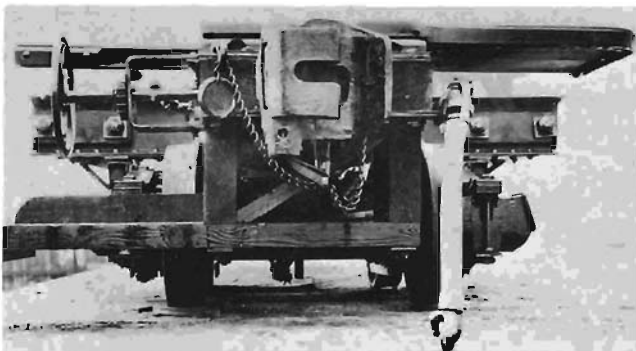
injury to the under-age passengers, Con DeGrootte routinely traversed the length of the moving train after it passed the mission to scare any potential long distance riders off of the empty log cars.

Management policies leading to the high utilization of equipment and efficient operation of the railroad were exercised by a small group of men which remained almost unchanged in membership during the late 1920's, 1930's and on through beyond the end of narrow gauge rail operations in May of 1948. All of this team except for the firm's founder who had died late in 1932, continued to work for Biles-Coleman after the end of the narrow gauge.

Mr. Ross L. McNett, the president-general manager, specialized in the "remanufacturing" portion of the mill operation, and along with other members of the Biles family held a 55 percent controlling interest in the stock of the company. Mr. Emmit R. Aston was the Logging Manager for the firm and ran the railroad and all woods operations. Mr. A. M. Aston, the older brother of Mr. Emmit Aston, was company Sales Manager and Secretary. Mr. A. M. Aston had developed and maintained the loyal clientele which had helped keep Biles-Coleman in operation during the depression. Both of the Aston brothers were also Biles-Coleman stock holders as were a few other company officials. The management roster was filled out by Mr. C. A. Palmer, the Master Mechanic for all mill equipment and machinery and by Mr. Lester Nelson who was the company Purchasing Agent.

Although stock purchase prices of a constant \$9.00 per share were listed in Timberman Magazine, with the notation "wanted" during the war years, Biles-Coleman was actually a closed stock company.

Primary members of the train crew during the final years of operations on the Omak Creek narrow gauge when equipment utilization reached maximum levels were Mark Purdy, engineer of Heisler 102, and Con DeGrootte who was the train conductor. After World War II, George McCracken joined the crew to become the last brakeman to work on the railroad. In earlier years, engineers on the line had included Ben Holt, Joe Hanson, and Marv Dean, while train conductors had included Barney Moran who later became an Omak Mayor and George Hubbard who subsequently served as the city manager of Sunnyside, Washington.



P. C. & F. Co./F. Moline
Builders photo end view of log car No. 113 showing the end safety platform and automatic couplers.

as standard equipment on cars 111 through 124 were relatively safe points upon which the children could board the slowly moving cars. Without adult interference, some of the children would have undoubtedly found the temptation of skipping classes and riding the train out to Disautel irresistible. To avoid any possible accidental



C. DeGrootte
Train crew of Heisler No. 102 some time prior to 1940. Mark Purdy (left), Con DeGrootte (center) and Harley Purdy (right).

Chapter 4

OUT IN THE WOODS

While the operations of the Biles-Coleman Lumber Company narrow gauge are our primary concern, this narrative would be incomplete without consideration of the capable and flexible woods operations which supplied the logs carried by the railroad to the mill. In the early years of the original Omak Mountain line, the skidding of logs from the stump to the railroad was done by horse team. In 1922, replacement of this picturesque but relatively inefficient method of skidding started when a 10 ton Holt tractor was purchased. As the years passed, these first tractors with "caterpillar" type tracks completely replaced all animal power and in turn were replaced first by Best tractors, and then during the early 1940's by Caterpillar D-60's.

Improvements in the methods used to fell trees progressed in a similar manner. In 1935-36, Biles-Coleman became one of the first if not the very first logging operator in the West to purchase and use gasoline powered chain saws. These early saws were manufactured in Germany by Stihl, a name still known in the chain saw industry today. These first chain saws were purchased from a Vancouver, B. C. logging equipment dealer who then held all dealership rights for Stihl in North America. The utilitarian labor saving characteristics of the chain saw were rapidly demonstrated on the Biles-Coleman and a few other innovative operations. Soon loggers throughout the West were rushing to buy the new saws and the sole Stihl dealership was divided up to satisfy the rapidly increasing demand with numerous new dealerships being established in the United States. The point of origin of these saws became a source of acute embarrassment to Biles-Coleman during World War II when a parts list somehow managed to pass from Germany via the postal system of a neutral country to the United States and thence to Omak and the company office. The arrival of Secret Service agents investigating this mail from an enemy power required many detailed explanations before the inquisitive security personnel were satisfied that no improper or traitorous acts had been committed.

Shortly after the chain saw parts list incident, recognizing that new tracts of uncut virgin timber would not be available indefinitely, Biles-Coleman established the first Western Pine Association registered tree farm on November 10, 1943. This was not only the first W. P. A. tree farm in the Inland Empire region of Washington State but was the first W. P. A. three farm.

During the war-time years, the company started a new log haul operation by both truck and water to Omak over a route which crossed the narrow gauge near St. Mary's Mission. A portion of the new route had been surveyed in earlier years for a projected but never built branch of the narrow gauge. The route for the proposed spur had extended some four miles from the lower leg of the "S" curve near St. Mary's Mission to the north end of Omak Lake. This projected rail line would have proved invaluable when logging was started during World War II in the Kartar valley at a time when the supply of logging trucks of any vintage was practically nonexistent.

In the Kartar valley operation, logs cut on reservation land south of Omak Lake were trucked to the lake and dumped in at the south end. From this point, the logs were rafted some seven miles up the lake to the north end, followed by a reload operation onto trucks, and a final road haul to the mill. The availability of the projected rail spur at the north end of Omak Lake would have proved to be far more economical in terms of both labor and equipment utilization than was the truck, raft, truck operation actually employed.

During the latter years of the railroad's operation, Omak Lake also served as a holding point or storage area for truck hauled pine logs cut during the summer months. These logs would be cut by the mill during the following spring when restrictions were placed on the movement of heavily loaded log trucks over the public highways. Such restrictions were regularly imposed during the period when the thaw from the freezing temperatures of the preceding winter made road sub bases and pavements unstable and unable to support heavy loads without undue danger of fracturing asphalt pavement surfaces. The road from Omak Lake to Omak was designated a special use road for Biles-Coleman. Okanogan County required the company to post a bond guaranteeing that it would keep this section of road in good condition in return for a permit allowing the operation of log trucks with 9 foot wide bunks carrying loads of up to 90,000 pounds. Omak Lake was an ideal log storage point as it has no outlet and its waters are highly alkaline. This alkaline solution was found to be a perfect preservative which prevented the stored logs from developing an undesirable coloration known as blue stain.

In the early years, the company used logging camps which were extremely mobile in nature consisting of flimsy, temporary buildings which were used to provide shelter for the woods crews. These buildings were abandoned where they stood when the timber at that location was exhausted and logging activities moved on to a new area. Horses for the skidding teams were kept in the camps. When the ever changing timber cutting areas moved further than a mile away from any camp site, the camp was relocated to a point adjacent to the current work area. The policy of keeping the logging camps close to the cutting areas resulted in rather primitive living conditions for the woods crews but did insure that a minimum of lost time would occur in getting the loggers to and from the work areas at the beginning and end of each days work. The maximum utilization of equipment and labor at the minimum cost possible was a direct result of this mode of operation. During the height of railroad logging activity on the Biles-Coleman line in the late 1920's and before the narrow gauge became a strictly reload and main line haul operation, the company operated a series of short lived logging camps to support the constantly moving logging operations in the woods. Four of these camps were somewhat more permanent in nature than most and deserve special attention.

The first of these camps, called Camp 5, was located on the "A" line just south of the point where it split



Okanogan County Historical Society

Buildings at Cougarville, Washington sometime between September 1921 and mid-1924.

into east and west branches. Camp 5 was used from early 1925 until about September of 1927 when timber supplies in the surrounding area had been exhausted and the "A" line was pulled up. The scene of logging activity was then transferred to the just started "B" line.

The largest and longest lasting separate logging camp on the Biles-Coleman narrow gauge, known as Camp 6, was built on the "B" line at a point less than a mile southwest of Disautel. About 35 million board feet of timber was cut in the general vicinity of this camp during the years from October of 1927 through early 1930. During the years in which Camp 6 was active, the company cut timber on approximately 6,000 acres (or 9% square miles) of land per year. Total output of the mill at Omak from this activity during 1927 was about 35 million board feet of rough cut lumber. An average of 1 7/8 acres of timberland was harvested during every hour that company logging crews were at work. Camp 6 was a full fledged logging camp complete with horse barns and sheds for tractor maintenance and was home for 100 men and 50 horses. The camp included a dining hall, bunkhouses, homes for 30 families whose wage earners were key Biles-Coleman workers, as well as supply houses, a blacksmith shop, a saw filers shack and company offices. Camp 6 was also the home and operating terminal for the five man crew of Heisler No. 102 and the 19 car log train which departed the camp every afternoon heavily laden with the day's output of logs cut to satisfy requirements of the mill. In July of 1929 the headquarters for company woods operations was moved from Camp 6 to new quarters at Disautel which had just become available following the return of sawmilling operations to the newly rebuilt mill at Omak.

Camp 7, also located on the "B" line near its south

end, was primarily a tractor camp with shed facilities used only for servicing tractors and other mechanized equipment at night. The last camp built in connection with a logging spur was Camp 8 which was located near the north end of the west branch of the "C" line. This camp included a tractor repair shed, horse barns, and housing for the night time tractor maintenance mechanic. Camp 8 was the last of the logging camps to be built with horse barns to shelter horses used to skid logs. Tractors completely replaced horses in the woods soon after Camp 8 was built. Camp 8 operated from 1929 until all of the timber adjacent to the spur had been harvested and the rails had been removed during the final months of 1933.

When the early roads of the area developed sufficiently to allow the loggers to drive automobiles to and from work, or to a nearby point on the railroad in a reasonable time, use of the temporary and frequently moved logging camps came to a rapid end. The loggers rapidly became town or at least village dwellers.

Railroad operations of the Biles-Coleman Lumber Company on the Omak-Disautel line were unusual in nature and pioneered a new multi-mode concept of woods to mill log transportation not adopted by most other logging railroads until the mid 1940's. A varying combination of railroad and truck log transportation was used from the very beginning of company operations in 1922 on the Omak Mountain line. This combination continued when the new main line went into operation late in 1924.

When trucks were used, usually in areas having the sparser stands of timber, the trees were felled, bucked into truck length logs, loaded on the trucks, and then were carried to a rail line reload point. At the reload point, the logs were dumped and stored until a pile large



Biles-Coleman Lumber Company Camp 6 during the winter of 1927.

E. Fulford



Peterbuilt log truck No. 16 being loaded by the "Buncher" near Disautel, Washington on February 18, 1946.

E. R. Nelson

enough to justify stopping the empty log train for loading had been accumulated. When a large quantity of logs had been stockpiled at a reload point, the train stopped for as many trips as might be necessary and the log cars were loaded until the stockpile had been depleted.

In other locations where dense stands of timber adjoined the right-of-way in positions favorable for direct railroad logging, trees were cut, branched, and after being bucked into carload lengths, the logs were yarded in directly to track side over distances of up to 150 feet by the log loader and were then loaded on the waiting log cars. This type of direct railroad logging operation was quite common until about 1930. In subsequent years, the bulk of the logs carried by the railroad were either skidded to track side by tractors or were carried in on log trucks.

The log trucks used to supply the narrow gauge developed along with Biles-Coleman and in some cases were developed in direct response to the specific needs of the company. Prior to 1927, all of the log trucks used by Biles-Coleman had a single driving axle and were equipped with solid rubber tires. These early log trucks performed satisfactorily as long as the road was fairly smooth with a compact surface. If the road was softened by rain or melting snow, or if covered with chuck holes, these trucks often became mired in the soft earth or simply got stuck in deep holes due to their lack of adequate power. Additionally, the hard rubber tires with their relatively high road surface contact pressures tended to dig ruts and pound out chuck holes in the best of logging roads if even a trace of moisture existed in the road surface.

The Moreland truck equipped with dual driving axles but initially equipped with solid tires did much to improve the situation when delivered in 1927. The dual axle drive together with greater engine horsepower gave that little extra margin of traction necessary to pull through soft spots while effectively smoothing out the holes and bumps in the road. After several years, the solid tires on these trucks were replaced by pneumatic

tires first on the front axle and later on the rear axles. This change improved the soft terrain/unimproved road operating abilities of the Moreland trucks dramatically. When Biles-Coleman required new trucks in 1936, it was decided that potential supplying manufacturers would be required to provide the needed new larger dual axle drive machines with dual axle trailers, the entire combination being equipped with pneumatic tires on all wheels. Initially, only Kenworth would agree to build a truck to the specifications demanded by Biles-Coleman and even then reportedly refused to guarantee its performance. A short time later General Motors agreed to produce trucks to the same specifications.

The new trucks went into operation carrying 6,500 board foot loads of logs 32 feet long in 1938. After less than a year of operating experience, the maximum load was abruptly increased to 8,500 board feet when the trucks were operating exclusively on company owned logging roads connecting with the narrow gauge. The new larger loads were carried on a trial basis for two successive seasons, but proved to be so large that the frequency of breakdowns was unacceptably increased. The maximum load was consequently cut back to 7,000 board feet in 1941, a load which proved to be acceptable in the long term without undue risk of breakdown. Each of these trucks was nearly equal in capacity to one of the Pacific Car and Foundry built narrow gauge log cars. This impressive load carrying ability started some company officials to thinking about the merits of continuing operations of the narrow gauge. These thoughts failed to bear fruit however, as the restrictions on the supply of new equipment imposed by World War II were soon to be felt in the lumber industry.

Ten years later in 1951, only three years after use of the narrow gauge had ended, the company was operating logging trucks that regularly carried 100,000 pound loads. These loads were carried over a network of 90 miles of permanent company owned road and nearly 100 miles of temporary road.

As noted previously, operations on the original



E. Fulford

Biles-Coleman Lumber Company GMC logging truck driven by Elmer Fulford on the Moses Meadows grade in 1939. This was one of two "big" GMC's bought in 1938. The fuel economy of these trucks was rather poor, averaging 1½ miles per gallon in use.



E. Aston

Biles-Coleman Lumber Company Peterbuilt logging truck being loaded with logs by the "Buncher" near Disautel, Washington, 1940.

Omak Mountain line provided a basis for the selection of equipment and methods of operation which were to be later used or improved upon as the new Omak Creek line was developed. A typical example of this evolution is to be found in the selection of log loading equipment used on the railroad throughout its existence. Log loading on the old line was initially accomplished using teams of horses which rolled logs up temporary skids onto the log cars. The obvious inefficiency of this mode of operation, together with its relatively slow nature soon became apparent.

A homemade log loading machine dubbed a "slide back loader" by western pine region loggers, was soon constructed by the company to take over the log loading task. This machine consisted of two logs placed parallel about eight feet apart and tied together with cross members to form a framework and serve as runners upon which an "A" frame boom was rigidly mounted at one end with a platform supporting a gasoline engine driven winching unit mounted at the other end. This log loading crane could pick up logs previously skidded to track side by teams of horses through the use of a cable passed over the boom and attached to the rotating drum of the winch unit. This machine was not merely a stationary "A" frame winch unit, but possessed the additional capability of self propelled movement allowing it to slide from the top of one empty log car to the next over the bunks. The name applied to this type of unit was derived from its ability to slide from car to car as the loading of logs progressed. The power unit of this loader was made from the motor and chassis of an old Fordson tractor which had been modified to drive one of the types of winch unit built by the Skagit Steel and Iron Works of Sedro Woolley, Washington.



E. R. Aston

Short log car being loaded with 16 foot logs by the "cross haul" method. Ernie Wise on the ground, 1923 or 1924.



Two bunk log car being loaded by "home built" slideback log loader along Omak Creek during the fall of 1924. Loader rested on a rough skidder type sled built out of logs.

E. R. Aston

The home made slide back loader proved to be so successful on the Omak Mountain line that Biles-Coleman placed it in use on the Omak Creek line loading the new cars built by the Pacific Car and Foundry Company. The immediate success of this unit in loading the new cars led to the purchase of a similar but much larger and more advanced factory built unit constructed by the American Hoist and Derrick Company.

The performance of the Skagit winch installed on the first Biles-Coleman slide back loader may have been a decisive influence when the purchase of a new speeder was decided upon some years later, as it also came from the Sedro Woolley logging equipment manufacturer.

The American Model "C Skid" log loader was purchased in 1926 at about the same time as the new log cars following a successful sales talk presented by Mr. Bill Loomis of the American Hoist and Derrick Company. This unit was used in much the same manner as described earlier for the Skagit/Fordson powered home built unit. It was also equipped to slide from the bunks of one car to the next as the cars were loaded. Movement occurred when the loader operator winched his machine forward by a cable fastened around the draw bar of the car at the opposite end of the string of empty cars upon which the loader was resting. When the loading of one car was completed, the loader would be moved from the empty car which it was resting upon to the adjoining car. The loader would then be used to load logs on the car upon which it had most recently been resting while the first car was being loaded. As each car was loaded, this cycle would be repeated until the loader was finally resting upon the last empty car at the other end of the now loaded train.

Before the loaded log train was started on its way to the mill, the car carrying the loader, often the number 124 which was specially strengthened for use as an equipment moving car, was switched out of the train and onto a siding to await the arrival of the following day's log train from the mill. The next morning, the car carrying the loader was switched to the head end of the train where it would be the first car to be loaded as soon as the operator moved the loader onto the next adjoining empty car. At the end of the day's work, the loader now resting on a different empty log car would be switched off of the main line onto the siding for another night. Almost all of the maintenance work required to keep the loader in operation was performed in the woods. This machine proved to be an efficient and economical piece of equipment to operate under the conditions encountered on the Biles-Coleman narrow gauge.

When used for railroad logging, the loader, after yarding logs to track-side, would then load them on the waiting empty cars. This type of operation was the only true railroad logging to occur during the entire history of Biles-Coleman if the term "railroad logging" is to be defined in the normally accepted sense. Such operations, although quite efficient, were not practical in most locations. This regrettable situation was a result of the sparse stands of timber available in much of the area readily accessible to the spurs built off of the Biles-Coleman line. The average timber yield of a single acre in much of this area often failed to exceed 5,000 board feet, or slightly more than one-half of a single log car load. In many locations not even this minimal quantity could be harvested.

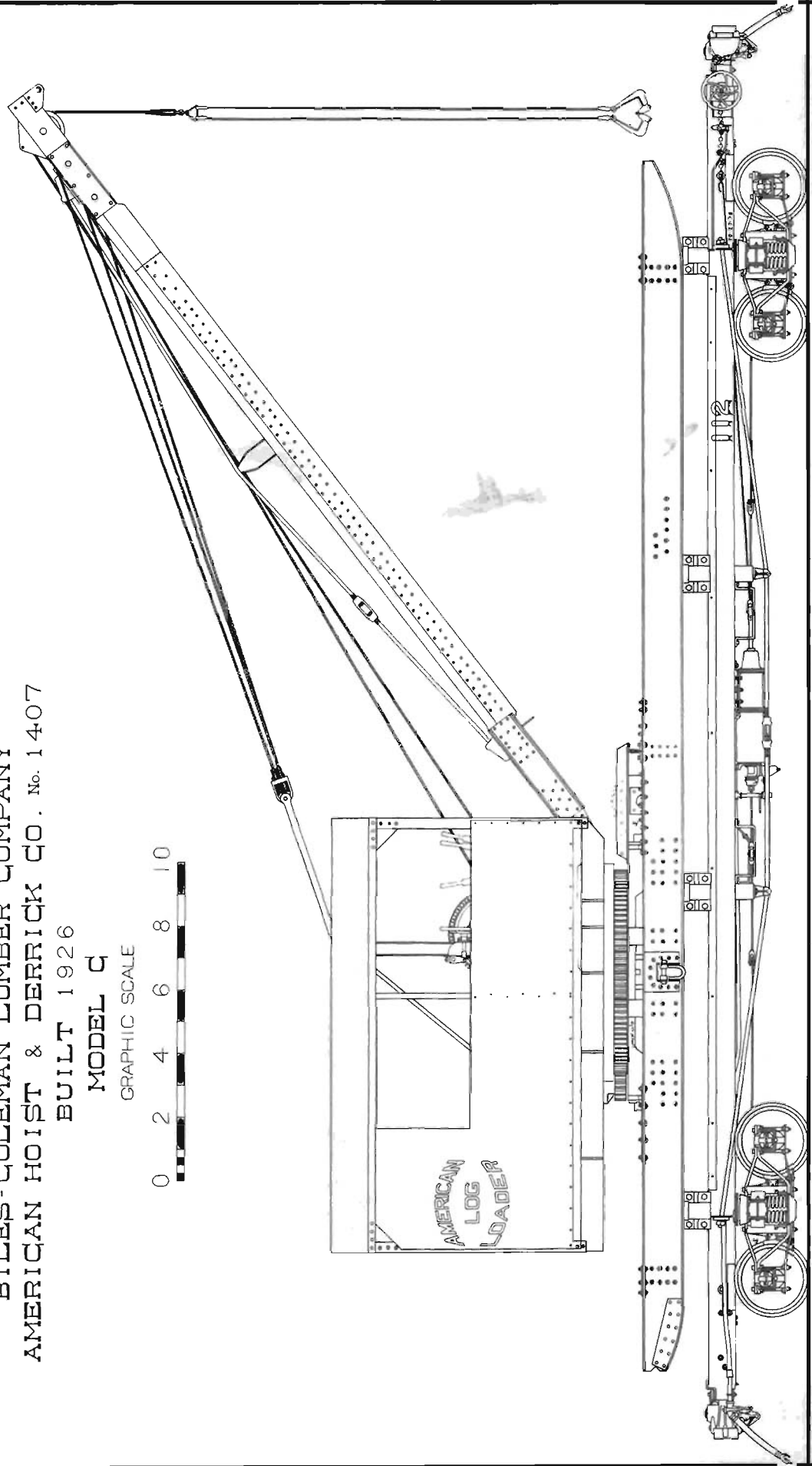
As timber was harvested and became ever more in-

LOG LOADER

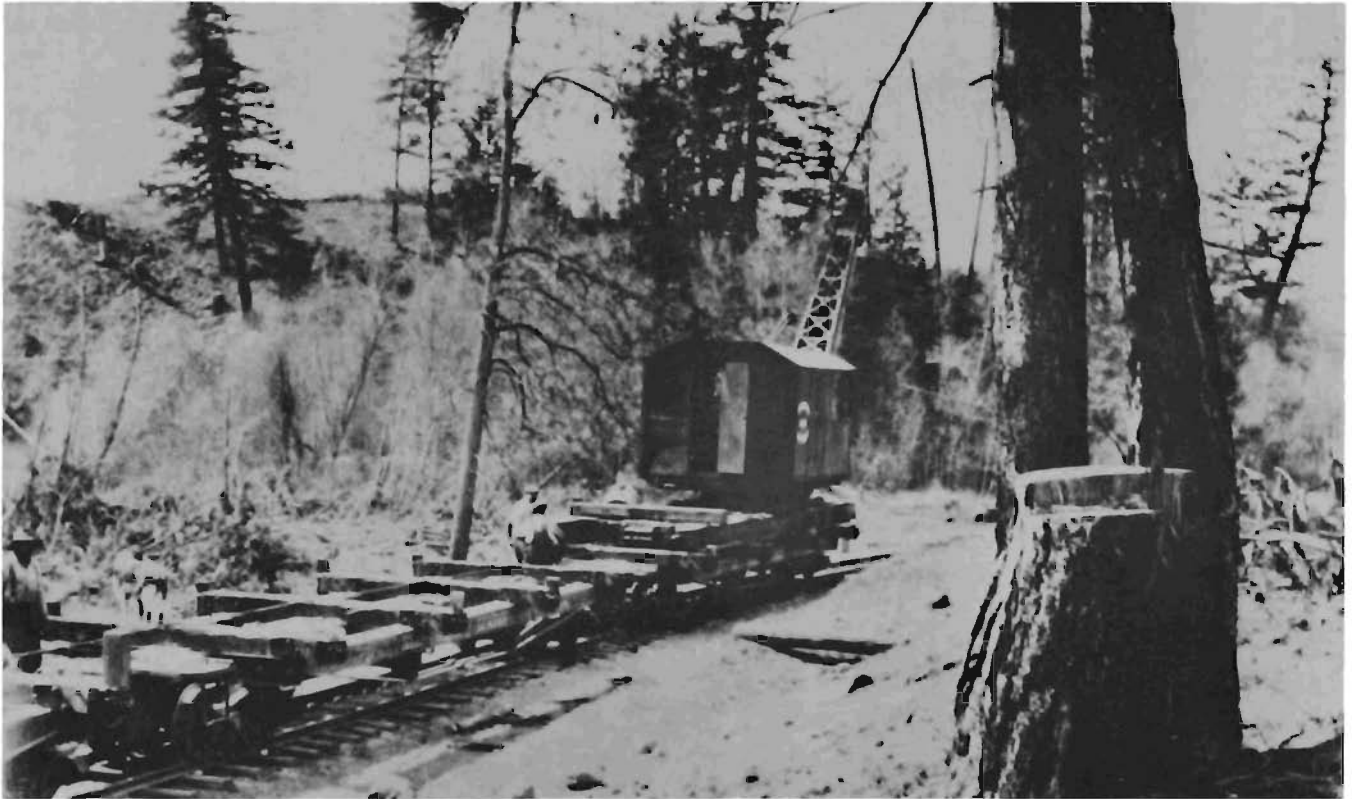
BILES-COLEMAN LUMBER COMPANY
AMERICAN HOIST & DERRICK CO. No. 1407

BUILT 1926
MODEL C

GRAPHIC SCALE



JOHN LEWIS



E. R. Aston

The slideback log loader pauses on an empty car at the end of a string of cars waiting to be loaded. The cable used to winch the loader from car to car is clearly visible.

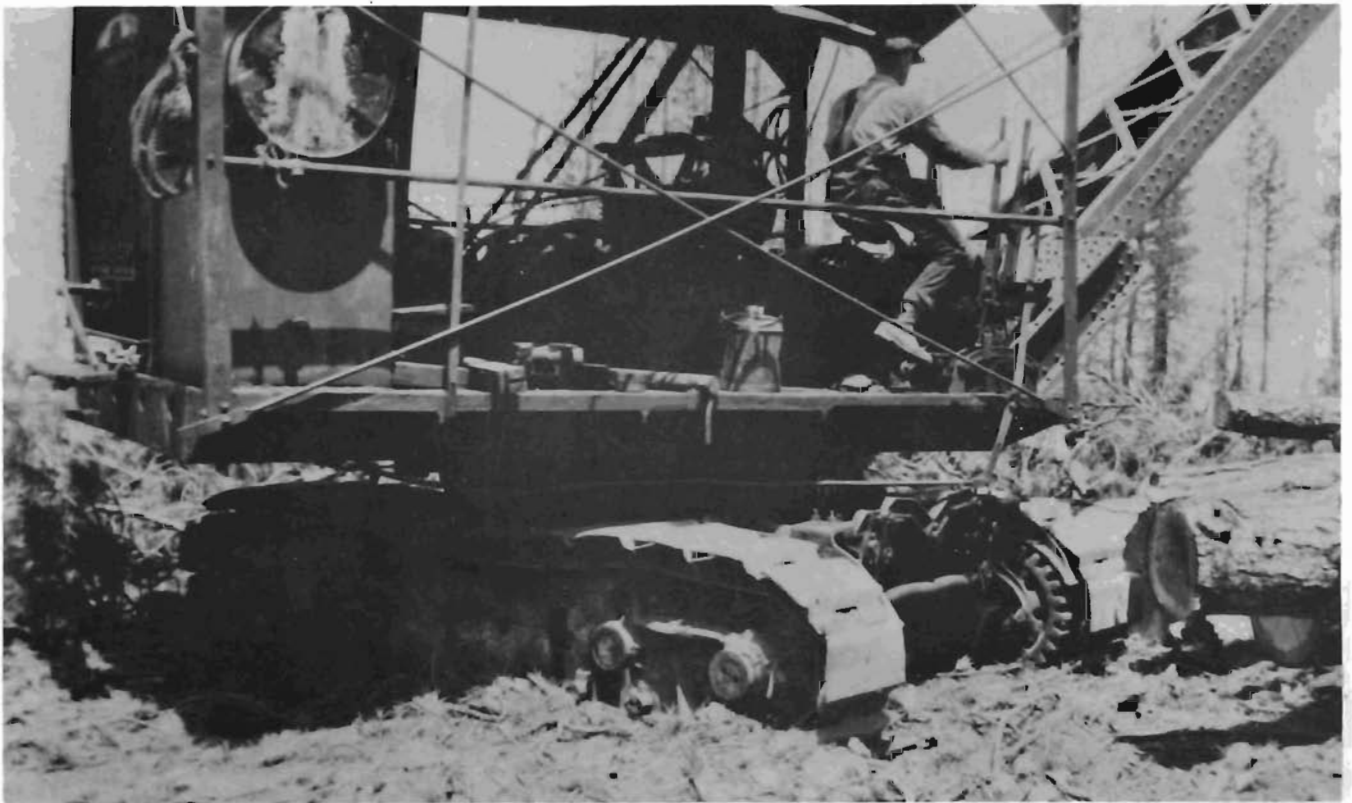


H. Weaver

The slideback log loader "heel-booms" logs onto log car No. 122. The car carrying the loader is No. 124, built especially for the task of carrying the loader. Photo taken during winter of 1943/1944.



The Biles-Coleman "Buncher" being used to stack logs near the village of Disautel, Washington in September of 1935. E. Fulford



Close-up view of the "Buncher" in action on the Colville Indian Reservation.

E. R. Aston

accessible from the immediate track-side area, the need for trucks to haul logs from the stump to the train became increasingly apparent. Log trucks had to be loaded of course, and this need led to the purchase of a second log handling crane from the American Hoist and Derrick Company. This new crane was essentially identical to the loader, except that it was mounted on crawler type tracks instead of the structural steel sled which provided a base for the loader. Referred to as a "buncher" by Biles-Coleman personnel, this unit was used to either stack logs brought into the landing area in a manner suitable for further handling by the loader, or to load the trucks used in the woods to carry logs to the railroad reload point. Experience proved this crane to be extremely serviceable. As late as 1967 the "buncher" was still in operation, although the crawler tracks had been permanently removed by that date and it had been permanently mounted on a flatbed trailer. Following the sale of Biles-Coleman to the Crown Zellerbach Corporation in early 1974, this machine was finally retired. As of August 1977 this A. H. & D. Company built logging crane was still in existence and awaiting a possible new owner and future career at a scrap yard on the south side of Omak. The official A. H. & D. Company designation for this type of machine was model number WS4G.

Despite the flexibility of the "buncher", it was not possible to load all of the logs on either trucks or log cars directly from the point where the tree was felled. Yarding or skidding of the logs from the stump to the nearest road or to trackside was essential. Biles-Coleman never owned or operated steam powered donkey engines for log yarding. Tractors had replaced teams of horses for skidding work at an early point in company operations. At



Authors Collection
The Biles-Coleman "Buncher" built by American Hoist & Derrick Company while being repaired at Omak Lake in 1939 or 1940.

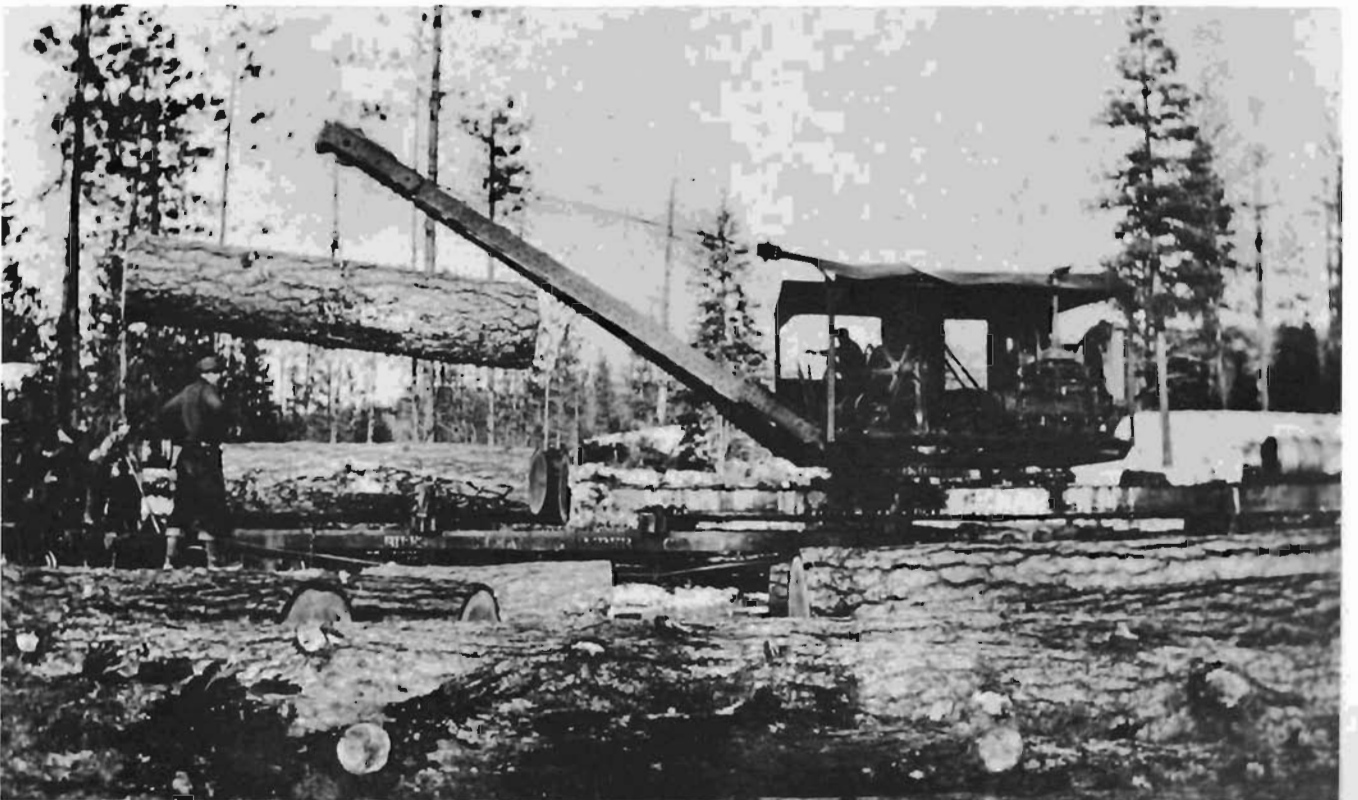


J. Lewis

Side view of the Biles-Coleman Lumber Company "Buncher" being used for log loading along the Moses Meadows road during October 1965.



Ladd Photo from E. Aston
 Caterpillar tractors and hydraulic log lift high wheels being used by Biles-Coleman in 1927 to yard logs to track side.



E. Fulford
 Biles-Coleman Lumber Company's slideback log loader loading short logs on the Omak Creek narrow gauge about 1930.



E. R. Aston
Log cars being loaded with full length logs during the early 1940's near the point where the Omak Creek narrow gauge crossed Washington State highway 10A. (Photo 1 of 2)



E. R. Aston
Log car No. 112 being loaded near the highway 10A crossing during the early 1940's. (Photo 2 of 2)

about the same time, the use of high wheels, an early predecessor to the now familiar logging arch had started. Tractor drawn high wheels were used for the task of skidding a sufficient quantity of logs to a given point to warrant the loading of either log cars or trucks. The high wheels performed the function of lifting one end of the logs to be moved off of the ground so that the tractor pulling the high wheel assembly could tow the logs travois style to the selected loading point.

During the initial years of the Omak Creek line, felled trees were bucked into logs approximately 16 feet in length. As newer and more capable equipment became available in both the woods and in the mill, the requirement for cutting and handling logs in short lengths disappeared. The slide back loader was modified by the addition of a lengthened boom to permit the loading of full length (32 to 40 foot) logs on the log cars.

Maintainability of the loader was improved during the early 1940's when the original gasoline engine drive was replaced by one of the first Caterpillar Diesel/Twin Clutch power and drive installations to be made in the Western states. This conversion greatly reduced shock, strain and wear on the unit and was so successful that a number of similar installations were made on other loaders of similar design used throughout the West-

ern Pine region. A four man crew was required to operate the loader. This crew was composed of two men in the loader and two men on the ground handling lines to the logs being loaded. Mr. Ernie Rabb was responsible for operation of the loader during most of the period that it was used on the narrow gauge. The only other employee assigned to operate this machine was Mr. Elmer Fulford, who ran it during the final years of the narrow gauge in the late 1940's.

During twenty-three years of rail use, the loader lifted three quarters of a billion feet of logs onto the bunks of log cars for transportation to the mill. Of that total, about one quarter billion feet of timber was loaded aboard log cars on a siding at the main reload (landing No. 1) which was located on the main line about one mile east of Disautel.

After being transported from the woods by log train to the mill at Omak, the logs were dumped off of the log cars into the mill pond by a small two drum steam donkey engine. This machine assisted gravity by winching logs off of the log cars so they could roll into the mill pond. Steam used to power this unloading engine was supplied from the sawmill plant rather than from an independent donkey engine boiler.



E. Fulford

Summertime log loading on July 22, 1946 as the recently re-engined log loader rests on car No. 114 at Landing No. 1 East of Disautel, Wash.

Chapter 5

LOCOMOTIVES, UNFULFILLED PLANS AND WASHOUTS



E. R. Aston

Biles-Coleman Lumber Company No. 102 and a loaded train of eight log cars drift down the 3.6% grade just to the East of St. Mary's Mission on the final leg of its trip to the mill, 1926.

The workhorse and most essential item of equipment of the Biles-Coleman narrow gauge logging railroad was Heisler locomotive number 102. There can be little doubt that Biles-Coleman was well satisfied with the performance of Heisler 102. In a letter dated March 31, 1928 in response to a letter of inquiry of March 19th, from Heisler, Mr. R. L. McNett, the General Superintendent of Biles-Coleman noted in part, "We are more than pleased with the work of our Heisler Locomotive, in fact, it is doing more than we figured on when we purchased it. At the present time we are putting sixteen to seventeen standard 40 foot cars out to our logging works with some four percent grades." The letter further advised that the locomotive had been fitted with equipment to burn oil fuel and that a form of feed water heating added to the locomotive had cut the fuel bill in half when handling heavy loads. The reliability of this sturdy machine can only be appreciated when it is realized that few if any other western logging railroads operated for longer than 20 years with only one locomotive. During the period from March of 1925 to May of 1948 the 102 operated on a six day per week schedule making one and sometimes two round trips per day.

One of the first times that the Heisler became inoperative because of an equipment failure occurred during the first week of March 1927. The damaged part was removed from the lokie and was placed on the train

from Omak to Wenatchee and thence on a connecting train to Tacoma at 7:46 a.m. on the morning following the failure. By 8:55 p.m. the part had reached Tacoma. Following pickup upon arrival and overnight repair by the Whitney Engineering Company, the Heisler dealer, the part was placed back on the train to Wenatchee and thence Omak at 5:45 a.m. the next morning. The repaired part arrived at Omak at 7:28 p.m. after an all day trip from Tacoma, and was reinstalled that night in time for the 102 to depart for Disautel at the normal time early the next morning. Clearly, the public transportation and express systems of that day functioned in a manner that deserves envy today. The only long "down" period for the 102 occurred during the 1940's when the crank shaft fractured and a replacement could not be obtained from Erie, Pennsylvania for about two weeks. The replacement shaft was manufactured specially for the job as no stock parts were then available. When completed, the new part was expressed to Omak to permit the earliest possible resumption of service.

During an operating life of 23 years 3 months, the Heisler travelled almost 510,00 miles shutting back and forth over the rails of the narrow gauge to Disautel while wearing out almost four sets of driving wheel tires in the process. Tires were replaced on an average of once every 5 years 9 months giving an average tire mileage life of about 125,500 miles. The last tire replacement

HEISLER
BILES-COLEMAN LUMBER COMPANY

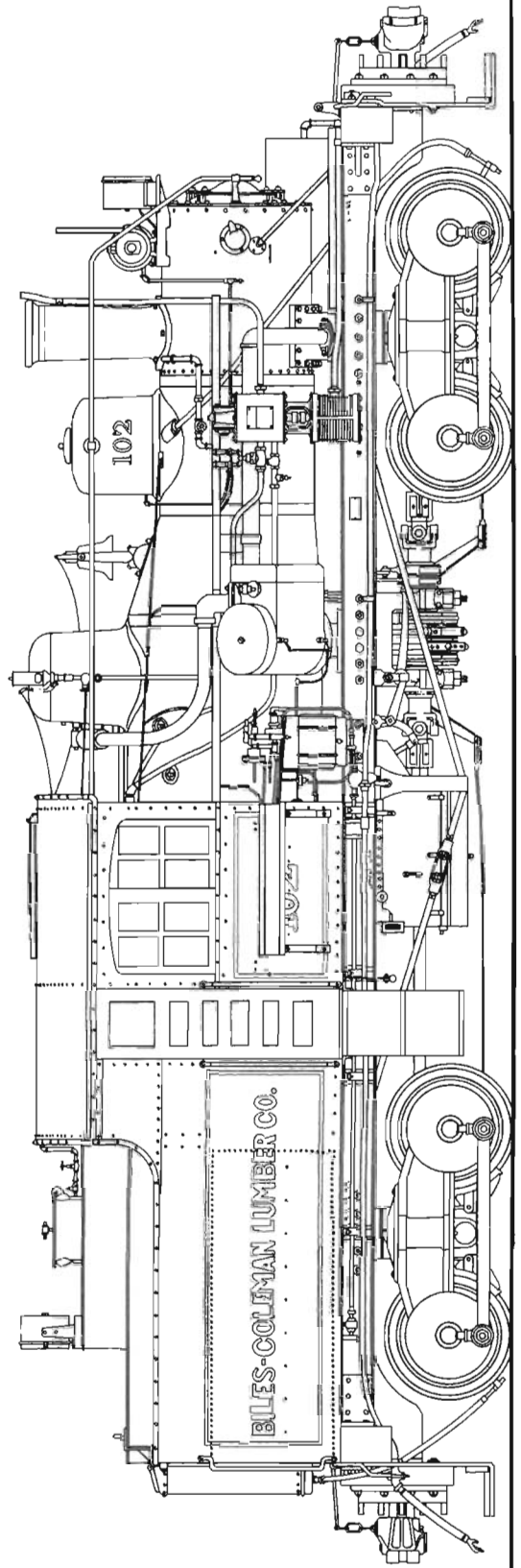
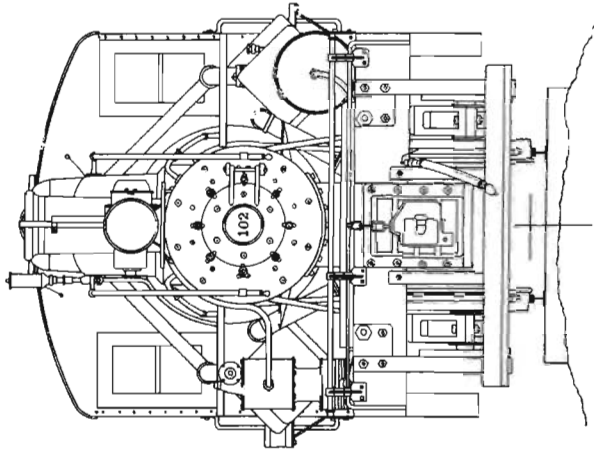
NARROW GAUGE

HEISLER 1516

BUILT 1925

CLASS B-42

GRAPHIC SCALE



took place in late January or early February of 1943 and it is of interest to compare the purchase cost of this set of tires with that of the previous replacement which occurred in April of 1937. The eight 33 inch diameter, 2 1/4 inch thick MCB standard tires purchased in that year weighing a total of 3200 pounds cost Biles-Coleman \$283.50 F. O. B. at the Erie, Pennsylvania plant of the Heisler Locomotive Works. By early 1943 the rapid inflation of the first 14 months of World War II had increased the cost of replacement tires to \$442.40, a jump of nearly 49 percent.

Freight expenses for the tires purchased in 1937 had totalled \$77.44 via a combination sea and rail route from the east coast to Omak. This expense was 21.45 percent of the total delivered cost of \$360.94, a graphic example of the cost impact to western loggers which transportation costs imposed upon parts procured from the east.

As the years passed, Biles-Coleman found that replacement of certain parts was required purely as the result of routine wear which occurred with regular use of the locomotive. The first replacement of the line shaft pinion gears was required in July of 1928 after the Heisler had been in use for nearly three and one-half years. During this initial period of operation the switching and track building tasks had been shared with the Shay. In later years, after the Shay had been retired, the Heisler had to perform all motive power tasks and the average life of pinion gears was reduced to three and one-fourth years between replacement. The master bevel gears mounted on the axles had an average life of slightly more than eight years before replacement was required. When the locomotive was permanently idled by the flood at the end of May 1948, the pinions were due for replacement, six previous replacement cycles having been performed. The main axle bevel gears were due for replacement during August of 1949, two previous cycles having been accomplished, the most recent having occurred in August of 1941.

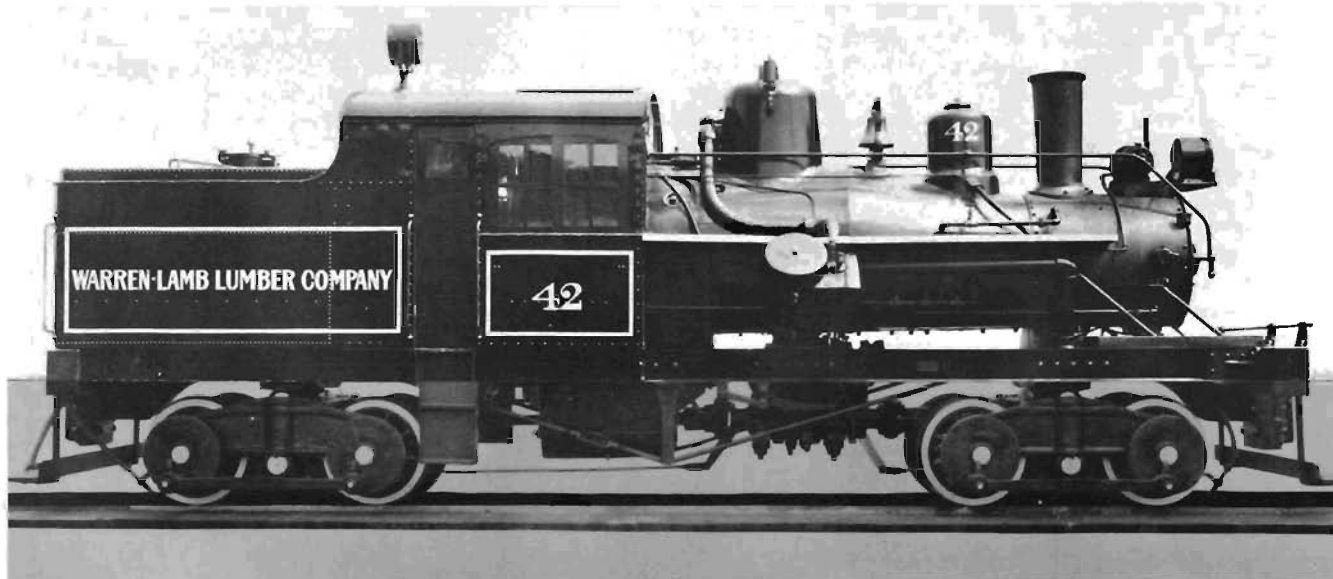
One factor contributing to the relatively maintenance free operation of Heisler 102 was found in the design of its trucks. Most narrow gauge Heisler loco-

motives built for logging in the West were fitted with trucks having the slide frame members located between the inside faces of the driving wheels. The number 102, in common with only three other narrow gauge Heislars used in western logging out of a total of 22 machines delivered for such service, was equipped with outside frame or "disc type trucks" as described by Heisler Locomotive works brochures. These trucks were built with the side frame member located outside of the outer faces of the driving wheels but inside of special crank disks mounted at the ends of extended length axles. Connecting rods on each side of the truck used to transmit power from the gear-driven to the ungeared axle were connected through crank pins to those axle-end crank disks.*

Connecting rods and side frames on opposite sides of the standard design 36 inch gauge Heisler truck were as close together as 47 inches and 28 inches center to center respectively. Under conditions of heavy loading, or on steep grades where high power was required, the transmission of power from the single gear-driven axle of each truck to the other axle through the connecting rods produced severe horizontal loading and pounding forces on axle journal bearings. These forces, because of the narrow spacing width between truck side frames, produced maximum thrust induced loadings on axle bearings 34 percent higher than on the adjoining connecting rod bearings. Such loadings resulted in abnormally rapid wear or failure of axle bearing journal brasses.

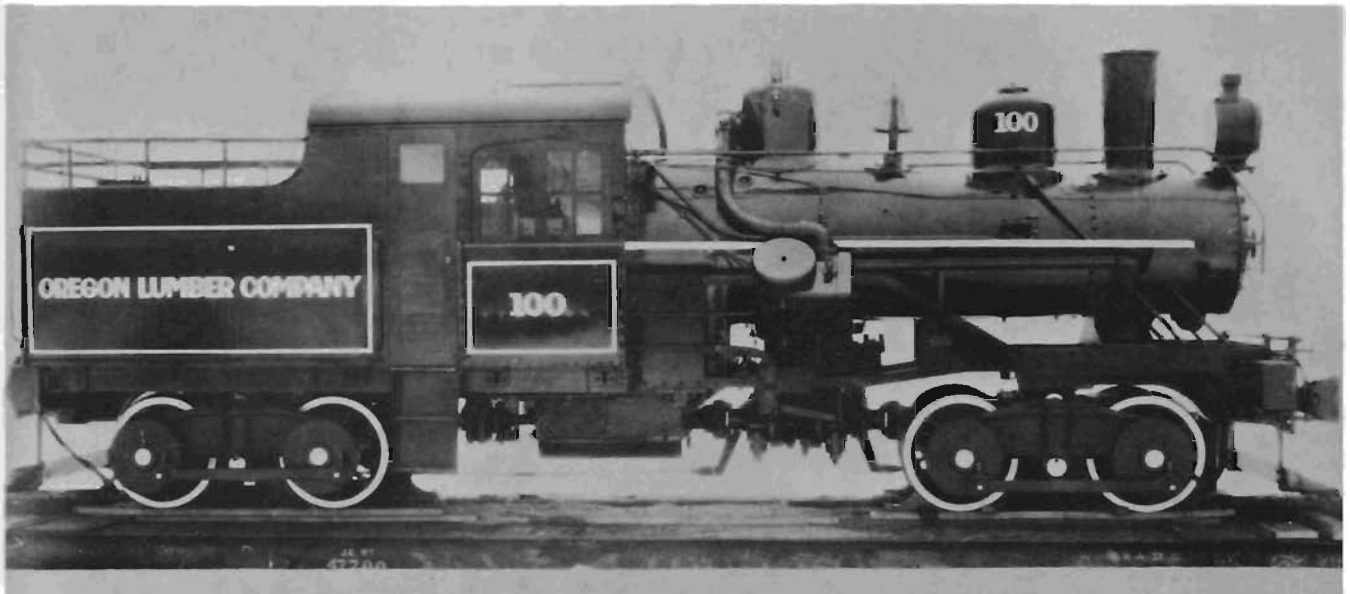
Outside frame trucks, by placing the connecting rods and side bearings as far apart as 63 inches and 50 inches respectively, reduced the maximum push-pull induced moment arm force loadings on each axle bearing. This reduction resulted in maximum dynamic axle bearing

*The other three outside frame narrow gauge Heislars used in the west were: Sandpoint Lumber and Pole Co. No. 1, C. N. 1461, class 40-2, built July 1922; Oregon Lumber Co. No. 100, C. N. 1510, class 50-2, built November 1924; and Warren-Lamb Co. No. 42, C. N. 1547, class 42-2, built 1927.



Warren Lamb Lumber Company No. 42 became the fourth and final western "disc truck" Heisler when delivered in 1927, and was almost identical to the third western outside frame Heisler which had been delivered to Biles-Coleman two years earlier.

Walter C. Casler



B. Ward

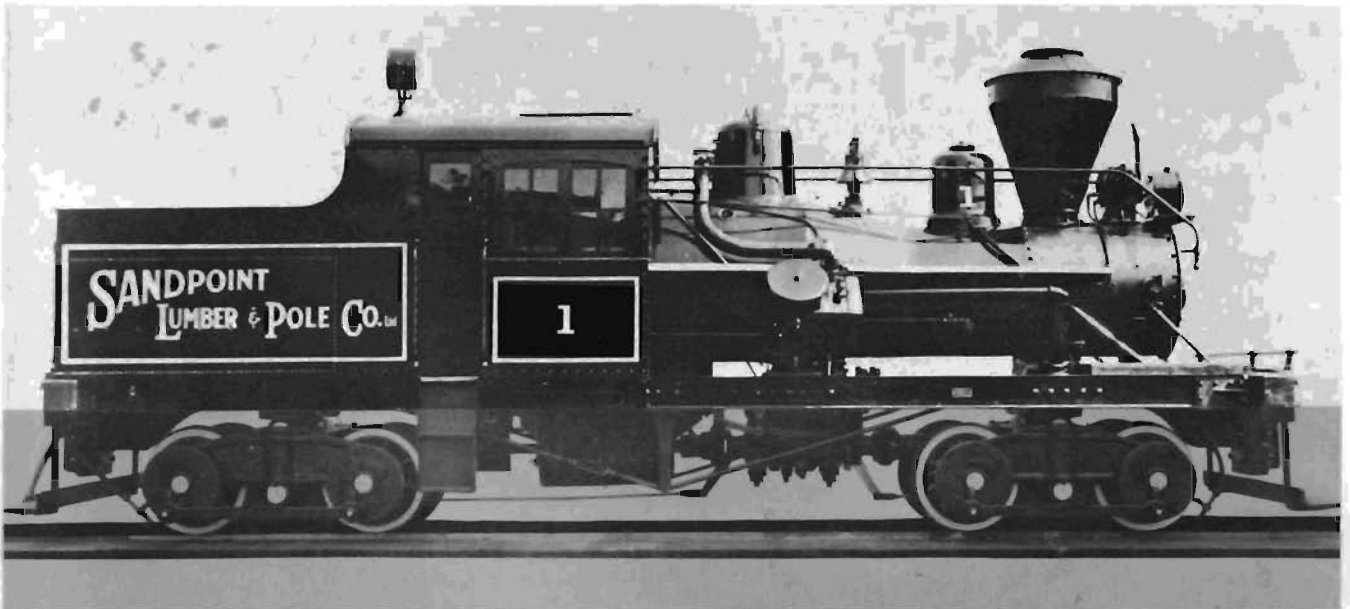
Oregon Lumber Company No. 100 was the largest narrow gauge Heisler used in the west and was the second outside frame machine to be delivered to a western owner.

loadings only 85 percent as high as encountered on inside frame trucks. Such a reduction in bearing loadings strikingly increased bearing service-life while reducing the frequency of bearing brass replacement and time consuming bearing adjustment.

Outside frame trucks also had the advantage of allowing the use of larger, standard gauge width gear cases and as a result, larger gear case axle bearings. These bearings were much wider than usable on the regular narrow gauge width gear cases which had to fit in between the closely spaced side of frames of standard narrow gauge trucks. The effects upon bearing life and upon wear reduction resulting from the use of larger more

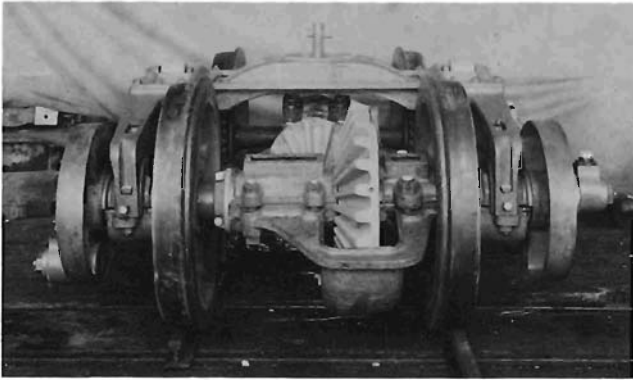
adequate bearings to support the gear case and resist the skewing loads caused by forces tending to drive the line shaft pinion gear out of mesh with the axle bevel gear are obvious.

While the outside frame "disc type truck" design did improve axle bearing life, the revised design did not improve the serviceability of bearings in lineshaft universal joints. These universal joint bearings, or knuckle joint bushings, were subject to high thrust loadings in both rotational and fore and aft directions. As a consequence these bearings wore, or perhaps "pounded", out rapidly. Biles-Coleman found that it was almost a routine necessity to pull either the front or rear truck out from



Walter C. Casler

The first outside frame or "disc truck" narrow gauge Heisler built for use in the west was Sand Point Lumber and Pole Company No. 1, built in July of 1922. While classified by Heisler as a 40 ton locomotive, it was almost a duplicate of subsequent Biles-Coleman and Warren Lamb 42 ton machines.

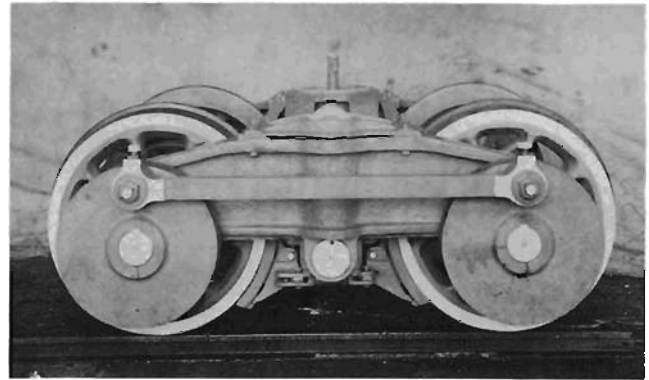


Walter C. Casler

End view of a narrow gauge Heisler outside frame truck dramatically illustrates the massive gearbox/drive gear assembly which could be placed between truck wheels when the usual inside truck frame was eliminated.

under the locomotive during weekend shut downs to permit repairs to be performed on the universal joint bearings. These bearings were removed, built up, re-machined and replaced routinely nearly every weekend. Occasionally bearing wear did not follow routine patterns, and repair had to be effected after a bearing failure occurred while the locomotive was out on the line pulling a train either from or to Omak.

Maintenance on the Heisler which had been purposely minimized during the deepest years of the depression was progressively resumed in 1937. During that year the cross head pins were rebuilt in February followed by the installation of new wheel tires in April and replacement of the steam dome gasket in June. This program con-



Walter C. Casler

Side view of a narrow gauge Heisler outside frame or "disc" type truck in the builders Erie, Pennsylvania shops.

tinued in 1938 with the periodic replacement of the Paxton Mitchell piston rod packing in September. In 1939, parts were purchased in August for the repair of the Heislers two Garfield No. 6 injectors.

The years of 1940 and 1941 witnessed a major overhaul program on the Heisler which was to pay dividends in reduced maintenance during the subsequent war time years. In late March 1940, Biles-Coleman ordered and installed new bearing brasses in the trucks of the number 102. In May of 1941 the piston rod packing was again repaired followed by the procurement of additional parts for repairs on the injectors. In August of that same year, new truck pinions, and master axle bevel gears were installed as noted previously thus completing the pre-war repairs.



G. McCracken

Heisler No. 102 being repaired on the "S" curve near St. Mary's Mission, Washington. Lokie front jacked up and supported on blocks to permit removal of the front truck for repair of lineshaft universal joint bearings. Repair crew identity from left: Henry Hahn, unknown, Bill Ostoff, unknown, George Vess, Robert McCracken, and unknown at the right.

The early years of World War II proved to be difficult for Biles-Coleman when the purchase of repair parts required to keep the Heisler running was attempted. The assignment of government priorities for the procurement and use of critical or strategic materials for uses not directly related to the war effort, and the ensuing bureaucratic red tape led to frustrating and time consuming delays in obtaining the required replacement parts. The line was never forced to shut down as a result of such delays but shut downs were avoided at times by the margin of only a few days when critical spare parts arrived just before imminent failure was expected.

Perhaps the most time consuming and most critical of these episodes occurred early in World War II between the first week of May and the end of September 1942. The Heisler was fitted with a 2 inch Von Boden-Ingles Oil Burner and by the end of April 1942 it was no longer operating properly and was beyond the point of acceptable repair. Biles-Coleman, quoting a war-time defense preference rating A-10, ordered a replacement unit from the Whitney Engineering Company who in turn ordered the unit through their supplier the Erie Iron and Supply Company, successors to the Heisler Locomotive Works. The manufacturer of the burner, the Edward S. Sullivan Company of San Francisco, California was in turn contacted by the Erie Iron and Supply Company and by July 24 had been notified of the A-10 preference rating. On August 6th Whitney was forced to notify Biles-Coleman that the higher A-1-K rating or a higher preference rating would be required by the manufacturer since a considerable quantity of brass was required to build the burner. After completing the required applications and making the necessary certifications required by the bureaucrats, Biles-Coleman was able to advise Whitney Engineering Company on August 24th that the order held an A-1-E rating. Although the Whitney Engineering Company had forwarded the higher rating to their supplier by September 3rd, the manufacturer had not yet been notified by September 11th when the Edward S. Sullivan Company advised Whitney that they were ready to ship the oil burner until they noticed that the order quoted an A-10 rating. They further noted that a rating of at least A-1-J would be required to permit them to ship the oil burner. In response, Whitney directly advised the Edward S. Sullivan Company on September 15th of the A-1-E preference rating held by Biles-Coleman for the order. After a short delay resulting from mail and freight forwarding times, the badly needed burner was finally received at Omak at the end of September.

The previously noted purchase of new tires for the locomotive was initiated on October 31, 1942. Only after another extensive exchange of correspondence transmitting data on preference ratings was the Whitney Engineering Company able to place a firm order with the factory for the required tires on December 8, 1942. On that date, Whitney advised Biles-Coleman that they would be well advised to check their stock of spare parts for the 102 which would be needed in the near future as they (Whitney Engineering Company) still had in stock some parts which Biles-Coleman could use. This notification was actually a thinly veiled reference to the fact that if Biles-Coleman bought in-stock parts without delay, they could avoid lengthy unnecessary delays in the ordering and receipt of parts from the factory which would almost certainly exist for the duration of the war effort.

The Heisler was destined to be the only locomotive purchased new by Biles-Coleman, but an interesting "might have been" almost resulted in the company being the only operator of a narrow gauge mallet compound 2-6-6-2T in the United States. In 1929, Biles-Coleman was preparing to start logging operations in the Moses Meadows region about eight miles northeast of Disautel. The new narrow gauge branch line proposed to permit the exploitation of timber in this area would have required log trains to overcome adverse up-grades of almost three percent on a portion of the route before starting the long descent toward Disautel. The adverse grades involved, together with the expected route length, resulted in the conclusion that a locomotive combining both grade pulling ability and moderately high operating speeds would be required if operation of the new line was to be conducted in the most efficient manner. While larger geared locomotives could provide the power to pull the required load over the anticipated grades, not even the Heisler could provide the operating speeds in the 25 to 30 mile per hour range required for long distance down and moderate up-grade operation.

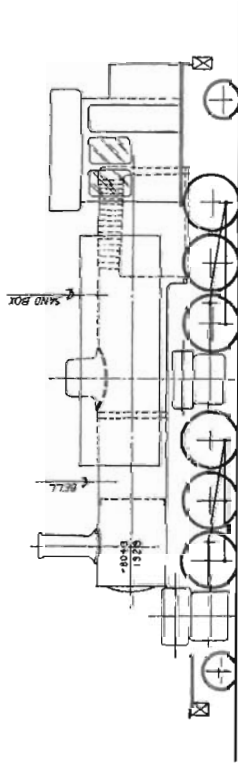
During the late 1920's competition between the manufacturers of logging railroad motive power to secure an increasing share of an ever diminishing market had reached an intensity previously unseen in the locomotive building industry. This competition was the result of pressures caused by a increasing consciousness of logging railroad operating costs, by the diminishing number of new logging railroads started as the amount of easily accessible virgin timber rapidly diminished, and as the initial faltering attempts to introduce motor trucks for the task of log transportation began to show promise. The Baldwin Locomotive Works had vigorously advertised the merits of the Mallet Compound 2-6-6-2 type of locomotive as an alternative to the best geared locomotives available during these fiercely competitive years.

Accordingly, Biles-Coleman contacted Baldwin early in 1929 requesting a proposal for a new locomotive that could efficiently satisfy the operating requirements anticipated for the proposed new branch line. Analysis of these requirements resulted in Baldwin Locomotive Works Specification Number 8043 of January 25, 1929. This specification envisioned a 2-6-6-2T mallet compound locomotive similar in design to a meter gauge machine previously built in 1921 for the F. C. Del Sur of Columbia, South America and having an appearance similar to the much larger, standard gauge, Weyerhaeuser Timber Company number 110.

The proposed 2-6-6-2T would have weighed 70 tons in working order. Using a conservative factor of adhesion, this locomotive would have had a tractive effort or pulling ability of 23,100 pounds, a force 18% more than that exerted by Heisler number 102. The new locomotive would have had 38 inch diameter drivers, a total rigid wheelbase of only 7'10", and would have been able to readily negotiate 30 degree curves and 5 percent grades. A conceptual drawing of the appearance of this locomotive is provided in the accompanying pages as are copies of the Baldwin Locomotive Works Specification Card Number 8043.

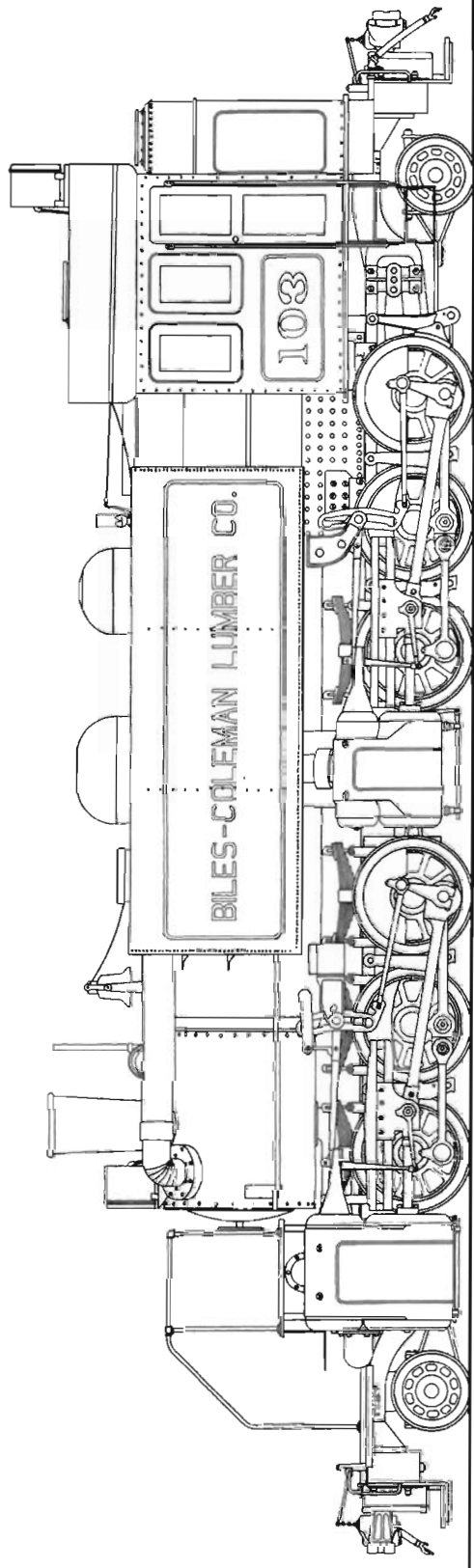
Unfortunately for those who like to speculate upon proposed plans, no order was ever placed with Baldwin for the new locomotive nor was the proposed branch line to Moses Meadows to be built. Mr. Emmit Aston, logging

2-6-6-2T
MALLET COMPOUND
 BILES-COLEMAN LUMBER COMPANY
 NARROW GAUGE
 BALDWIN PROPOSAL 8043
 DATED 1929

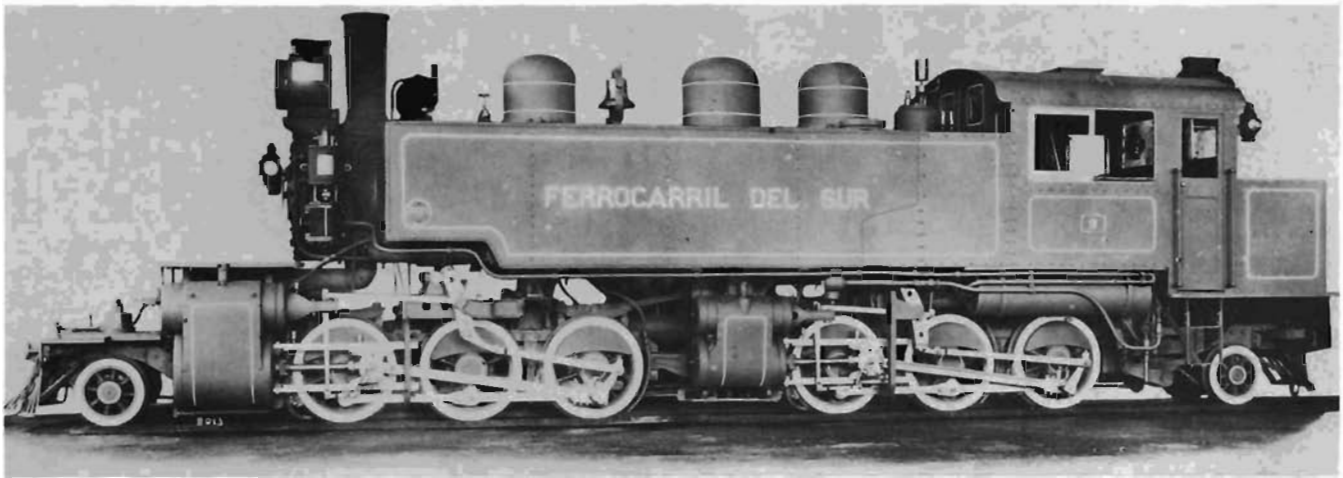


PROPOSED BALDWIN OUTLINE
 GRAPHIC SCALE
 0 2 4 6 8 10

GRAPHIC SCALE
 0 2 4 6 8 10



JOHN LEWIS



H. Broadbelt

Ferrocarril Del Sur 2-6-6-2T No. 9. The design of this meter gauge width locomotive formed the basis for the proposed Biles-Coleman Lumber Co. 2-6-6-2T Mallet Compound locomotive.

manager of Biles-Coleman had already become attracted by the operating flexibility and low operating costs provided by the relatively crude motor trucks then available for use in logging. This flexibility coupled with the financial conservatism produced by the devastation of the 1929 Depression led to a decision to transport logs from the Moses Meadows area to the railroad at Disautel by truck. The interesting prospect of a mighty little narrow gauge mallet thundering through stands of Ponderosa and Lodgepole Pine thus faded from memory in the ever increasing gloom of the financial chaos of the 1930's which was destined to overwhelm the nation.

The Biles-Coleman line must be considered a disappointment to those whom gloat upon train wrecks. Heisler number 102 was never tipped over during its entire operating career and was derailed only infrequently.

Operating speeds on the Omak Creek line were limited to a designated limit of about 15 miles per hour on downgrade trackage although infrequent bursts of speed up to about 18 miles per hour did occur. Train crews guilty of breaking the 15 mile per hour speed limit were disciplined if caught. The combination of narrow gauge track, relatively light rail, and heavily loaded log cars provided a natural speed restriction. Train speeds in excess of the rulebook limit usually led to a natural amplification of the normal in-motion sway of the loaded log cars. With increasing train speed, this swinging motion increased in severity until the cars tipped off of the track. The results of such an incident were invariably more damaging to the ego's of the engineer and train crew than to either the track or log cars. Biles-Coleman log cars were fitted with bunks 9 feet in width instead of the more usual 8 foot width bunks accepted as standard for narrow gauge operations. The company found that the extra width was more practical as cars with the standard 8 foot wide bunks and high log loads swayed constantly while in motion and frequently tipped over on 36 inch gauge track. The use of bunks 9 feet wide with quite evenly balanced but lower height log loads of the same size significantly improved operating stability. Wider but lower log loads moved at moderate speeds helped keep moving accidents to a minimum.

The use of 9 foot width bunks on the log cars also had another unexpected advantage in addition to improved operating stability. The slideback loader, mounted

on an I beam sled 32 feet in length could easily move from one car to another and remain both centered and stably balanced even when the train was stopped on a curve as sharp as 30 degrees without interference or hangup.

A few notable train wrecks did occur on the line although none of them resulted in damage to either of the line's two locomotives. The first such incident on the Omak Creek line occurred on Monday evening, December 27, 1926 when one car left the track and turned over and two other cars derailed at bridge number 8.

The next major accident occurred on the evening of Saturday, May 11, 1929 at Camp 8 when the loader tipped off of a log car and slid down over the bank at trackside. The loader was so severely damaged that a new gasoline engine had to be purchased to replace the one which originally powered the loader when it was new. Biles-Coleman train crew and logging camp personnel worked all day on the Sunday following the accident to get the loader back to the track and loaded on an empty log car upon which it could be carried back to Omak for major repairs.

On Thursday, November 14, 1929, one of the empty log cars spotted at Camp 8 somehow became uncoupled from a string of empty cars waiting to be loaded and ran away down grade. This car raced down the track for a distance of about twelve miles before it hurtled off of the rails just above the mouth of the Omak Creek Gorge. In the course of its wild trip, this car ran into and killed five wild horses standing on the right-of-way. Although the M. A. C. speeder manned by the section gang chased this car down grade in hot pursuit immediately after it broke loose, they could not overtake the runaway before it left the track. Crews sent out to return the errant car to the track worked three days before it was returned to the rails for a trip to Omak for much needed repairs. Following this incident, "Owners" of the horses killed by the speeding car suddenly remembered that all were race horse quality animals. Biles-Coleman decided to honor the demands for reimbursement claimed. Within a short time all of the protesting "Owners" had been reimbursed for the replacement value of the destroyed animals and work on the narrow gauge had returned to normal.

Although several other minor wrecks and derailments occurred, the one major and final train wreck on

the line occurred on Monday, January 27, 1947 only fifteen months before the narrow gauge terminated operations permanently. The morning log train from Omak had just arrived at the main log landing east of Disautel and the Heisler had just been uncoupled from the string of ten empty log cars when George McCracken, then a new brakeman on the line, set the hand brakes on one of the cars in accordance with standard operating procedures to insure that the cars would not run away as air pressure in the air brake reservoirs of the empty cars gradually leaked away. After setting the brakes, George McCracken climbed back aboard the Heisler which was then run upgrade a short distance to the second reload east of Disautel to couple onto a string of loaded cars. Upon backing down to the siding where the empty cars had been spotted, the train crew discovered that all of the empty cars had disappeared. After hurriedly dropping off the loaded cars and securely setting the brakes on this train, the crew reboarded the Heisler and with whistle screeching started a high speed chase down the line to the west in what was to prove a futile attempt to catch the runaway train.

The wreck of the runaway train was witnessed by Mrs. Edna Fulford, the wife of the loader operator at that time, and her daughter Sandra from the kitchen window of their ranch house near the point where Stapaloo Creek ran into Omak Creek. Mrs. Fulford recalls the events of that day vividly in the following narrative: *"Our daughter was hanging out of the kitchen window overlooking the railroad track, which crossed our meadow, waiting for the train to come by as Con De Groote always tooted the whistle to her. All of a sudden she gasped and said; Momma, the train is coming without the engine! I looked out just in time to see the ten loaded cars rush out of sight behind some brush on the banks of the creek and then logs went high in the air and slid up over each other like matchsticks. Immediately after the sound of the crash subsided I could hear the engine racing down grade with the whistle wide open. My only thought was that the engine was coming so fast that the crew might not see the wreck in time to stop as the cars left the track on a curve. I grabbed Sandra by the hand and we ran down across the creek and over to the middle of the track where I stood waving my coat over my head as the Heisler came into view and screeched to a stop."*

Inspection of the wreck scene showed that all of the cars had left the track while some of the outside rail on the curve had been severely twisted, buckled and torn from the ties. Closer examination revealed that while some of the cars such as the No. 110 were relatively undamaged, others like the No. 102 and 105 had been severely damaged. With the line blocked by a jumbled mass of logs and derailed cars as well as being torn up to the extent that further passage was impossible, the train crew boarded the Heisler and returned to Disautel to pick up the loader and work crews to start the urgently required wreck clean-up which had to be accomplished before the supply of logs to the every hungry mill at Omak could resume. The wreck clean-up crew arrived after a short trip from Disautel aboard the Heisler which was pushing a string of empty log cars headed by a car carrying the loader. Work started with track crews restoring the dislocated rail to proper track gauge. The clean up commenced with those cars which had suffered only minor damage and which could be moved on their

own wheels being lifted back on the track. The other more severely damaged cars were loaded aboard undamaged cars and after the logs had been cleared away to either side of the right-of-way and track had been re-stored, the train load of wrecked and damaged cars proceeded westward to Omak where the necessary repairs could be effected.

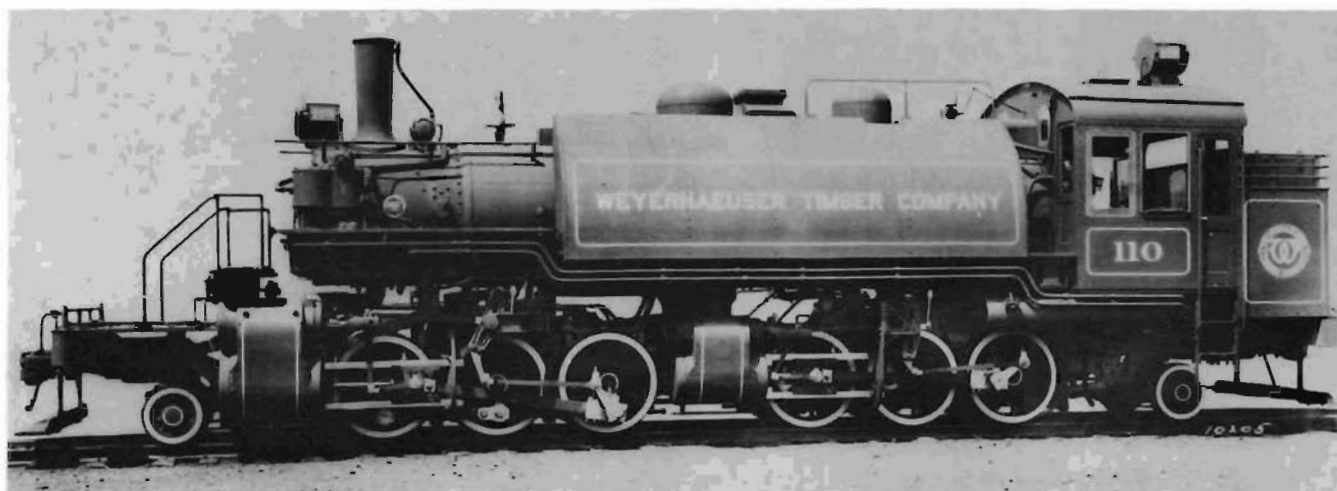
For several days after the Stapaloo Creek wreck, the line was forced to operate with only thirteen of its normal complement of twenty-three log cars, necessitating ever greater than usual peaks of equipment utilization. Soon, however, the Omak car shop was returning the newly rebuilt log cars to service and operations resumed a normal pace within a short time. It is rather ironic to note that the cars which were extensively damaged in the wreck, and which were subsequently rebuilt to a like new condition, were to operate for only an additional fifteen months before being idled permanently.

Up-grade and level track operating speeds usually ranged from 10 to 12 miles per hour. These relatively fast speeds of operation for a gear driven steam locomotive accentuated one of the primary advantages of the Heisler design. The Biles-Coleman Omak Creek narrow gauge was designed and built with long stretches of generally easy grades and moderate curves which were only marginally steeper and sharper than would have been generally acceptable for operation of conventional rod locomotives. Thus a locomotive able to operate at relatively high speeds on easy grades while retaining the capability to pull heavy loads up steep grades and around moderately sharp curves was required by Biles-Coleman.

The Heisler design was the only one of the three principal types of gear driven steam logging locomotive which satisfied Biles-Coleman's requirements. Both the Shay, and particularly the Climax, were limited to normal up-grade operating speeds of about 10 and 7½ miles per hour respectively. Further, while able to operate on track rougher than considered acceptable for either the Heisler or Shay, the larger size Climax locomotives were speed limited when operating down-grade due to a severe vibration problem caused by dynamically unbalanced reciprocating weight in the engine at speeds exceeding a maximum of approximately 8 miles per hour. Thus the relatively fast up and down-grade operating speeds common on the Biles-Coleman line would not have been possible had the company selected either a Shay or Climax locomotive as the primary motive power to be used on the Omak Creek line.

Water tanks to supply the needs of the locomotives were never constructed on either of the Biles-Coleman narrow gauge lines. An alternate and completely acceptable source of supply was obtained by dropping the locomotive's siphon hose into the mill pond, Omak Creek, or a hastily dammed-up trackside ditch in the woods. Boiler compound was not used to counteract the effects of hard water because it was discovered that the mill pond water formed a perfect source of "treated" water which required no further attention. The decision to do without water tanks was probably fortunate from an operating standpoint. The intensely cold winter weather encountered in the Omak-Disautel area would have necessitated the provision of heavy insulation around water tanks and feed lines to protect the water from freezing.

One notable incident related to operation of the Heisler occurred during one of the periodic inspections



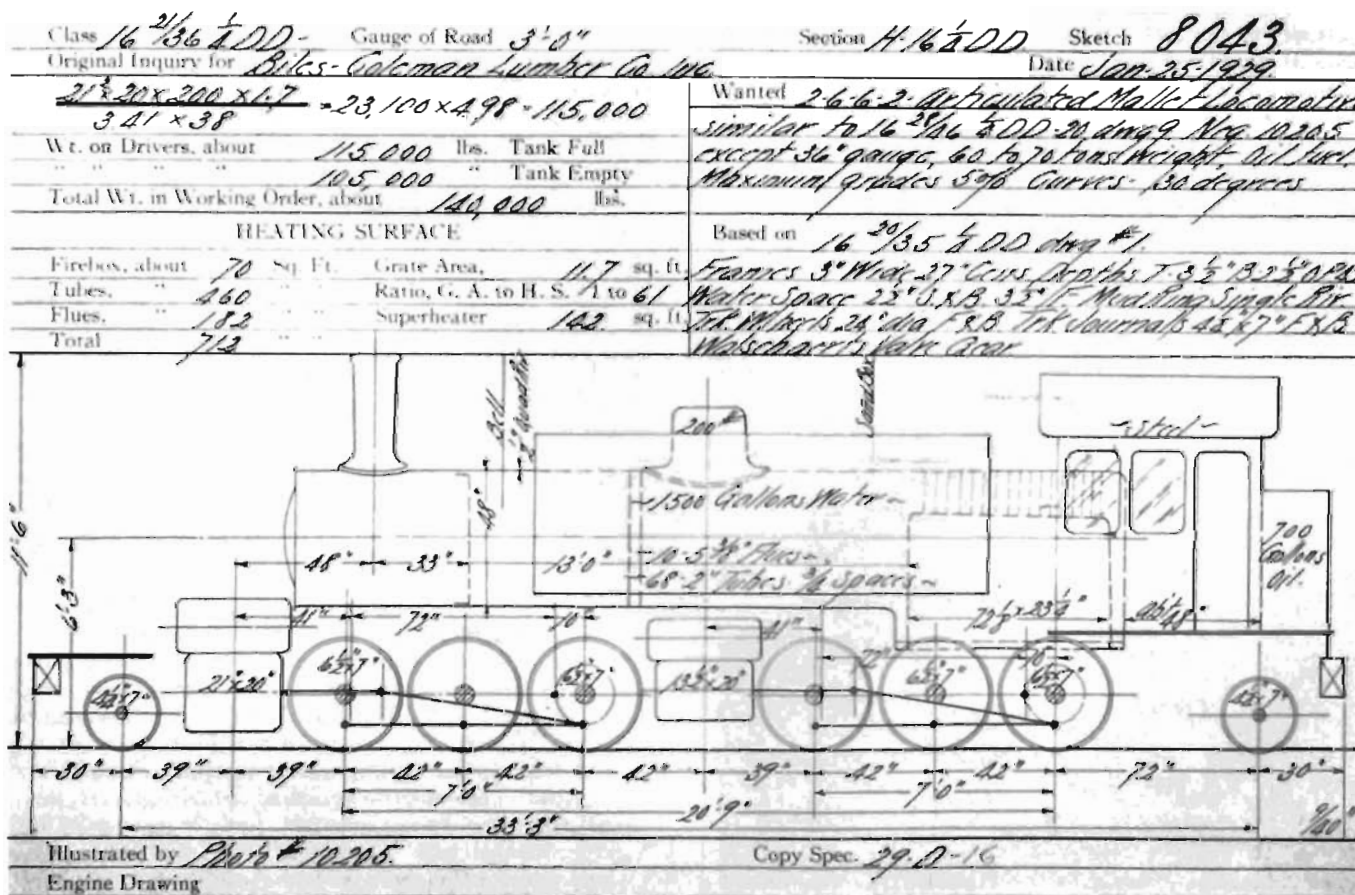
H. Broadbelt

Weyerhaeuser Timber Company standard gauge 2-6-6-2T Mallet Compound locomotive No. 110. The Baldwin Locomotive Works proposal for the Biles-Coleman 2-6-6-2T referenced this photo as having an appearance almost identical to the proposed narrow gauge machine.

required by state law for all steam producing boilers. The inspector arriving to perform the duties on this particular occasion possessed a rather portly stature. After crawling in the boiler to make his inspection, the State man discovered that he could not get back out. This problem was solved rapidly when the bulging portions of the inspector's anatomy were thoroughly smeared with grease. The grease, together with the assisting tugging of obliging company personnel, enabled the trapped man

to slither out of the boiler. No record exists as to whether this inspector ever made a repeat visit to perform another routine inspection on the Heisler.

During the latter part of 1939 or perhaps early January 1940 the water level in the boiler of Heisler number 102 was accidentally allowed to fall below the bottom level of the boiler water gauge sight glass on one occasion. This potentially explosive incident and the possible burning damage which might have occurred in-



Baldwin Locomotive Works Proposal Card for the projected Biles-Coleman Lumber Company 2-6-6-2T.

J. Cummings



Mark Purdy Photo Courtesy of Mrs. A. Purdy

Log car No. 112 and other cars tipped off of the track in the Omak Creek Gorge.

ternally to the boiler led company officials to the conclusion that replacement of the "burned" flue, crown and firebox sheets would be required. Accordingly, Biles-Coleman contacted the Whitney Engineering Company on January 23rd requesting a quotation and estimated delivery times on the replacement boiler sheets. Whitney quoted a total price of \$275.00 F. O. B. the factory at Erie, Pennsylvania on February 8th with shipment promised one week after receipt of the order. An indicated shipment transit time of two weeks was promised subsequently in a letter dated February 13, 1940.

While the quotation for the replacement boiler sheets was being prepared by the Whitney Engineering Company, Biles-Coleman had taken steps to have the boiler inspected to verify that the flue, crown, and firebox sheets had indeed been burned in the low-water incident. This inspection, the humorous aspects of which have been men-

tioned previously, revealed that no damage had occurred. Following certification by the Hartford boiler inspection people that repairs would not be necessary, Biles-Coleman advised Whitney Engineering on March 11, 1940 that it would not be necessary to order the replacement boiler parts.

Although most boiler repairs were performed on a scheduled basis in the shop at Omak, occasional events resulted in unscheduled out of shop repairs in the woods. In one such incident during the early post war period, the flues at the front end of the boiler of Heisler No. 102 blew out while the locomotive was crossing bridge No. 18. A makeshift crew replaced the offending flues on the spot. When repairs were complete, the train crew was faced with the unenviable task of refilling the boiler with water dipped from the creek below in five gallon buckets before the boiler could be steamed up again. This entire repair task required almost 36 hours to complete and when finally finished, the exhausted train crew was relieved to be able to resume the journey which had started so many hours earlier.

The crankshaft failure noted previously which had brought operations of the Heisler to a halt for about two weeks during the early 1940's had an impact upon company thinking which probably led to the early decision to abandon the narrow gauge when the flood struck at the end of May 1948. During the crankshaft incident the mill could not stop operations while the replacement part was being awaited, and as a substitute, logging trucks with bunks 10 feet in width were pressed into an emergency over-the-highway shuttle to supply the mill with logs. This operation helped remove any remaining doubts from the minds of company man-



G. McCracken

A section hand on the Omak Creek narrow gauge watches a band of wild horses East of St. Mary's Mission, 1940's.



DeGroote/McCracken

Log car No. 105 survived the Stapaloo Creek wreck in a relatively intact condition except for the complete loss of its brake end coupler and the supporting wood center sills.

agement personnel as to whether a truck haul operation could be successful in replacing the narrow gauge main line log haul while simultaneously reducing operating costs. As a result of experience gained during this direct over-the-highway woods to mill log haul operation, Mr. E. R. Aston advised company management in mid-1947 that a change over to a trucking operation could reduce log hauling expenses by up to \$1.50 per thousand board feet. Assuming that the average train consisted of 12 cars, each carrying a 9,000 board foot load of logs, and that two trains ran per day on a five day week basis, the projected transportation cost savings expected by a switch from rail to truck log hauling would have amounted to \$84,240 over a one year operating period.

In 1947 management was not entirely convinced that such major savings could be realized, but Mr. Aston was given a promise that his proposal would be given a trial the following year. When the unexpected flood struck the following spring, the promised experiment suddenly became a forced necessity. Actual results of the new truck operation proved that the promised savings were conservative and that actual cost reductions of up to \$2.00 per thousand were possible. Whether this impressive cost reduction would have been possible if Biles-Coleman had employed a progressive program of modernization, improvement, and undeferred maintenance on the narrow gauge remains open to question. Certainly the availability of fuel efficient narrow gauge diesel locomotives from such builders as Porter or General Electric was not a problem in 1947, and such a machine could easily have replaced the Heisler. The manager of the Sumpter Valley Railway, another northwest narrow gauge lumber hauling line, with its terminus at Baker, Oregon, stated to the author, on more than one occasion

in 1958, that the sudden post-war decision to convert from rail to truck operation had subsequently been regretted from both the financial and operating standpoints on many occasions.

In 1948, about twenty-five miles of track including sidings and the Disautel branch was in use between the truck reload points in the vicinity of Disautel and the mill at Omak.

Heavy spring rains coupled with a rapid melt of the snow pack in the mountains caused the flood of May 1948 which was famous for the destruction which it brought to Vanport on the Columbia River near Portland, Oregon. Upstream, the effects of this flood were equally destructive both on the Columbia and on its tributaries.

Headlines and articles in Omak and Okanogan newspapers had been giving insight to perceptive readers for more than a month prior to the flood that dire events were to be expected. As early as May 3rd, a heavy rain had temporarily washed out a portion of the Disautel Pass road and the Okanogan Independent noted on May 6th that April rains had surpassed the average of the preceding 31 years by 300 percent.

The same newspaper noted on May 20th that low temperatures were holding back melting of the snow which had accumulated during the previous two months in higher areas. An accompanying headline noted, "Old Timers Look with Disdain as Okanogan (river) rises". By the 27th of May such disdain had become genuine concern with headlines proclaiming "Valley Rivers Rising in Assault on Records". The snow melt had become a torrent and area rivers rose to depths that endangered bridges and produced localized but generally unimportant flooding.



DeGroot/McCracken

"Damn!" Stapaloo Creek wreck being viewed by Con DeGroot on January 27, 1947.



M. Purdy Photo

Log loader "heel-booming" a large log onto log car No. 120.

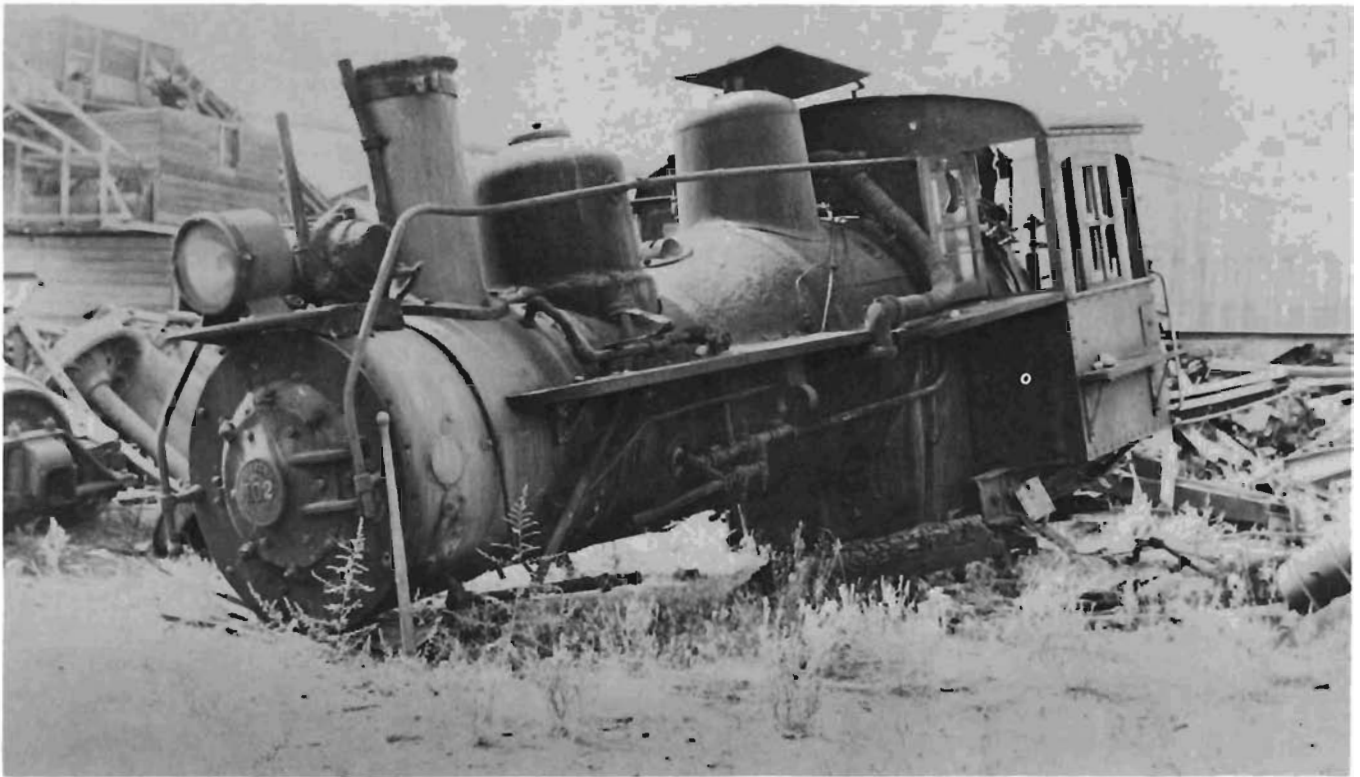


U. S. Indian Service Photo from J. E. Lewis Collection
Loaded log train trailing a car carrying the loader with its boom lowered to allow movement over the main line leaves log loading landing No. 1.



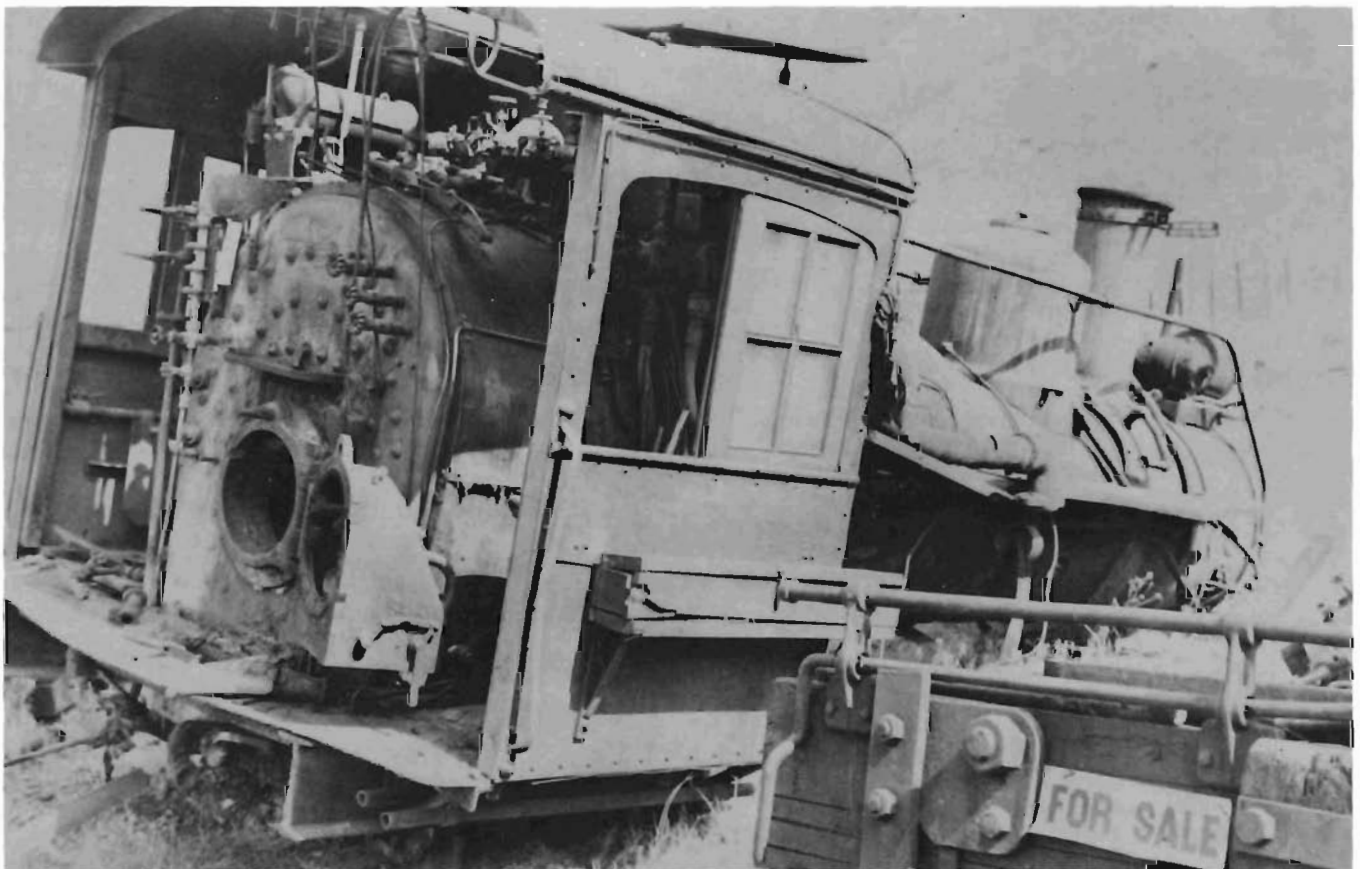
The remains of Heisler No. 102 and the long log cars in a scrap pile at the Omak mill in the fall of 1949.

C. DeGroot



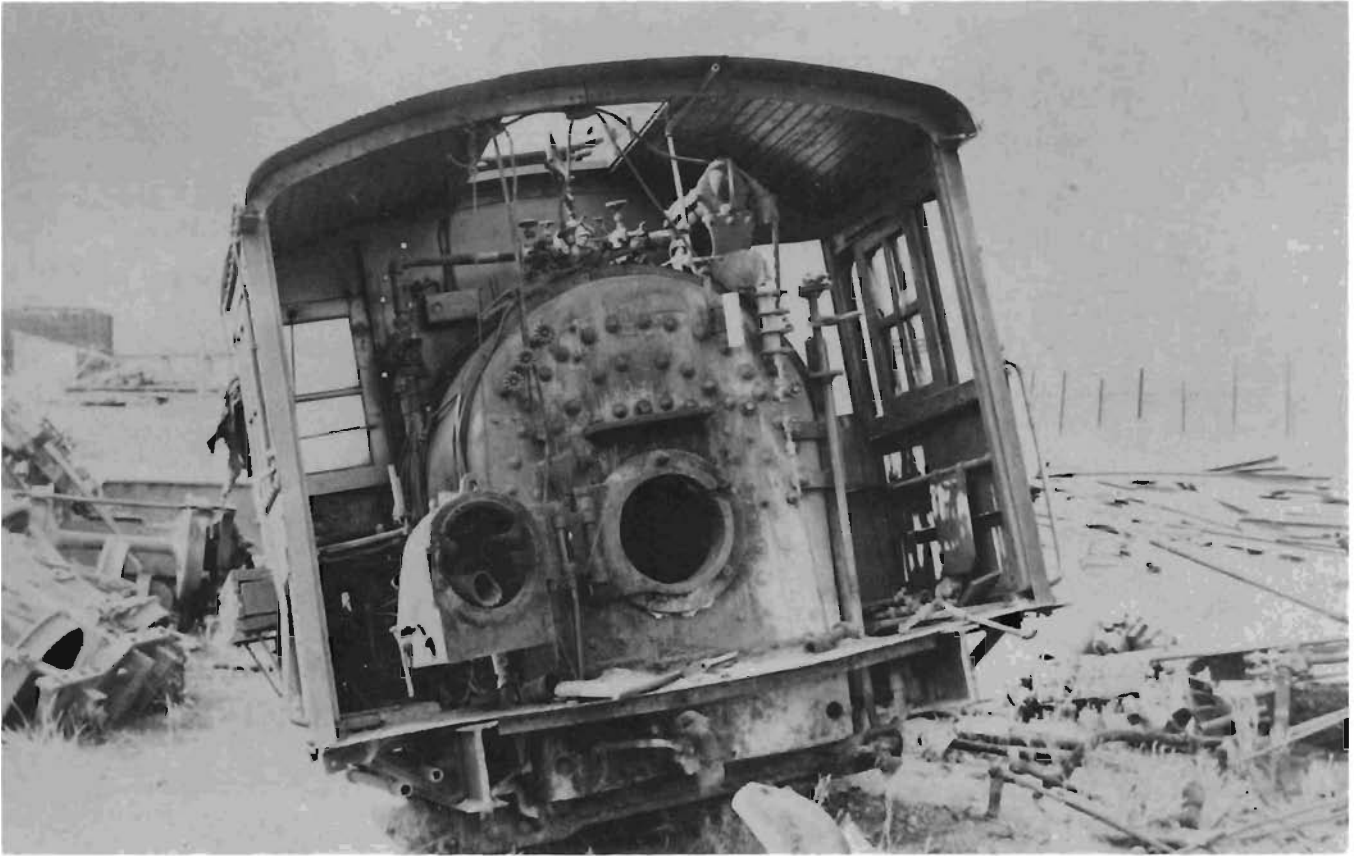
Boiler and cab of No. 102 in the scrap heap, fall 1949.

F. Cotton



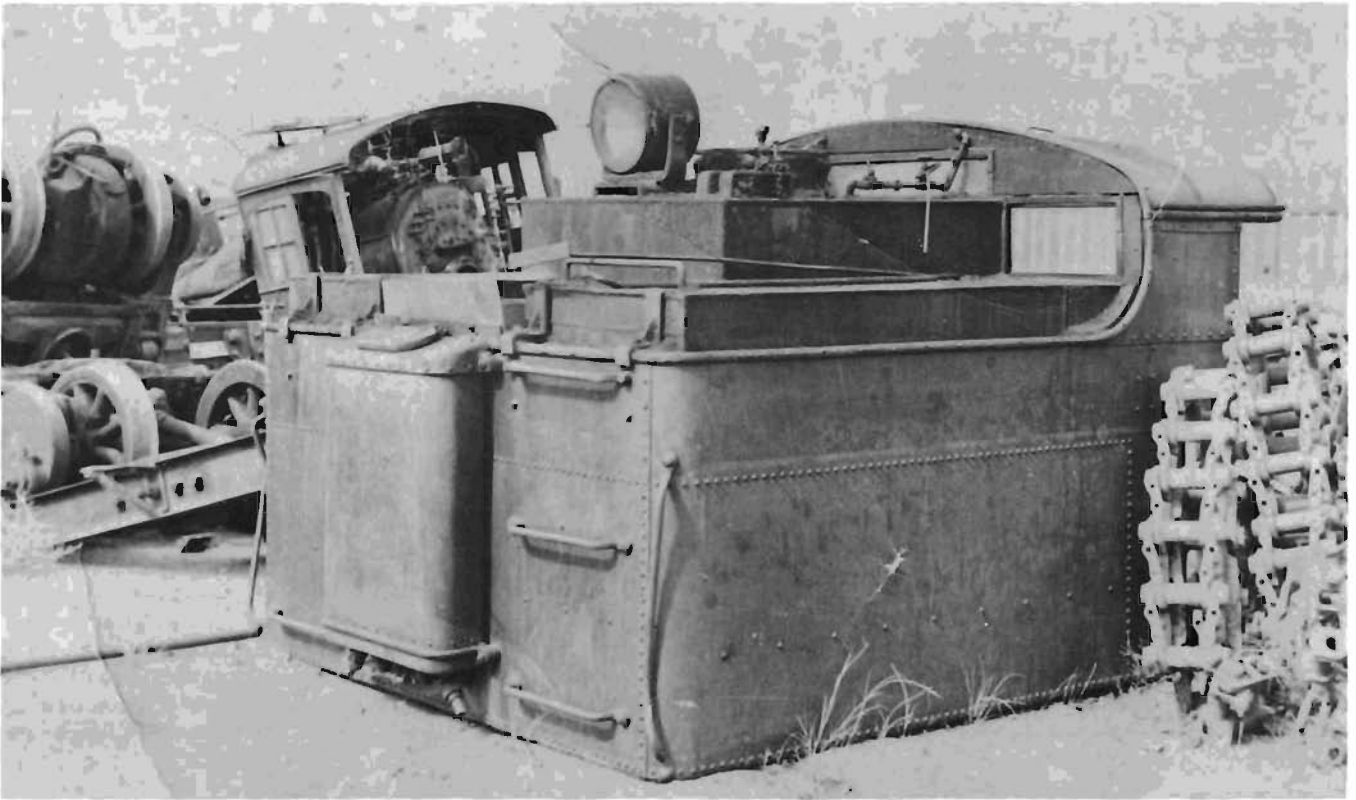
Rear right side view of the remains of No. 102's cab and boiler during the fall of 1949.

F. Cotton



Cab interior of Heisler No. 102 at Omak, fall 1949.

F. Cotton



Tender tank, main frame, and trucks of Heisler No. 102 in the Omak mill scrap pile, fall 1949.

F. Cotton



E. Fulford

Cleanup operations, Stapaloo Creek wreck, January 28, 1947.

The threat of possible major flooding became a crisis for Biles-Coleman on Sunday the 30th of May when Omak Creek turned into a raging torrent following a rain which had lasted 30 hours. The swiftly flowing waters washed out bridges and a portion of the right-of-way. Along Omak Creek, the flood was responsible for the destruction of over $\frac{3}{4}$ mile of railroad and roadbed. Equally serious was the damage to bridges on the line, seventeen of the total of nineteen being washed out. Three of the washed-out bridges were located in the lower end of the creek valley west of St. Mary's Mission, thus completely isolating most of the rail equipment, which happened to be at the mill, from the woods.

Newspaper headlines on June 3rd read, "Greatest Flood Recedes" and "Worst Flood Since 1894", the Okanogan Independent noting that in Omak, the water level of the Okanogan River crested at 1:00 p.m. on Monday, May 31st. The paper also noted that the Great Northern Railway line north of town had been closed by flood waters.

The damage to the narrow gauge coupled with the proven ability of the newer highway equipment to haul logs at a lower cost sounded the death sentence for the Omak Creek Railroad. A rapid inspection of the line

revealed that repairs would be prohibitively time consuming and expensive and the decision was made without delay to abandon the railroad. As a sideline to the flood damage to the railroad, it should be noted that the washout marooned the log loader, five of the twenty-three log cars, the two ballast cars and the line's only narrow gauge tank car in the woods. While the loader was destined to be used subsequently in truck logging, the marooned cars had to be scrapped where they were stranded.

The results of the flood left Biles-Coleman in the unexpected predicament of not having adequate means of transporting logs from the woods to Omak while dashing plans for an orderly transition from rail to truck hauling. The company was thus forced to start a crash program of renting and buying logging trucks as well as sub-contracting some log hauling to independent operators to satisfy the timber demands of the mill. During this final year of 1948 in which the narrow gauge operated, Biles-Coleman milled 45,119,000 board feet of lumber and employed a total of 600 men in its woods, mill, and re-manufacturing operations.

After the decision was made to abandon the narrow gauge, it remained idle for a year before work started to scrap the equipment and pull up the rails. On Thursday, April 28, 1949, Mr. Ross L. McNett announced that the rails, logging cars, and locomotive of the Biles-Coleman narrow gauge had been sold to the Riverside Junk Company of Everett, Washington. The price reportedly paid by the Junk Company for the narrow gauge equipment and rails was approximately \$100,000. When the scrappers arrived, the cars were stripped of their trucks and were then stacked in a pile near the north boundary fence of the mill yard near the shipping shed where they were burned. After the fire was out, the steel parts of each car were easily salvaged from the ashes.

Heisler number 102 was scrapped a short distance from where the cars were burned. The rails were pulled up and dragged to waiting trucks by Caterpillar tractors for transport to a Puget Sound port and subsequent shipment to India where they would be used again. Within a short time the little railroad had been completely dismantled, the only tangible remains consisting of a grade strewn with partially up-rooted and disused ties. Only the log loader and the "buncher" survived abandonment of the line. The "buncher" was subsequently mounted on a flatbed trailer as noted previously while the loader was kept in operation in the woods until the early 1960's when it was finally sold to an unknown buyer.

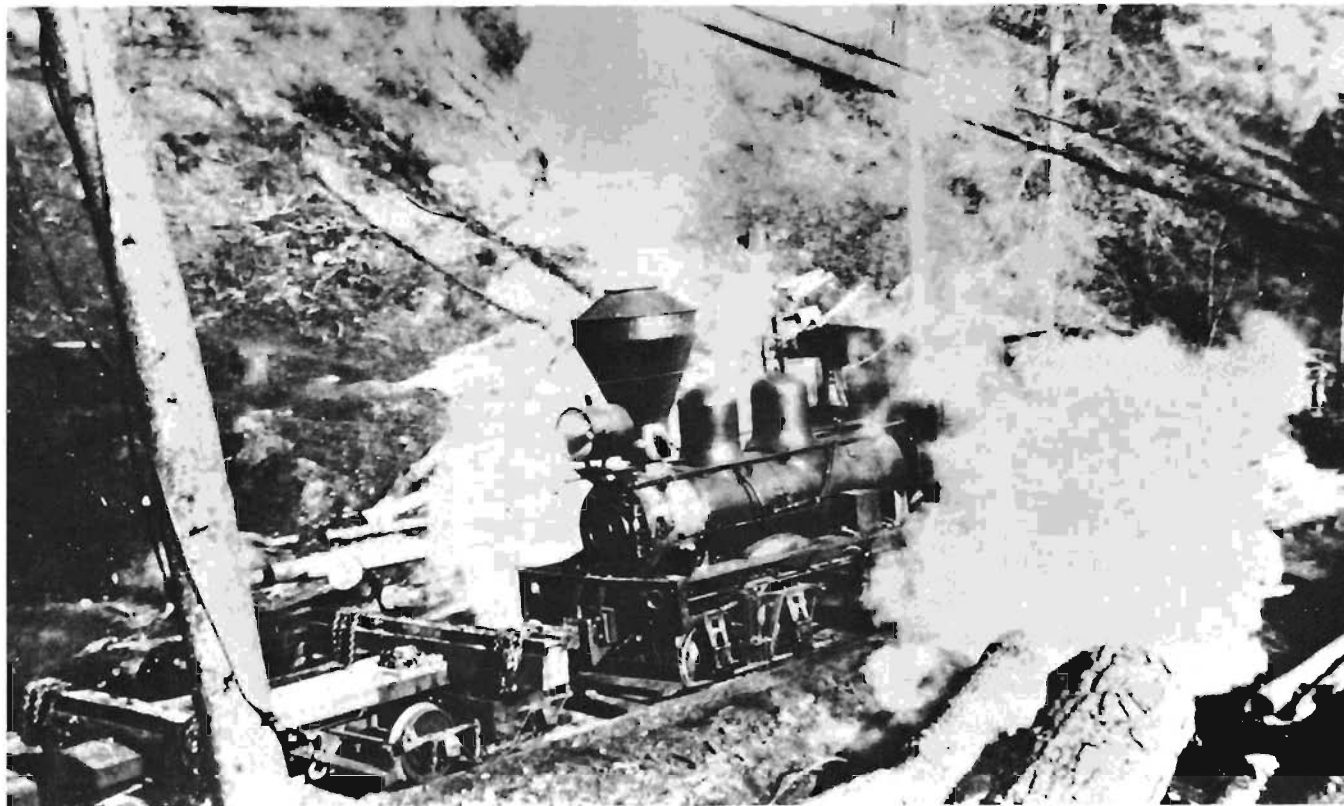
The Biles-Coleman narrow gauge logging railroad had served the needs of its owners well and efficiently for twenty-four years. The flood of May 30, 1948 forced the line into abandonment at least one and perhaps as long as five years prior to the time that routine management decisions would have led to its expected demise. Washington State's last narrow gauge logging railroad thus ended operations suddenly as the result of an unexpected violent and capricious stroke of nature. Even in abandonment the line remained obscure and little known, the news of its demise being overshadowed by more tragic events elsewhere in the Columbia River basin.



Main line roadbed of the abandoned Omak Creek Narrow Gauge looking west from the Disautel switch in December of 1965. Authors Collection

Chapter 6

ROLLING STOCK



Okanogan County Historical Society

Shay No. 2 enveloped in a cloud of steam heads back out to the woods from Cougarville with a train of empty log cars, 1923.

The Biles-Coleman Lumber Company narrow gauge was equipped with two different types of log cars during the two distinct periods of its existence. Six small two bunk, link and pin coupler equipped log cars were used on the initial narrow gauge on Omak Mountain from 1922 through mid-1924. These 22 foot long cars were designed and built by company mechanics to carry logs cut to 18 foot lengths. These cars were the successful second result of a log car design effort initiated by the line's inexperienced operators with initially laughable and operationally unusable results. Specifications for these cars are presented in Appendix I.

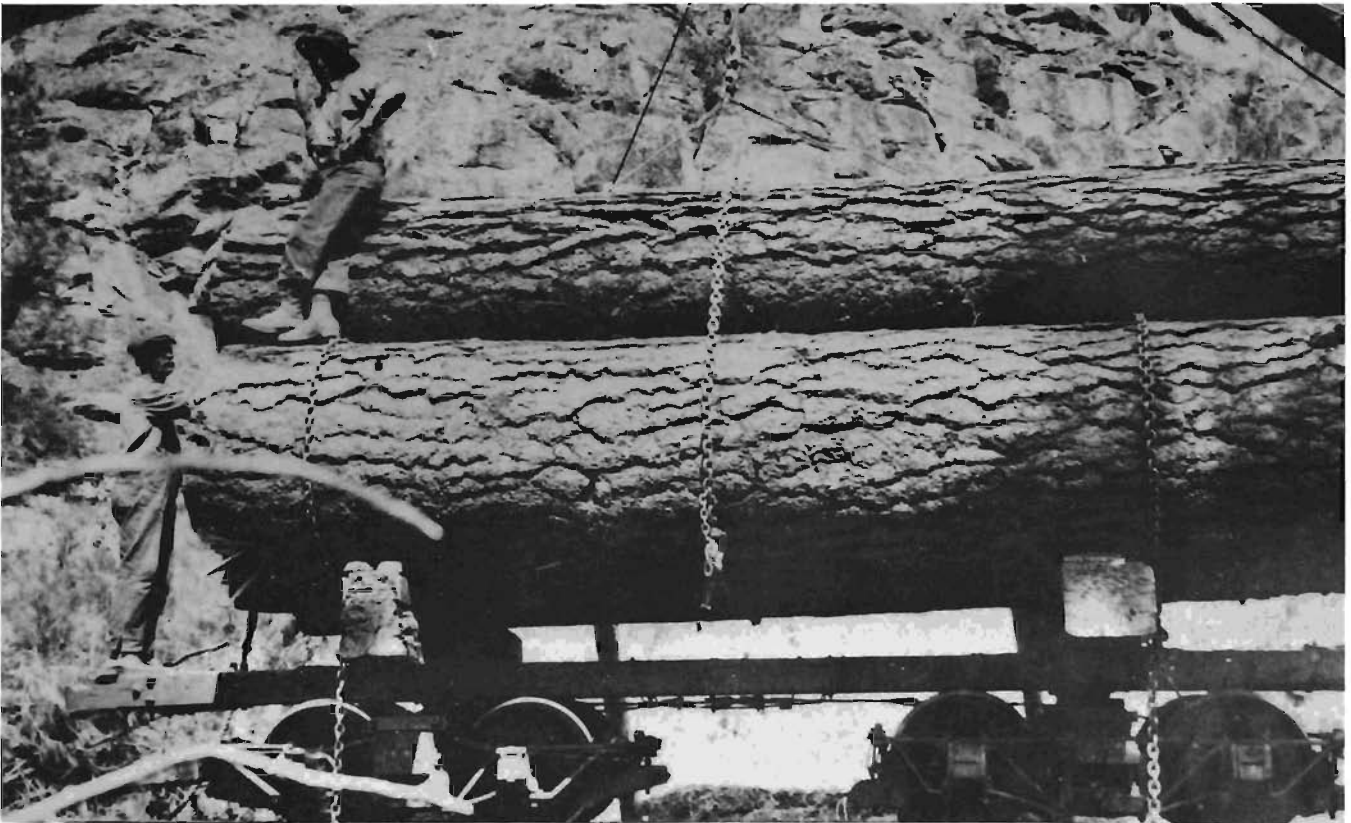
When Biles-Coleman started to purchase equipment, a total of 12 second hand disconnected logging trucks similar to the "Hercules"* design were obtained from a Seattle logging equipment dealer along with a 20 ton two truck Class A Shay locomotive. After delivery of this equipment to the new line, company management determined that log transportation by disconnected truck was neither required, suitable, nor appropriate to the needs of the new railroad/mill operation.

When an imaginative individual suggested that each of the disconnected trucks could be easily and inexpensively converted into a short two bunk four wheel log car, the inexperienced operators of the new railroad enthusiastically accepted the idea. The proposed conversion offered an easy way for the new company to obtain twelve log

cars out of the equivalent of six at negligible additional cost. This conversion was rapidly accomplished by placing the needed sills and assembly of two bunks on top of each truck. While the dimensions of the new "cars" were not recorded for posterity, they did present a somewhat incongruous appearance. Mounted on top of a single rather short wheelbase truck, the car frame ending in link and pin couplers extended far out in either direction past the ends of the truck frame. Two bunks to support log loads were mounted on top of the main frame. These log support members were spaced so as to be located beyond the ends of the supporting truck frame, the entire car thus having a remarkable resemblance to a child's teeter totter.

The first tests of the newly converted cars showed that the new design, which had seemed to be such a good idea, was extremely impractical in actual fact. If each car was not loaded with the logs precisely balanced over the single center truck, it became a lurching, bucking

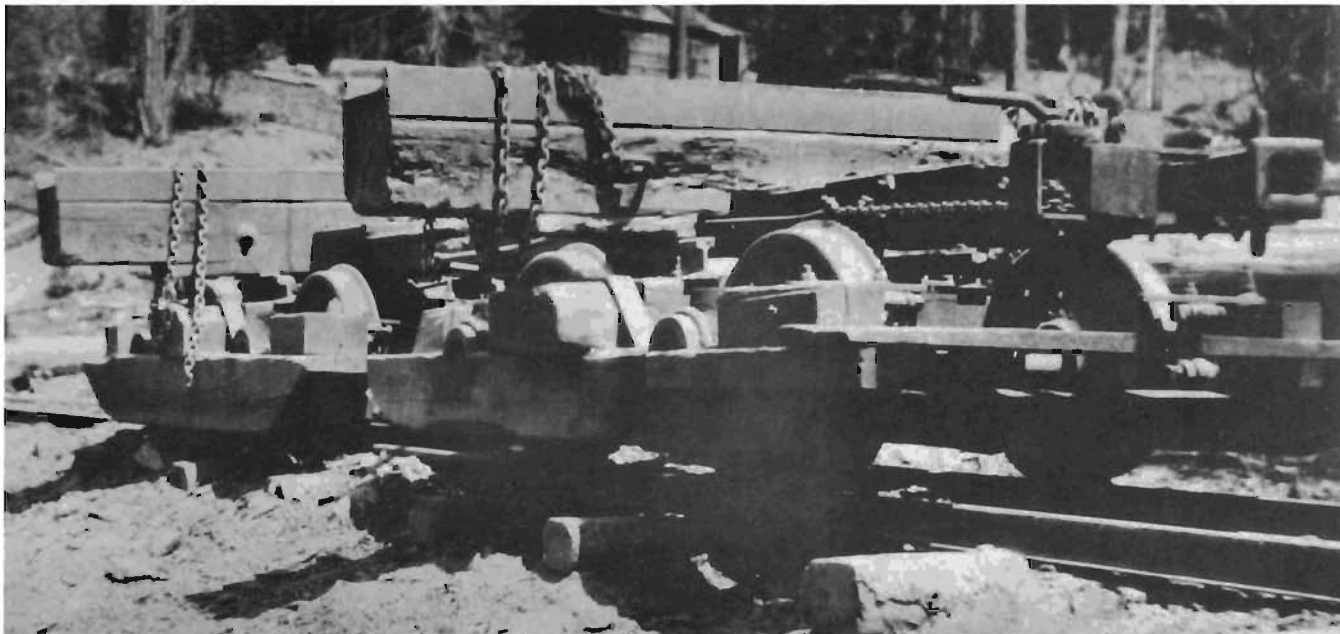
*"Hercules" was a trade name of a certain type of disconnected truck manufactured by the Seattle Car Manufacturing Co. and succeeding firms. This name was applied to similar trucks built by other manufacturers as general classification by most loggers. Some of the B. C. L. Co. trucks appear to be of S. C. M. Co. origin.



U. S. Indian Service Photo from J. E. Lewis Collection
 "Russel" type log car with a "photo" type load of logs intended for publicity purpose use by Biles-Coleman on Omak Mountain in the early spring or summer of 1924.



G. P. Museum
 "Old No. 2" pauses at the Cougarville log pond while logs are being dumped off of one car of its six car train of logs, summer 1923.



Short log car fitted with unique "home built" wood truck frames, Cougarville, Washington 1922.

E. R. Aston

bronco as soon as the train started rolling. The inevitable result of this violent reaction was the derailment of the car and destruction of the underlying track. After several destructive wrecks which even occurred at deliberately slow speeds, the once promising concept was discarded and the trucks and other metal salvaged from the twelve single truck cars were used in building the six successful conventional two truck, two bunk short log cars.

The new short log cars proved to be very successful and served on both the Omak Mountain line and later during the construction and initial operations of the new Omak Creek line. The frames of these cars rested upon converted "Hercules" design trucks from which the original sills, bunks, and couplers had been removed. At each truck, the car body rested upon a wood beam attached to, mounted above, and cut to the same length as the truck bolster beam. This new member served as both center plate and side bearings for the truck. It also rested upon the truck frame top arch bars thus rendering the truck springs ineffective and forcing the cars to ride down the track in an unsprung condition.

In later years, the wood combination center plate/side bearing beams were replaced by conventional cast iron center plates and by side bearings composed of short sections of rail fastened to the top of the truck bolsters. These side bearings were located just inside of the top arch bar on each side of the truck and served to provide stabilizing support under the outer end of each bunk when the car was loaded. This modification once again allowed the truck springing to be effective in absorbing shock loadings caused by operation over rough or uneven track.

Bunks of the short log cars consisted of wood beams topped by steel "I" beams which strengthened the bunk while providing non-wearing support surfaces which firmly gripped the logs thus preventing them from shifting to the front or rear while the car was in motion. Hand brakes were fitted to the short log cars as the Shay used

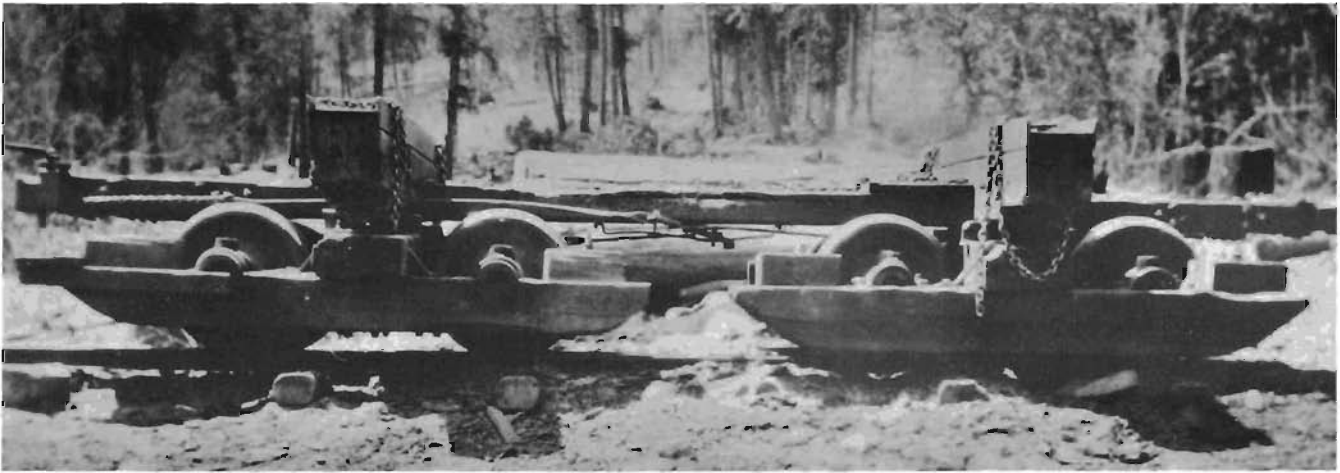
a steam jamb for braking and was not initially equipped with any type of air brake equipment. Each car was equipped with a brake lever rather than the more usual brake wheel which had to be turned like a crank to tighten up and set the brakes.

During construction of the Omak Creek line and its initial period of operations, the original fleet of six two bunk log cars was supplemented by the purchase and/or construction of an additional group of at least four or perhaps five cars of similar design. These cars although of second hand origin, were apparently built new as two bunk logging cars and were probably products of the Russell Wheel and Foundry Company of Detroit, Michigan. The addition of these cars gave the firm the capability of operating ten car log trains into the mill every



Single truck log car in a rare photo taken in the early fall of 1921.

E. R. Aston



Side view of short log car fitted with unusual wood truck frames at Cougarville, Washington in 1922.

E. R. Aston

day while the "home built" slideback log loader rested in the woods on the eleventh car awaiting the return of the empty train from Omak. At least one of these, cars was fitted with unique wood side frame trucks built by Biles-Coleman which were reminiscent of the runners used on heavy duty sleighs.

Following the purchase of Heisler locomotive number 102 and the first of the new four bunk log cars in March of 1925, the short cars were soon removed from revenue producing tasks and were reclassified for conversion to either service or work equipment. In common with the other types of railroad equipment used by Biles-Coleman, the total number of work and service cars used on the Omak Creek narrow gauge was very small for a line which attained a total length of thirty miles and which by the late 1940's had been so long established. With one minor exception, all of these cars were basically similar because of their common origin. Four variations on the basic two bunk short log car frame existed. A fifth type of car was built using components of the short log cars but the design of this car was substantially different from that of the other four log car based variations.

The first conversion was a "flatcar" which was the basic short log car with a wood plank decking resting upon and spiked down to the bunks.

The second variant was a single snow plow car equipped with a Baldwin "V" plow and flanger attached to one end. This car was fitted with a modified air brake cylinder, supplied with compressed air from the train air brake line, which could be actuated, as desired by a member of the train crew riding the car, to lower or raise the snow plow/flanger to meet operating needs during snow removal operations. George McCracken rode this car on many occasions during sub-freezing weather to operate the controls of the plow elevating actuator when snow accumulation became deep enough to disrupt operation of the line. Unlike snow plows on other contemporary west coast narrow gauge logging lines, this car was not heavily ballasted with all manner of scrap iron to provide the extra weight which was generally considered to be essential to hold such a car down on the rails during particularly icy snow removal operations. Despite the lack of ballasting, this car did not readily jump the track and proved successful in performing its assigned tasks.

The third type of car was similar to the "flatcar"

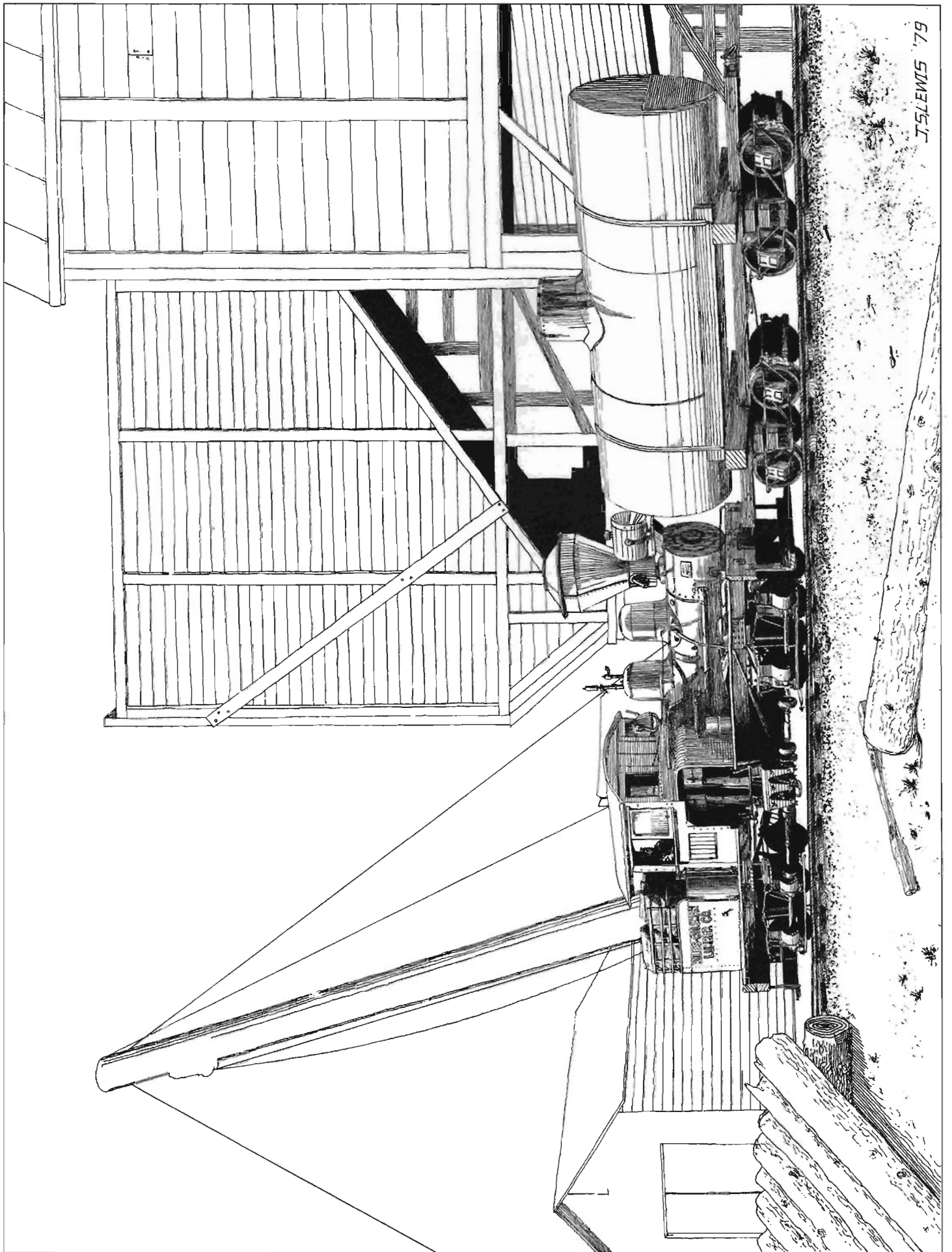
first described, but was equipped with sides to make a crude sort of "gondola" car. These cars were used to carry slab wood from the mill to the logging camps for use as fuel, for some ballasting of the right-of-way, and other tasks which might require restraint for the load being carried.

The fourth and final variation on the original short log car design existed as a single unit only and probably was more frequently used than all of the other variants combined. This car was modified by the addition of an old boiler shell with all of the former fire tube openings sealed to permit its use as an oil tank. The resulting tank car was frequently seen in routine log trains coupled adjacent to the locomotive which was pulling a long string of log cars. In every day use, the tank served as an auxiliary fueling point for the Heisler at the far end of the line near Disautel.

The oil used for locomotive fuel by Biles-Coleman and most other steam locomotive operators was a thick, gooey, tar-like substance known as "Bunker C". Under normal operating temperatures this fuel had about the same viscosity as the proverbial "Molasses in January". When heated however, this oil displayed much more manageable properties. Most locomotive tender oil tanks were fitted with internal steam heating coils to insure that this type of oil fuel was maintained in a hot and thus liquid state. When hot, this tar-like substance flowed readily through the locomotive's oil burner which sprayed it into the firebox where it was burned to produce the heat required for steam generation.

To prevent fuel transfer problems, the narrow gauge tank car was fitted with steam heating coils within the tank to warm the oil as well as a steam powered oil transfer pump mounted on the car frame to refuel the tender tanks of Heisler 102. Steam was supplied to the car from the Heisler to both warm the oil and power the pump through a quickly connected flexible high pressure steam hose. Thus equipped, Biles-Coleman was able to accomplish refueling operations with the tank car at any place desired on the narrow gauge whenever the need arose.

Maximum utilization of the unusually small fleet of log cars owned by Biles-Coleman called for the early evening and morning transit of the log train to and from the mill to permit the log cars to be available for loading



J.S. LEWIS '79

in the woods during daytime hours. Consequently the locomotive was scheduled to operate around the reload points during daylight to switch cars as required, while the trip into the mill with the loaded train was made at night after the days work had been completed. The return empty trip occurred either during the night time or pre-dawn hours. Thus the locomotive was often "tied up" in the woods far away from the refueling facilities at the mill. The availability of an auxiliary refueling point provided by this car was thus a necessity.

The old boiler shell used as the oil tank on this car had a diameter of about 74 inches and had a capacity of about 4,000 gallons. The narrow gauge tank car remained in regular use right up to the end of rail operations and was stranded in the woods along with five of the long log cars, the log loader and the ballast cars by the flood which washed out much of the track on May 30, 1948.

Oil fuel carried by the narrow gauge tank car was supplied from the only piece of standard gauge rolling stock owned by Biles-Coleman. The company bought a 12,000 gallon capacity standard gauge tank car in the late 1920's to serve as the fuel supply and storage tank for the fuel oil burned by Heisler number 102. This car was permanently spotted on a siding adjacent to the narrow gauge track in the mill area between the log dump and the chip and shavings storage bin south of the boiler house. When empty, this tank car was refueled from 8,000 to 10,000 gallon capacity tank cars which were switched into the mill over the track connecting with the Great Northern Railway siding which served the shipping shed. When empty, the refill tank cars were switched back out to the G. N. main line for return in the next south bound train to Wenatchee, Washington or oil re-supply facilities at other points. The Biles-Coleman fuel storage tank car was also fitted with steam heating coils of the same type fitted to the narrow gauge tank car. These coils were supplied with steam from the mill boilers to keep the oil hot and thus fluid so that it could be easily

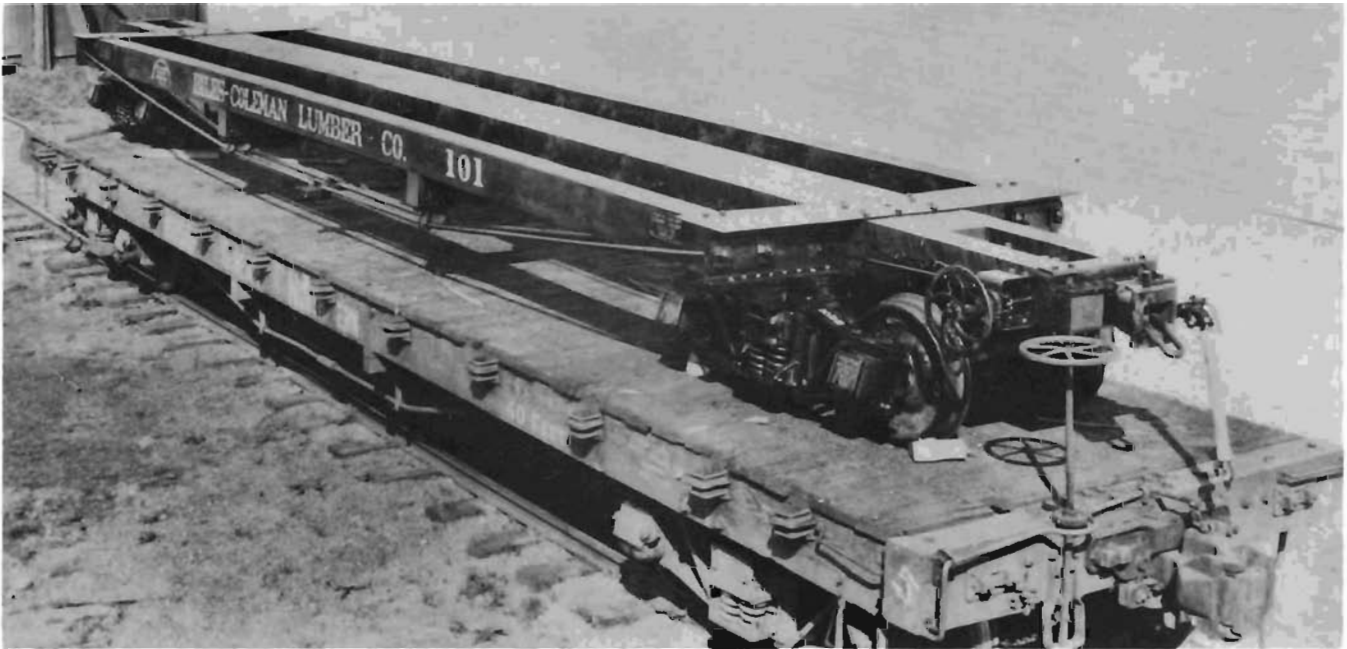
pumped into either the narrow gauge tank car or Heisler 102.

Ballast cars were the fifth type of special service, or work train car to operate on the Biles-Coleman line. These cars, unlike the other types of special service cars used on the Omak Creek line, were not based upon the short two bunk log cars first used by Biles-Coleman. The company built two ballast cars, which were usually operated in a short train pulled by the Shay during the late 1920's. These cars were used to carry fill or waste materials and/or ballast during the construction of new trackage. In later years the two ballast cars were spotted on a short siding about three-eighths of a mile east of the entrance of the Omak Creek canyon near St. Mary's Mission. These cars were kept in an operable condition and were held in a standby status in anticipation of some possible future use. Of the small group of special service cars used on the Omak Creek narrow gauge, only the snow plow, the two ballast cars and the tank car remained operable until the line was abandoned at the end of May 1948.

During the period of March 1925 through March 1928, a series of twenty-four new four bunk connected trucks (four bunk log cars) was purchased from the Pacific Car and Foundry Company of Renton, Washington in four separate purchase transactions. Details of the dates of purchase, numbering series, special characteristics and specifications for these cars are presented in Appendix I.

The cars purchased in the initial two orders were fitted with link and pin couplers to allow operation with equipment previously existing on the line and were not fitted with the brakeman or end safety platforms provided on later cars. Cars built to the last two orders were equipped with Sharon MCB automatic couplers as well as with the brake and safety platforms mentioned previously and were two feet longer than the cars built to the initial two orders.

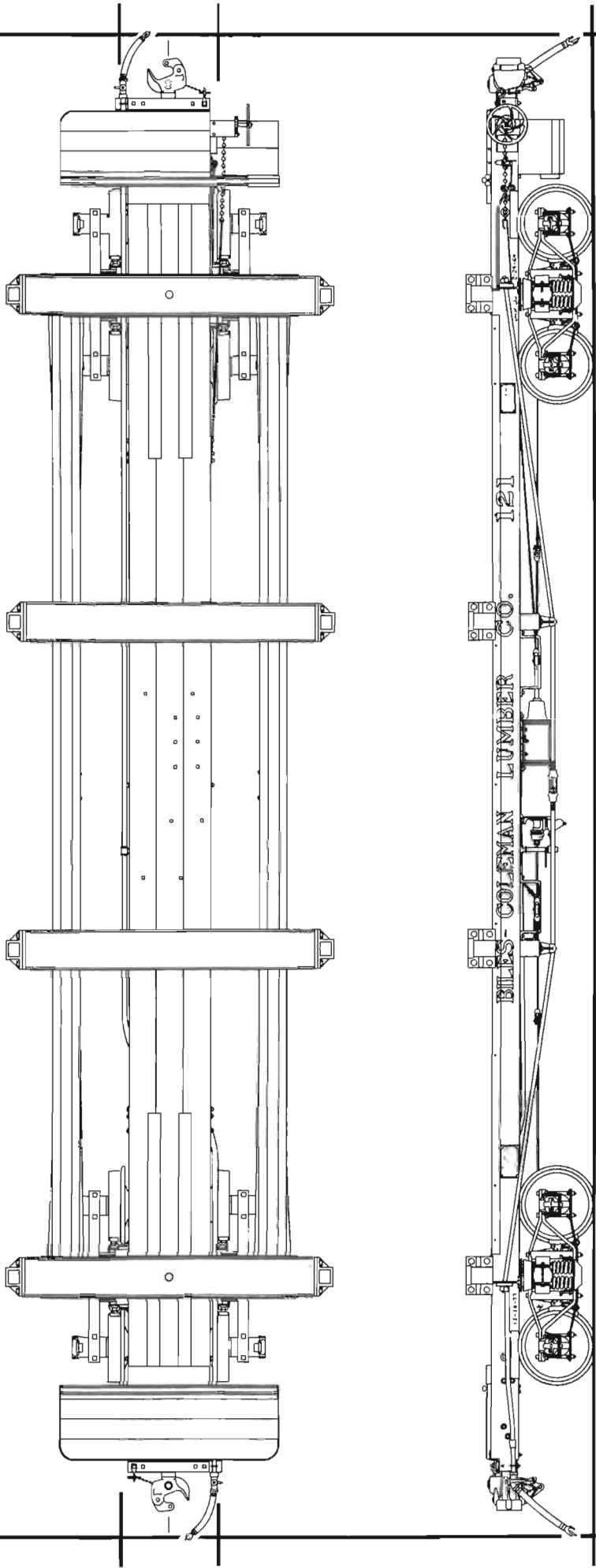
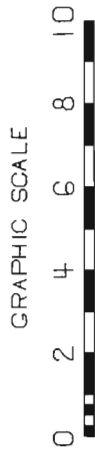
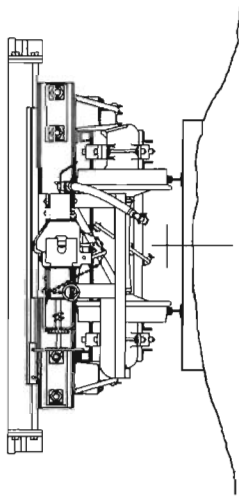
After only a short period of operation, the ten cars



Builders photo, $\frac{3}{4}$ end view, Biles-Coleman long log car No. 101 fitted with Link and Pin couplers. P. C. & F. Co./F. Moline

LOG CAR

BILES-COLEMAN LUMBER COMPANY
NARROW GAUGE



JOHN LEWIS

built for the first two orders were converted from link and pin to knuckle coupler operation at about the same time that the third series of cars was ordered in 1926. The new couplers were identical to those installed at the factory on cars built for the second two orders. However, these cars were not to be extended two feet in length nor were the brake plaforms featured on the later cars installed. Increased awareness of the need to reduce hazardous working conditions led to the installation of safety platforms on the brake wheel end of each of these cars to give brakemen an increased degree of protection while setting the brakes of cars in motion.

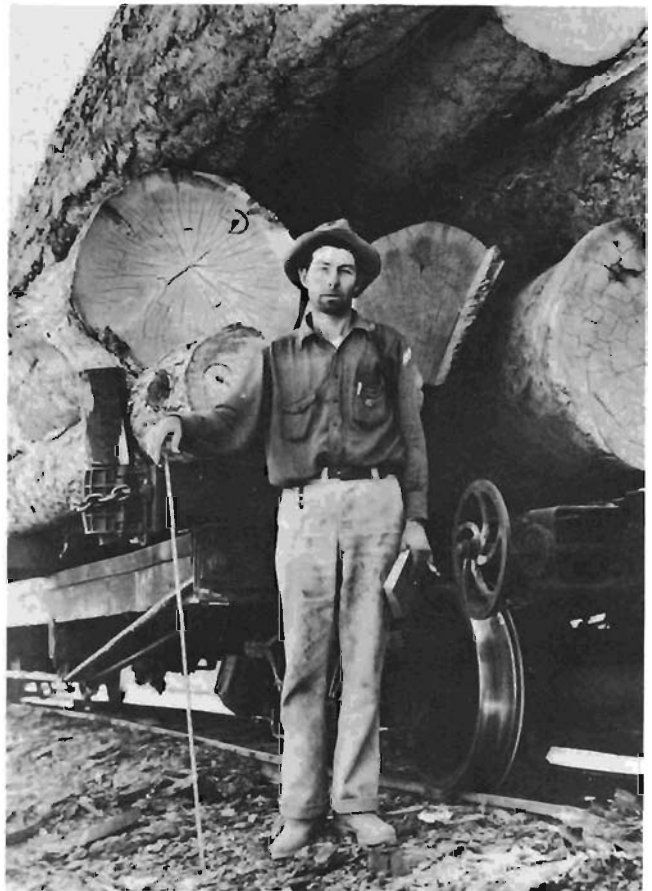


E. R. Aston
Log car No. 101 being loaded with logs by the A. H. & D. log loader on the "A" line during 1927 after the original link and pin couplers had been replaced by automatic couplers.

As delivered from the builder, these cars were not equipped with bunks of any type. Biles-Coleman designed, fabricated, and installed the four bunks on each car which initially consisted of 6" by 6" wood timbers fitted with bunk-end stake pockets fabricated from steel plate. At this late date, the wisdom of purchasing the new cars without specifying installation of any of the multiple types of specially designed log carrying bunks commonly manufactured by the Pacific Car and Foundry Company can only be questioned. Initial purchase cost was a major consideration to the conservative buyers as was the availability of company cut cheap timbers from which the bunks could be fabricated. The new bunks proved to be less than satisfactory in regular use. The "I" beam skids of the log loader rapidly scoured the tops of the soft white pine bunks as did the continual loading and unloading of logs. By 1929, the wood bunks had been replaced by new steel "I" beam bunks fitted

with cast steel stake pockets bolted on at the ends of each bunk. It is probable that the satisfactory performance of the "I" beam bunks installed on the original six short log cars resulted in selection of the same type bunk for the long cars when the original wood bunks proved unsatisfactory. The new bunks were applied to all of the long log cars and proved to be very satisfactory in every day operation, remaining in use with only one minor modification until the cars were finally scrapped in 1949. Sometime during the early 1940's the bunks of the shorter group of long log cars (101 through 110 series) were modified when the fixed, cast steel stake pockets were replaced by a new design swing opening stake pocket. These pockets could be actuated to swing open and release the stakes, thus freeing the log load to readily roll off of the car into the log pond. The new stake pockets reduced dangers to train crew members during the log dumping process and minimized the amount of power needed to roll unusual shaped logs off of the cars.

The Pacific Car and Foundry built log cars were well suited to the requirements of the Biles-Coleman operation. As the years passed, the requirement for short logs ended and operations changed so that full length 36 to 40 foot logs were acceptable at the mill. The long cars easily accepted the full length log loads without need for modification or conversion to a two bunk pattern as had been necessary on a number of other Western Pine Region narrow gauge logging lines. The center two bunks were retained, even though no longer required to support



H. Weaver
U. S. Indian service log scaler Henry Anderson and a typical car load of logs posed for the camera in 1945.



F. Moline

Orders for Diamond and Caldor Railway four bunk, 36 foot skeleton log flat cars, as illustrated in this May 1917 photograph of No. 203, initiated the first phase of the evolution that would lead to the Biles-Coleman log car design.

short logs, to provide support for the slide-back loader as it moved from car to car during the course of normal log loading operations. Since Biles-Coleman never built a permanent fixed reload facility at the woods end of the railroad, use of the slide-back loader, remained essential to the railroad until operations suddenly and unexpectedly ended.

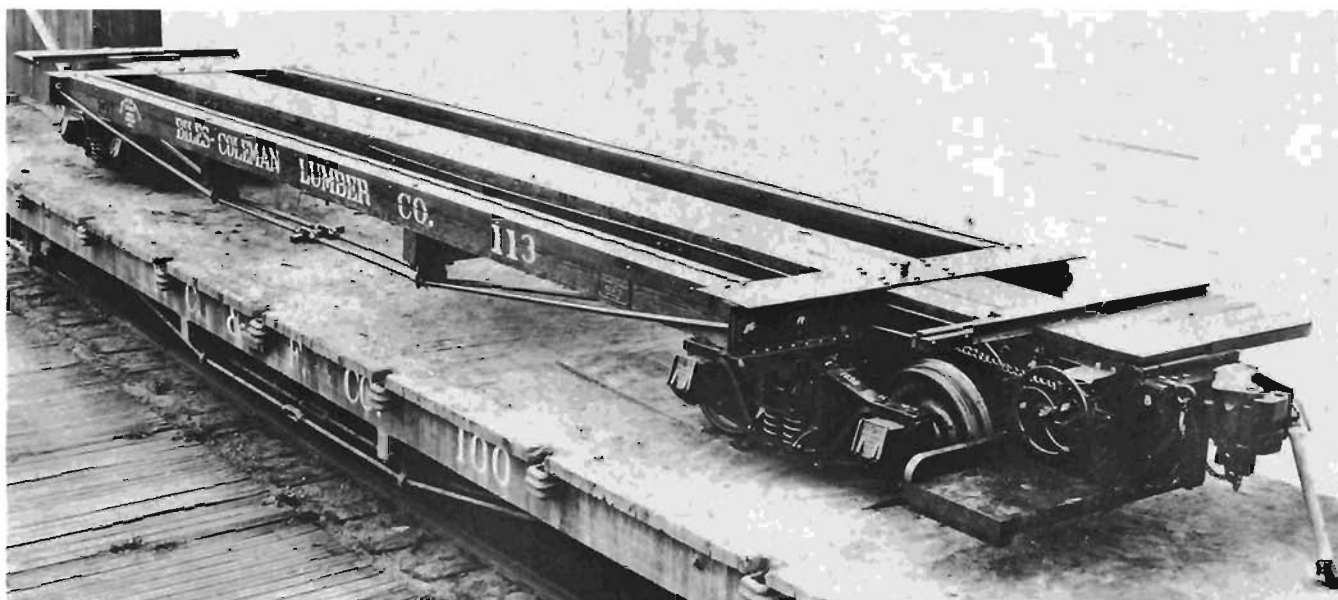
The narrow gauge and the Omak Mill operated almost without interruption during the depression years. One result of the conservative policy pursued by Biles-Coleman, in common with the attitude of most firms dur-

ing those lean years, was a decision that no more spare parts would be purchased for the replacement or repair of damaged or worn parts on the long log cars. To minimize the disruptive results of this policy, one car from the No. 101 through 110 series of 40 foot cars was sidetracked to become a source through cannibalization of replacement parts. This step allowed utilization of the long log cars to continue in a near normal manner during the depression without the unacceptable interruptions which would have resulted from attempts to maintain the cars without an adequate source of replacement parts. Fol-



F. Moline

The M. J. Scanlon Lumber Company series of four bunk, 40 foot skeleton log flat cars first built in March of 1921, illustrated by this September 1922 view of car No. 17, represented the second phase of the P. C. & F. Co. narrow gauge log car development program.



Builders photo, $\frac{3}{4}$ right side view of four bunk 42 foot log car No. 113 at Renton, Washington in August 1926. This class of car was the largest 36" gauge log car ever built in the United States. P. C. & F. Co./F. Moline

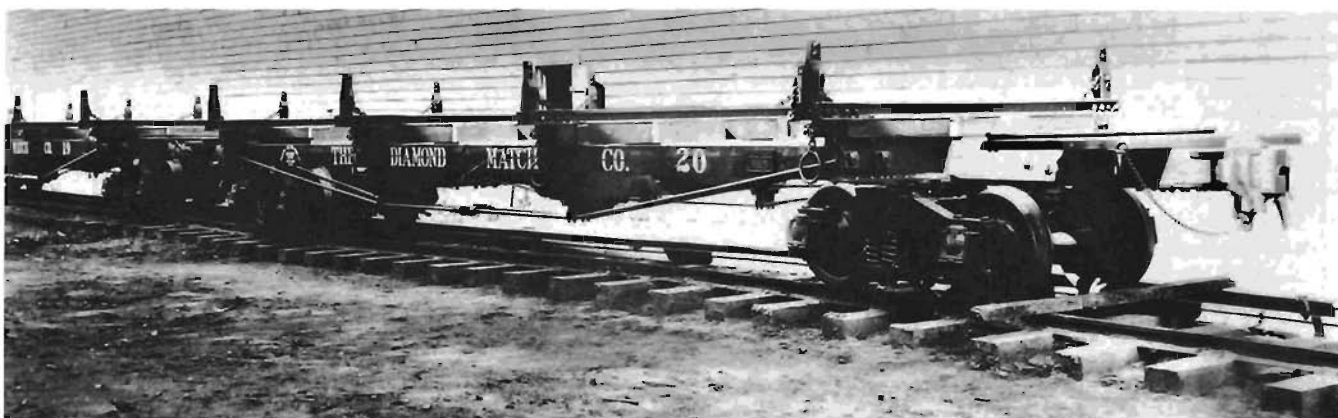
lowing the return of normal times, the company decided that the cost of returning this car to service would be unjustifiable. Thus the line spent its final operating years using twenty-three of the original twenty-four long log cars.

The long log cars represented at the time of their purchase, the next to final step in a progressive development program by the Pacific Car and Foundry Company aimed at developing the largest practical four bunk narrow gauge log car for use in the Western Pine Region. This development had been initiated in 1917 by an order from the Diamond and Caldor Railway of Diamond Springs, California for the first 16 of what was to eventually become an order for 67 four bunk 36 foot, 60,000 pound capacity log cars. The second step in this development occurred in March of 1921 when the first of a total of 8 four bunk 40 foot, 60,000 pound capacity log cars was built for the M. J. Scanlon Lumber Company of Massack, California. The third phase in this progression came with the order in July of 1922 for the first of 11 four bunk 40 foot, 60,000 pound capacity skeleton log cars built for the Sand Point Lumber and Pole Com-

pany of Troy, Montana. These cars were the first built by the P. C. & F. Co. which had a design essentially identical to the first 10 of the then yet to be built Biles-Coleman cars. The fourth development came in July 1924 when the first 6 of an eventual total of 21 four bunk 40 foot, 50,000 pound capacity skeleton log cars were built for the 42 inch gauge line of the Panhandle Lumber Company of Spirit Lake, Idaho. These cars were built with bunks 9 feet in width, but unlike the Sand Point Lumber and Pole Company cars, this series of cars were equipped with air brakes.

The order for 10 Biles-Coleman Lumber Company 40 foot, 60,000 pound capacity, four bunk skeleton log cars in March and May of 1925 initiated the fifth phase of the continuing P. C. & F. Co. development program. This step was followed in August of 1926 by orders for the first 10 of 14 four bunk, 42 foot long, 60,000 pound capacity skeleton log cars all of which were to be fitted with bunks 10 feet in overall width and which were equipped with brake and safety platforms.

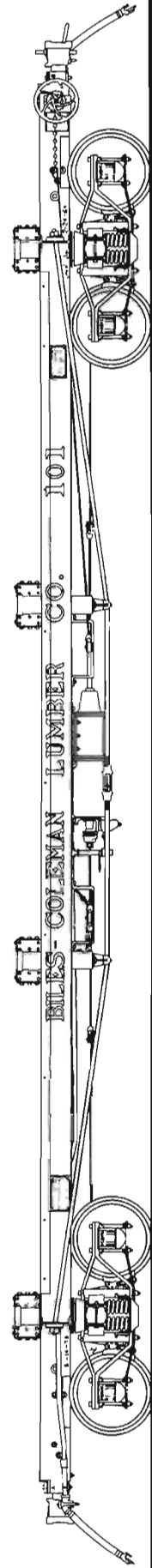
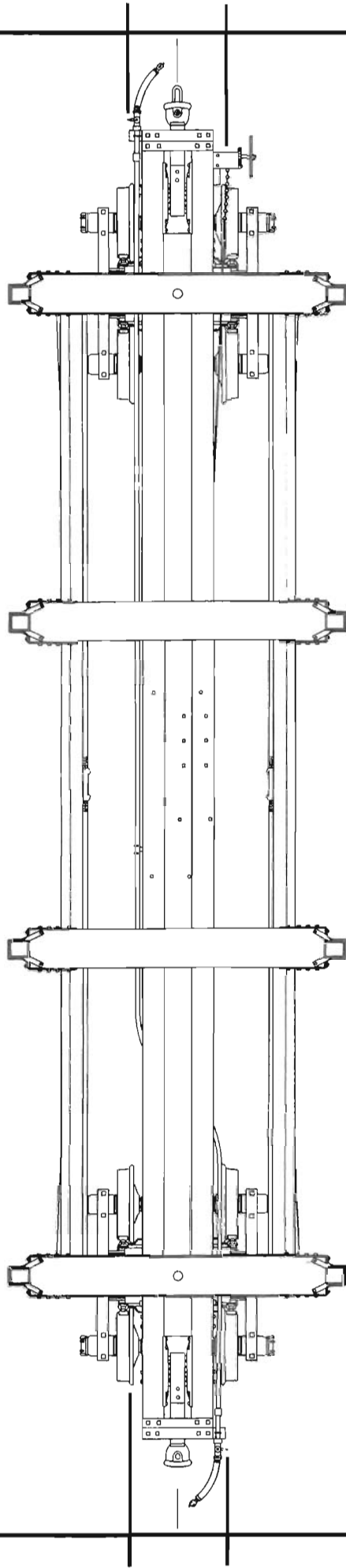
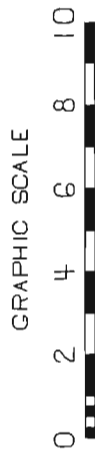
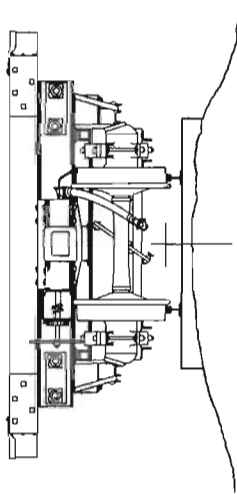
The seventh and ultimate development came in January 1927 with the construction of 20 four bunk 42



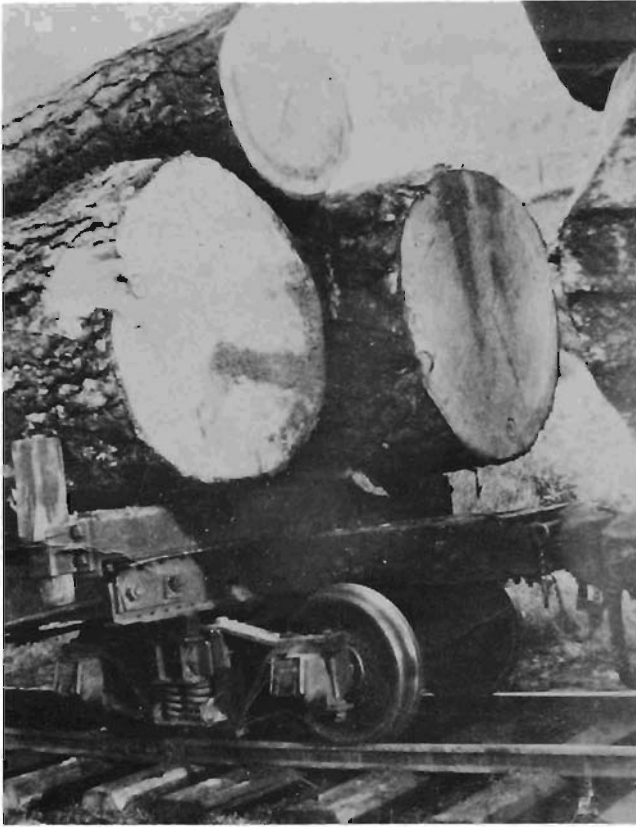
Builders photo of Diamond Match Company four bunk, 60,000 pound capacity narrow gauge log car No. 20 at Renton, Washington, 1927. F. Moline

LOG CAR

BILES-COLEMAN LUMBER COMPANY
NARROW GAUGE



JOHN LEWIS



C. A. Davis
Superb examples of the timber carried by the Omak Creek narrow gauge to supply the ever hungry sawmill at Omak.

foot, 60,000 pound capacity skeleton log cars having 9 foot wide bunks for the Diamond Match Company of Spokane, Washington.

In this development series, the Biles-Coleman cars were the largest, at least in sill size and bunk width, of all of these cars, while being identical in length and capacity to Diamond Match Company cars. Since both cars were larger than any other 3 foot gauge log cars used in the West it is almost a certainty that Biles-Coleman Lumber Company log cars were the largest 36 inch gauge log cars ever operated in the United States. The extreme length of 44 feet 5 inches over coupler faces of these cars and usable bunk width of 9 feet reflects the ability of these cars to carry large bulky loads.

Log loads averaging 9,000 board feet were regularly carried by the Biles-Coleman four bunk log cars. Such loads weighed about 72 thousand pounds based upon a standard weight of 8 pounds per board foot (log scale) for green logs, giving a total loaded gross weight of up to 91,514 pounds per car. Such weights amply demonstrate the extreme load carrying ability of this ultimate narrow gauge car design developed by the Pacific Car and Foundry Company for the Biles-Coleman Lumber Company.

The wisdom of building narrow gauge cars in such extreme sizes might be questioned. These cars could have easily been converted for standard gauge operation as originally planned by Biles-Coleman through the simple substitution of standard gauge trucks for the narrow gauge ones they were equipped with when built.

Derailments on sharp curves were not uncommon, and cars in the middle of a train rounding a curve, par-

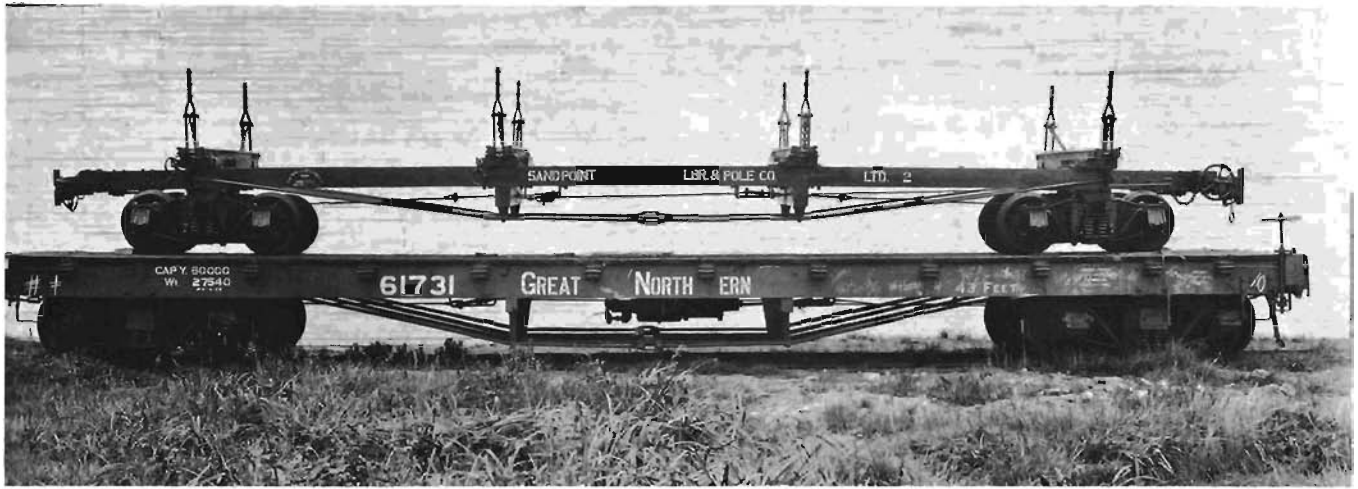


Mark Purdy Photo Courtesy of Mrs. A. Purdy
Ponderosa pine trees rarely attained the impressive size of this six foot diameter log resting on a log car spotted on the passing track just to the East of the Omak mill site and accompanied by Conductor Con DeGroot.

ticularly when empty, sometimes pulled off of the rails as the train seemingly tried to straighten itself out. The design of these cars could perhaps be criticized from an engineering standpoint as being unstable on any narrow gauge track, no matter how well built, due to the extremes of car width and loading height. The low speeds of operation encountered on a logging railroad such as the Biles-Coleman line which used gear driven motive power, would tend to minimize any unstable characteristics of these cars. Even if a car jumped the track, damage to either the car or track was usually minimal with inconvenience and raised tempers usually being the most serious result.

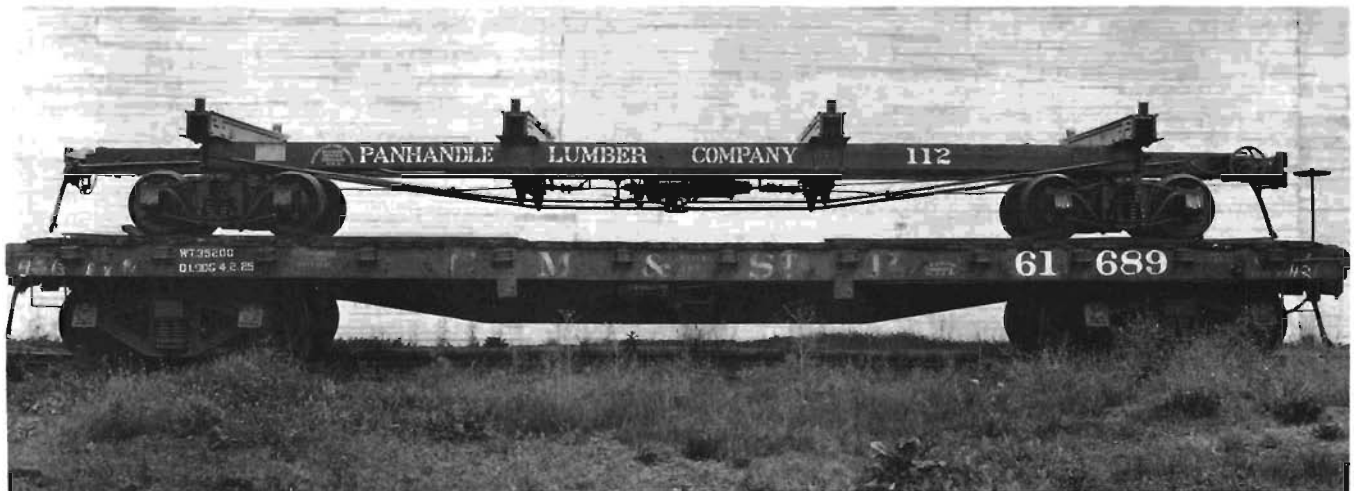
Biles-Coleman wanted to combine standard gauge log car capacity with a narrow gauge railroad already built and in use while retaining the possible future option of converting to standard gauge operation without the necessity of a major equipment replacement program. The design for these cars successfully integrated standard gauge log car capacity with narrow gauge flexibility and operating economy in what was probably the ultimate size for a 36 inch gauge log car.

When delivered, these cars were numbered from 101 through 124. Car number 124 had the distinction of being a dual capability car. Identical in size and configuration with the 42 foot cars numbered 111 through 123, the 124 was additionally strengthened to serve as a heavy equipment moving car. This strengthening was accomplished by the addition of two center sill truss rods and special draft still end castings to the regular structure which was fitted with four side sill truss rods on the standard car. As modified, the 124 had maximum load carrying capacity of 100,000 pounds. The additional strength was required to help support the weights of heavy logging equipment loads. The 124 could easily carry the American Hoist and Derrick built crawler tracked crane which Biles-Coleman employees called the "buncher" and which weighed almost 80,000 pounds.



F. Moline

Sand Point Lumber and Pole Co. Ltd. four bunk, 40 foot skeleton log car No. 2 photographed in September 1922 shows the more austere features including the deletion of flat car-like ends adopted during the third phase of the large narrow gauge log car design effort which resulted in the Biles-Coleman log car design.



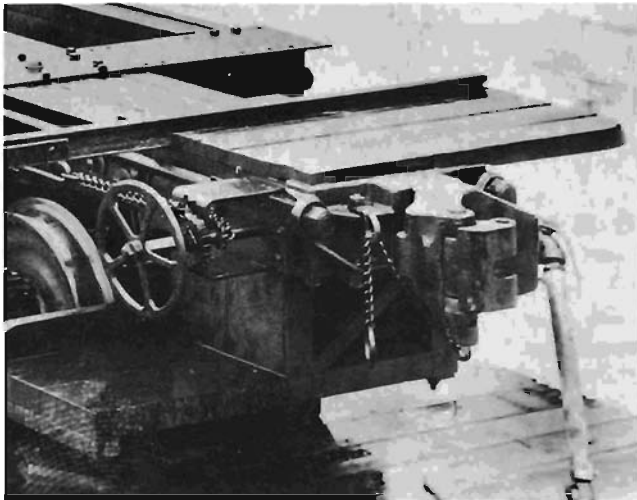
F. Moline

Panhandle Lumber Company four bunk, 40 foot 42 inch gauge skeleton log cars, illustrated by this April 1925 photo of car No. 112 built to a design first produced in July 1924, display the characteristics of log cars built during the fourth phase of the design progression which led to the eventual development of the Biles-Coleman cars.



P. C. & F. Co./F. Moline

Builders photo, side view of B. C. L. Co. log/equipment moving car No. 124 at the P. C. & F. Co. plant at Renton, Washington



P. C. & F. Co./F. Moline

Details of the end sill casting and center truss rods fitted on log car No. 124.

Unlike many of the longer lived logging railroads which remained in operation into the post World War II period with permanent main lines and common carrier like operating schedules, Biles-Coleman's line never used a caboose for the transportation and accommodation of brakeman/conductor members of the train crew. Such

personnel were usually to be found riding in the cab of Heisler number 102 during cold weather when switching or log loading/unloading work did not require their presence on or near the log cars. During warmer seasons, the same men were more likely to be found far away from the heat of the locomotive cab riding on the log cars. Interestingly, the Diamond and Caldor Railway of Diamond Springs, California which was one of only two West Coast narrow gauge logging railroads to survive the Biles-Coleman line for a significant period operated over a 32 mile main line without using caboose cars.*

*The D. & C. Ry. operated through the late fall of 1952 before being replaced by a truck haul operation and was scrapped in June of 1953. The last West Coast narrow gauge logging railroad, operated by the West Side Lumber Company of Tuolumne, California remained in use until October 28, 1960, was held in a standby status until June 1961, and was finally scrapped in the mid 1960's although a short portion was renovated and remains in occasional use as a tourist attraction. The main line of a third line owned by the Michigan California Lumber Company was breached by a cable tramway fire in March 1949 which terminated further operations on the line.

Chapter 7

POSTSCRIPT — AFTER THE RAILS WERE REMOVED

Following abandonment of the narrow gauge in May of 1948 and the dismantling of the railroad and scrapping of its equipment in the summer of 1949, the Biles-Coleman Lumber Company continued logging and lumber manufacturing operations without interruption. Only the mode of log transportation had changed with trucks having taken over the entire task.

When railroad operations were abruptly terminated in 1948, the West Coast Lumbermans Statistical Review and Directory credited Biles-Coleman with having the following equipment assets:

Locomotives	1
Tractors	3
Trucks	14
Logging/Milling Capacity	200,000 bd. ft./day
Track	30 miles*
Bulldozers	4
Sides**	4

By 1950 the listing of equipment assets had been revised to include:

Tractors	4
Trucks	14
Contract Trucks	4
Shovels	1
Logging Arches	4
Bulldozers	1
Dual Axle Trailers	14
Contract Trailers	4
Loaders	2

In 1960, the first of a series of retirements among the management personnel who had operated the company and railroad so successfully during the railroad logging era began when Mr. C. A. Palmer, the long time mill master mechanic left the company. In 1961, Mr. Palmer

*Actual mainline was just slightly less than 23 miles, with sidings, spurs, and rail removed from abandoned branches totaling 7 miles.

**"Sides" — A logging term used to define the number of separate logging operations; ie. felling, bucking, skidding, and loading being run by the company at any given time.

was followed into retirement by Mr. Ross L. McNett, the company president and by Mr. A. M. Aston. In 1962, Mr. Emmitt Aston, the innovative logging superintendent during both railroad and truck logging eras retired. The last of the "original" management team to retire was Mr. Lester Nelson who left the firm in 1970. Although the firm still retained the Biles-Coleman name at the time when Mr. Nelson retired, it was in actual fact, no longer the same company.

In July 1962, the financial interests of the Biles family had been sold to the Stuchell family, long time owners of the Eclipse Lumber Company of Everett, Washington, Mr. E. W. Stuchell becoming president of the newly purchased firm. In 1965, company assets and capabilities were listed as being:

Tractors	18
Trucks	18
Loaders	4
Logging Roads (including 70 built 1964)	200 miles
Logging/Milling Capacity	221,000 bd. ft./day
Crawler Loaders	1
Dual Axle Trailers	18
Sides	4
Tree Farm	79,000 Acres

Following the assumption of control by Mr. Stuchell, a business policy aimed toward a rapid expansion of company lumber output was adopted. New equipment was purchased to increase the production capacity of the Omak Mill, and for the first time since 1928, the purchase and operation of mills in localities other than Omak was initiated. By 1968, the annual lumber output of the rapidly expanding firm had increased to 90,000,000 board feet.

In 1970, the company had 600 mill and remanufacturing plant employees producing an output of 180,000 board feet in 8 hours with a total daily output over two shifts of 240,000 feet. The logging crew employed 75 loggers and the daily production of felled timber could reach totals of 250,000 feet in 8 hours with a daily total maximum of 400,000 board feet of logs. The excess of logging capacity above mill demand was used to permit the summertime stockpiling of logs to be used for mill supply during periods of bad weather and in the winter when short days reduced the output of the woods crews. In that same year the company was operating mills in both Omak, and Coulee Dam, Washington.

The expansion program continued in subsequent years and by 1974 the company had 935 mill and remanufacturing plant employees, an output of 180,000 feet in 8 hours with a total daily production capacity of 290,000 feet. A plywood plant had been added to the Omak mill complex in 1971 followed by the addition of a planing mill in 1973. Additionally, a sawmill in Twisp, Washington, had been purchased. To supply logs to this growing operation, a total of 100 loggers were employed in the woods and the total timber harvest capacity had jumped to 800,000 board feet in 8 hours with a daily total of 1,000,000 feet being obtained.

These figures present a startling contrast in growth when compared with corresponding figures for 1944. In that year the firm had a sawmill cut of 175,000 feet per day, 1 locomotive, 23 log cars, 30 miles of track, 6 tractors, 3 bulldozers, 15 trucks, and 100 miles of feeder truck roads.

Such a dynamic and rapidly expanding regional company could not long escape the notice of the giants of the timber industry. In March 1974, Biles-Coleman was sold to the Crown Zellerbach Corporation. This shift in ownership did not preserve the former name even as a divisional title, and the long recognized Biles-Coleman name disappeared from the lumber industry after almost exactly 53 years of continuous operation.

Appendix I

EQUIPMENT SPECIFICATIONS

Detailed specifications, roster information, construction serial numbers and dates, historical notes, and selected photographs including builders photos when available, and applicable drawings of the railroad equipment used in the Biles Coleman Lumber Company narrow gauge logging railroads are presented in the following pages. All data included in these pages is based either upon the specifications, engineering data and records of the manufacturers of the railroad's equipment or upon Biles-Coleman records.

Every possible effort has been made to verify and insure the authenticity of the data presented in this section. Whenever an entry is included which is the most probable value, or which is based upon a less than fully documented set of facts, accompanying notations such as "approx" or "est" are used. All other entries not specifically annotated are based upon the results of verifiable original research into records compiled over the years from diverse and varied sources.

BILES-COLEMAN LUMBER COMPANY Omak, Washington

Shay Locomotive	
—Biles-Coleman Lumber Co.	#101
—Built	#2190
—Lima Locomotive	7-10-09
—Class	20-2A
Gauge	36 Inch
Length over pilot beams	28' 10"
Total wheelbase	23' 2"
Engine wheelbase	23' 2"
Rigid wheelbase	50"

Diameter of driving wheels	26"
Number of driving wheels	8
Gears	43 teeth
Pinions	14 teeth
Number of cylinders	2
Cylinder diameter	8"
Cylinder stroke	12"
Boiler pressure	160 psi
Boiler diameter at front	36"
Flues	59 - 1 3/4" dia.
Flue length	8' 0"
Firebox length	50"
Firebox width	29 3/4"
Weight dry	39,980 lbs.
Weight in working order	44,000 lbs.
Tractive effort	10,270 lbs. approx.
Factor of adhesion	4.28
Fuel	Lignite - Oil in 1928
Fuel capacity	2,000 lbs.
Water capacity	800 gal.
Brakes - steam	
Draft gear	Link and Pin

Note: This locomotive was built for the Dawson Electric Light and Power Company. It is not known if this machine was ever delivered to its original owner but it was used by a second and unknown company where it was assigned the road number 2. Following use by the unknown owner this machine was sold to the Puget Sound Machinery Depot of Seattle from whom it was purchased by Biles-Coleman. During its use by Biles-Coleman wood, lignite, and oil fuels were burned in this engine.

LOCOMOTIVE/SPEEDER ROSTER BILES-COLEMAN LUMBER COMPANY

Spot	Type & Class	Builder	Const. Number	Year	Wt. Dry (lb.)	Cyl. Dia. & Str. (in.)	B. P. psi. (HP)	Driver Dia. (in.)	Tractive Effort (lb.)
101	Shay 2T 20-2A	Lima	2190	1909	39,980	2-8x12	160	26	10,270
					Ex Dawson Electric Light & Power Co. No. 1. Coal fuel, wood on B. C. L. Co. (1)				
102	Heisler 2T 42-2B	Heisler	1516	1925	84,000	14x12	190	33	19,530
	Speeder MAC 4-30	Skagit	114	1929	6,918	4-4 1/2 x 6	67	22	1,598
					Scrapped 1949. Coal fuel, later converted to oil fuel (1).				
	Rail-auto	Ford Model T		1924	Automobile/truck with flanged wheels.				
	Speeder 27AW-G (2 ea.)	Kalamazoo			2,000	4-3.44x3.6	48	16 5/8	
					Purchased with model 16 1/2 G 12 man trailers. Scrapped in 1949.				

(1) Note: Shay number 101 was shipped from the factory July 10, 1909. Heisler number 102 was shipped from the factory on March 20, 1925. The Skagit speeder was shipped on February 27, 1929. The Shay was scrapped about 1940, but the Heisler was used until the line was abandoned in 1948 and was scrapped in June of 1949 together with the speeder and the log cars.

BILES-COLEMAN LUMBER COMPANY
Omak, Washington

Heisler Locomotive	
—Biles-Coleman Lumber Co.	#102
—Heisler Locomotive	#1516
—Built (Date Shipped)	3-20-25
—Class	42-2
Gauge	36 Inch
Length over pilot beams	30' 9"
Total wheelbase	25' 0"
Engine wheelbase	25' 0"
Rigid wheelbase	56"
Diameter of driving wheels	33"
Number of driving wheels	8
Gears	26 teeth
Pinions	12 teeth
Number of cylinders	2
Cylinder diameter	14"
Cylinder stroke	12"
Boiler pressure	180 psi
Boiler diameter at front	42 1/2"
Tubes	120 - 2"
Tube length	8' 5"
Firebox length	56"
Firebox width	38"
Weight dry	71,000 lbs.
Weight in full working order	92,000 lbs.
Tractive effort	19,530 lbs.
Factor of adhesion	4.71
Fuel	Coal 5,000 lbs, later oil
Fuel capacity (oil)	500 gal.
Water capacity	1375 gal.
Brakes	Westinghouse Air
Draft Gear	Automatic

Note: This locomotive was designed to operate on 80' radius curves (77.36 degrees) over grades up to 10 percent. Cost new was \$15,625.00 F. O. B. Erie, Pennsylvania. Scrapped in the spring of 1949.

BILES-COLEMAN LUMBER COMPANY
Omak, Washington

Speeder	
—Biles-Coleman Lumber Co.	#“MAC”
—Skagit Steel and Iron	#114
—Built	2-27-29
—Model	M. A. C. 4-30
Gauge	36 Inch
Length over buffer plates	15' 10 3/8"
Length over coupler faces	16' 7 1/2"
Width over foot boards	6' 9 1/4"
Total wheelbase	6' 5 3/4"
Rigid wheelbase	6' 5 3/4"
Diameter of driving wheels	22"
Number of driving wheels	4
Journals (roller bearing)	2"x6"
Drive (1 1/4" roller chain drive to each axle)	Clutch/Gearshift
Engine	Buda YBU-1
Engine Horsepower	67 BHP
Cylinder diameter	4 1/2"
Cylinder stroke	6"
Weight dry	6,000 lbs.
Weight in working order	6,182 lbs. approx.
Fuel	Gasoline

Fuel capacity	12 gallons
Cooling water capacity	10 gallons
Brakes (one brake drum on each axle)	Friction brakeband
Draft gear	Link and pin
Transmission	4 speed
Operating speeds (maximum)	
1st gear	3.5 mph est.
2nd gear	7.2 mph
3rd gear	14.9 mph
4th gear	25.0 mph

Note: Car was used for track patrol/maintenance work, logging crew transportation, and as a shop switcher following the retirement of Shay No. 101 to the scrap line. Car remained in use until the line was abandoned following the flood of May 30, 1948. Car was equipped with link and pin couplers for the shop switching task. Maximum tractive effort available for switching was 1,391 pounds, a force sufficient to pull two of the long log cars over 1 1/2 percent grades having 30 degree curves if the cars were not loaded. Cost new was \$3,000.00 F. O. B. Sedro Woolley, Washington.

BILES-COLEMAN LUMBER COMPANY
Omak, Washington

Proposed	
<u>2-6-6-2T</u> Locomotive	
—Biles-Coleman Lumber Co.	
—Baldwin Locomotive Proposal	#8043
—Proposal Dated	1-25-29
—Class	16 21/36 1/4DD
Gauge	36 Inch
Length over pilot beams	38' 3"
Total engine wheelbase	33' 3"
Total driving wheelbase	20' 9"
Front and rear engine wheelbase	7' 0"
Diameter of truck wheels	24"
Diameter of driving wheels	38"
Number of driving wheels	12
Weight on drivers (tank empty)	105,000 lbs.
Weight on drivers (tank full)	115,000 lbs.
Weight on front truck (tank full)	12,000 lbs.
Weight on trailing truck (tank full)	13,000 lbs.
Total weight in working order (tank full)	140,000 lbs.
Total weight dry	112,500 lbs.
Tractive effort	23,100 lbs.
Factor of adhesion	4.98
Number of cylinders	4
Cylinder diameter (high pressure)	13 1/2"
Cylinder diameter (low pressure)	21"
Cylinder stroke	20"
Boiler pressure	200 psi
Boiler diameter	48"
Tubes	68 - 2" dia.
Flues	10 - 5 3/4" dia.
Tube and flue length	13' 0"
Firebox length	72 1/2"
Firebox width	23 1/4"
Fuel	Oil
Fuel capacity	700 gallons
Water capacity	1500 gallons
Brakes	Westinghouse Air
Draft gear	Automatic

Note: This locomotive was never built. Preliminary design was based upon a similar locomotive of the class 16 28/46 1/4DD illustrated by Baldwin photo 10205. The locomotive illustrated by photo 10205 was built for the Weyerhaeuser Timber Co. Detail design of the proposed Biles-Coleman locomotive was based upon a 3' 3 3/8" gauge locomotive of class 16 20/35 1/4DD built as the Number 9 of the F. C. Del Sur of Columbia, South America in June 1921, Baldwin C. N. No. 54857, and the requirement for operation on curves of 30 degrees and grades of 5 percent.

SPECIFICATIONS
FOR

SIX (6) NARROW GAUGE
BILES-COLEMAN LUMBER COMPANY
LOG CARS BUILT BY
BILES-COLEMAN LUMBER COMPANY,
OMAK, WASHINGTON IN 1922

	*	*	*
Type	Two Bunk Logging Car		
Gauge	36 Inch		
Capacity	30,000 pounds		

GENERAL DIMENSIONS			
Length over coupler faces			22' 0"
Length over main sills			20' 0"
Distance center to center of body bolsters			10' 0"
Distance center to center of bunks			10' 0"
Width over bunks			8' 0"
Width over sills			24"
Height to top of bunk above rail			4' 1"
Height to center line of drawbar from top of rail			2' 9"
Truck wheelbase			4' 0"
Wheel diameter			28"
Journal boxes			3 1/4" x 6"
Brakes			Hand
Draft gear			Link and Pin
Sills	Type	Number Used	Dimensions
	Center	One	8"x7"x13'8"
	Draft	Two	8"x7"x20'0"

Note: These cars were constructed by using the parts from six sets of second-hand disconnected trucks. After the company purchased the new cars, these cars were converted for use as work cars. An additional group of at least four short log cars purchased late in 1924 and apparently built by

BILES-COLEMAN LUMBER COMPANY
LOADER ROSTER

Machine	Type	Builder	Const. Number	Year	Engine/Notes	H. P.
Slide Back Loader	"C" Skid	A. H. & D. Co.	1407	1926	Waukesha Cost: \$11,000 F. O. B. Omak	80
"Buncher"	WS4G	A. H. & D. Co.	1474*	1927	Waukesha Cost: \$11,000 F. O. B. Omak *C. N. of hoist attachment was 1594	80

BILES-COLEMAN LUMBER COMPANY
LOG CAR ROSTER

Car No.	Length Over Ends	Type	Builder	Date	Order No.	Notes
101-104	40' 0"	Four Bunk Logging Car	PCF	3/04/25	20595	See Notes 1 and 5
105-110	40' 0"	Four Bunk Logging Car	PCF	5/27/25	21430	See Notes 1, 2, and 5
111-120	42' 0"	Four Bunk Logging Car	PCF	8/13/26	24975	See Notes 3 and 5
121-123	42' 0"	Four Bunk Logging Car	PCF	3/02/28	29650	See Notes 3 and 5
124	42' 0"	Four Bunk Logging Car	PCF	3/02/28	29650	See Notes 3, 4, and 5
1-6	20' 0"	Two Bunk Logging Car	?/BCL	1922		See Note 6
7-11	20' 0"	Two Bunk Logging Car	Russel	Post 1900		See Note 7

- Notes:
1. Equipped with air brakes and link and pin couplers, later reequipped with automatic couplers, safety platforms on brake end, and on cars 101 through 104 side sill protection angles.
 2. Car side sills made of larger timbers than previously used and steel angles installed on upper edges of side sills to prevent damage to sills during log loading.
 3. Equipped with air brakes, automatic couplers, safety platforms on both ends, and brakemans step on brake end. Use of steel protection angles continued.
 4. Equipped with safety equipment noted in note 3, and equipped with six truss rods instead of four to permit car to be used as a heavy machinery moving car in addition to normal usage as a log car.
 5. Cars 101 through 124 were painted black with white lettering.
 6. Built by Biles-Coleman from six sets of second hand disconnected trucks. After new cars were purchased from Pacific Car and Foundry Company, these cars were used for work train cars and one was converted into an oil tank car. Air brake equipment never installed.
 7. Cars 7 - 10 (and 11?) purchased during late summer or fall of 1924 during construction of the new Omak Creek Railroad, and were apparently built by Russel Wheel and Foundry Company. One or more of the cars in the No. 1 through 6 series may also have been Russel cars.
 8. All cars still in existence in 1948 were stacked and burned for scrap when railroad was abandoned in 1949.

WEIGHT ESTIMATE				
By <i>R.E. Johnston</i> Date <i>Jan 25 1929</i>				
ITEM	TRUCK	DRIVERS	TRAILERS	TOTAL
16 $35\frac{1}{2}$ DD-1	10,200	124,650	10,900	2 G.W. 1.0 145,750
Gauge 3'-0"				
Line of 3' 3 3/4"				- 400
Machinery for 200# pressure				+ 300
100# oil				- 400
100# of coal				- 400
Bolter Wand 48" dia x 5' thick x 13' 6"				100# - 300
100# of 48" x 3" x 14' 0"				Water - 400
Fire box 72 1/2" x 23 1/2" Straight Jack				100# + 50
100# of 72" x 48" Slabbing Back				100# - 400
Tubers 10 5/8" x 48 1/2" x 13' 0" long				
100# of 12 1/2" x 48 1/2" x 13' 0" - 1				- 450
Grate Area 117 Sq Ft				
100# of 20" "				- 1250
Unit for brick arch on studs				- 500
Superheater to suit 10 tubes 13' 0" long				
100# of " " " " " " " "				- 500
Frames 3" Wide x 4 1/2" 3 1/2" x 2 1/2" x shorter				+ 200
100# of 3" x 3 1/2" 3" x 2"				
Cylinders 13 1/2" x 20" x 2 1/2" 20"				+ 1200
100# of 13 1/2" x 20" x 2 1/2" 20"				
Tanks x 1500 gallons of water				100# - 500
100# of 1000 " "				100# - 2500
Oil Tank 8,700 gallons of oil				100# + 500
100# of coal box x 6300# coal				100# + 100
Cylinder saddle & mount beam				- 700
lever				
Result				139,700
Capacity	12,000	115,000	13,000	140,000
Empty				112,500

J. Cummings
Baldwin Locomotive Works Proposal Card specifications for the proposed B. C. L. Co. 2-6-6-2T.

the Russel Car and Foundry Company were dimensionally similar to this first group of six cars.

SPECIFICATIONS

FOR

TEN (10) NARROW GAUGE
BILES-COLEMAN LUMBER COMPANY
LOG CARS BUILT BY
PACIFIC CAR AND FOUNDRY COMPANY,
RENTON, WASHINGTON IN 1925

* * *

Type Four Bunk Logging Car
Gauge 36 Inch
Capacity 60,000 pounds
Weight 17,702 pounds for #101 - 104
18,373 pounds for #105 - 110

GENERAL DIMENSIONS

Length over coupler faces 41' 7"
Length over main sills 40' 0"
Distance center to center of
body bolsters 30' 0"
Distance center to center of
cross ties 10' 0"
Width over bunks 10' 0"
Width over sills 7' 2"

Height to top of bunk above rail 3' 9 3/8"
Height to center line of drawbar
from top of rail 2' 6 1/8"
Truck wheelbase 4' 4"
Wheel diameter 26"
Journal boxes 4" x 7"
Brakes Westinghouse
Automatic Air
Link and Pin
Draft gear
Sills Type Number Used Dimensions
Center One 10" x 10" x 33' 8 1/4"
Draft Two 8" x 10" x 40' 0"
Side (#101-104) Two 8" x 10" x 30' 4 1/4"
Side (#105-110) Two 10" x 10" x 30' 4 1/4"

Note: Cars numbered 101 through 104 cost \$617.59 each for materials used while cars numbered 105 through 110 cost \$652.78 each. All cars were painted black with white lettering and were later equipped with automatic couplers in place of link and pin couplers.

SPECIFICATIONS

FOR

FOURTEEN (14) NARROW GAUGE
BILES-COLEMAN LUMBER COMPANY
LOG CARS BUILT BY
PACIFIC CAR AND FOUNDRY COMPANY,
RENTON, WASHINGTON IN 1926 AND 1928

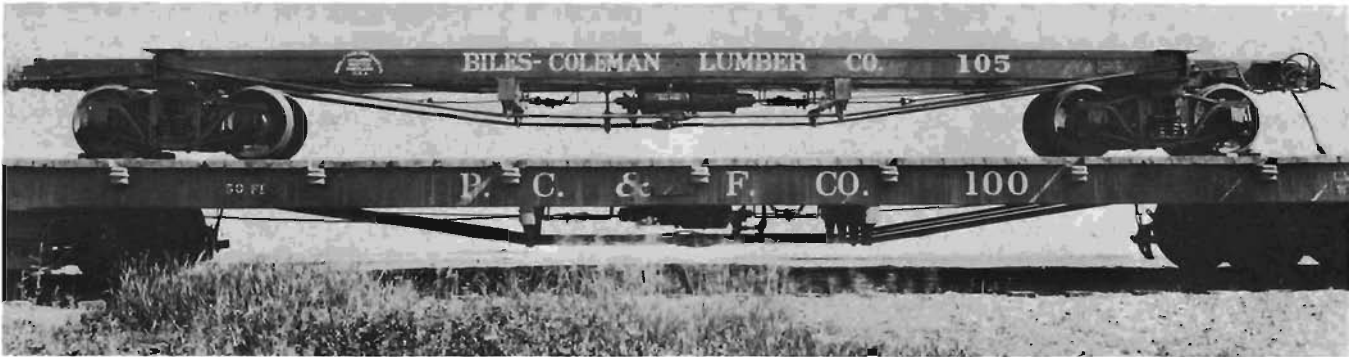
* * *

Type Four Bunk Logging Car
Gauge 36 Inch
Capacity 60,000 pounds
Weight 19,514 pounds

GENERAL DIMENSIONS

Length over coupler faces 44' 5"
Length over main sills 42' 0"
Distance center to center of
body bolsters 30' 0"
Distance center to center of
cross ties 10' 0"
Width over bunks 10' 0"
Width over sills 7' 2"
Height to top of bunk above rail 3' 9 3/8"
Height to center line of drawbar
from top of rail 2' 6 1/8"
Truck wheelbase 4' 4"
Wheel diameter 26"
Journal boxes 4" x 7"
Brakes Westinghouse
Automatic Air
Sharon MCB Auto-
matic, (9" slotted
face knuckle)
Draft gear
Sills Type Number Used Dimensions
Center One 10" x 10" x 35' 8 1/4"
Draft Two 10" x 10" x 42' 0"
Side Two 10" x 10" x 30' 4 1/4"

Note: Cars were numbered 111 through 124, and were painted black with white lettering. Car number 124 was built stronger for use as a machinery moving car.



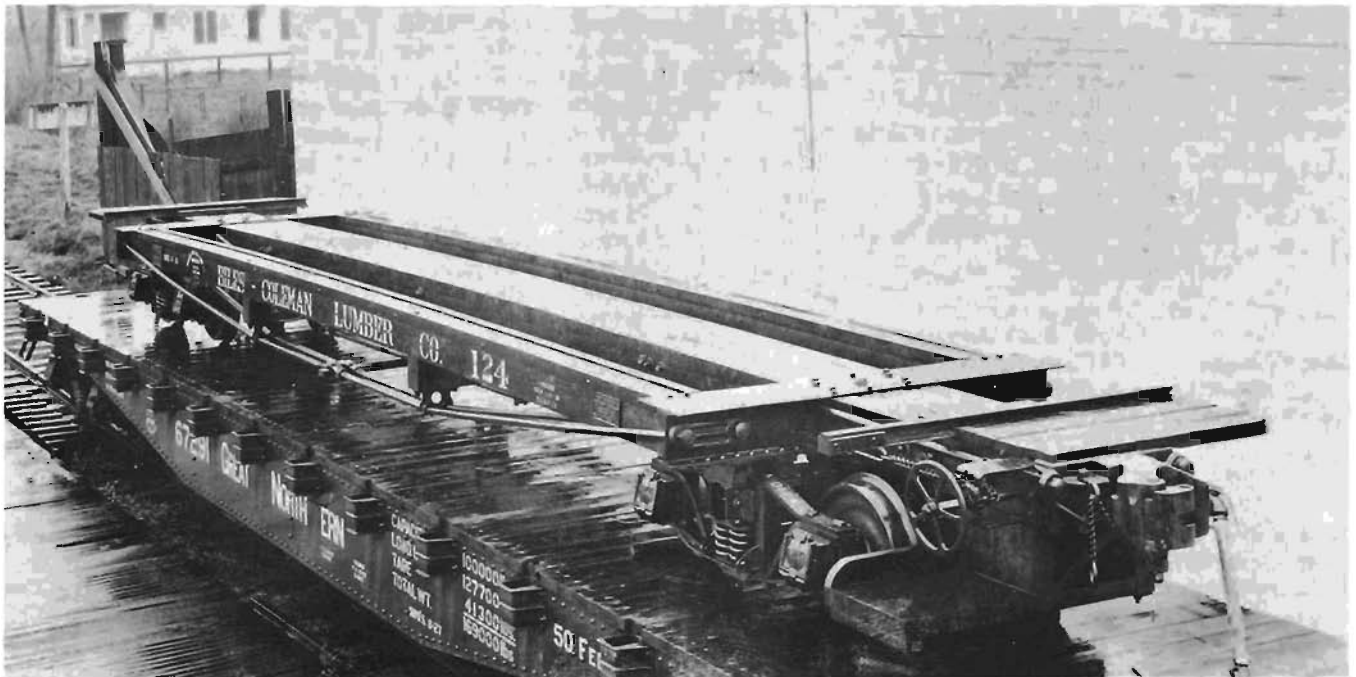
Builders photo, side view of 40 foot log car No. 105.

P. C. & F. Co./F. Moline



Builders photo, side view of log car No. 122.

P. C. & F. Co./F. Moline



Builders photo, ¾ right side view of the last of the B. C. L. Co. log cars built by the Pacific Car and Foundry Co. This car was specially strengthened to carry heavy equipment loads. End nuts on the added center truss rods can be seen on either side of the coupler.

P. C. & F. Co./F. Moline

Appendix II

DIAMOND MATCH COMPANY — THE WEST'S NEWEST AND MOST MODERN NARROW GAUGE LOGGING RAILROAD

In January 1927, shortly after the award on October 26, 1926 of a U. S. Forest Service Timber Salvage Contract, the Diamond Match Company then headquartered at Spokane, Washington, started development of what was to become the most modern narrow gauge logging railway ever built in the West. The white pine timber to be salvaged was located in the area drained by Kalispell Creek on the west side of Priest Lake in the Kaniksu National Forest along the Idaho- Washington border. Timberland in the salvage area was split in ownership with odd numbered sections owned by the Diamond Match Company while even sections covered by the government salvage contract were U. S. Forest Service property. This timber had been fire killed, but not destroyed in an unusual forest fire several years earlier. Clearing the private and public owned portions of the burn area and its large stand of readily ignitable fuel had to be accomplished rapidly before the wood of the dead trees started to rot or stain and so that replanting could be started without further delay.

The logging car design developed for Biles-Coleman by the Pacific Car and Foundry Company as well as the modern equipment selection policies of Biles-Coleman in the areas of log skidding and log loading equipment strongly influenced Diamond Match Company planning for the new line. In late January of 1927, the company ordered 20 four bunk, 36 inch gauge 42 foot long, 60,000 pound capacity log cars from the Renton, Washington car builders. These cars were identical to the final series of Biles-Coleman cars. Additionally, they were fitted with factory built rail and folding stake bunks.

An American Hoist and Derrick gasoline engine powered hoist unit was purchased early in 1927 for in-

corporation in a company built slide back loader. This machine was designed to handle the log loading task in the same manner as had been done by Biles-Coleman. The task of log skidding was to be mechanized by the use of two ton caterpillar tractors for use in "chute trailing" and by 10 ton tractors for skidding and hauling tree length logs to the railroad.

The final touch in insuring that the most modern equipment was used on this line came with the purchase in February 1927 from the Hofius Ferris Equipment Company of Spokane, Washington of two 18 ton Plymouth gasoline mechanical locomotives. The acquisition of internal combustion powered motive power reflected the rapid changes taking place in the logging industry during the late 1920's as a swift transition from steam to lighter forms of power producing equipment began to gather momentum. Had the Biles-Coleman Omak Creek line been built just two years later, it might also have acquired gasoline or diesel mechanical locomotives. These early forerunners of the diesel locomotives that would be destined to monopolize the railroad motive power scene in later years would have had great difficulty in matching the serviceability and durability demonstrated by the Heisler over a 23 year operating period.

From another aspect, it is probable that this same power revolution from steam to gasoline and diesel might have led to the bypassing of rail for truck logging entirely by Diamond Match had the timber salvage effort started as little as two years later. Thus the Diamond Match line proved to be an interesting combination of the latest, most modern and most flexible logging equipment from the railroad logging era with the light weight and easy to operate internal combustion power which was



H. A. Peterson

Plymouth locomotive No. 1 and two loaded four bunk log cars pause while a third car is loaded with logs by the loader on the Diamond Match Company Kalispell Creek narrow gauge railroad in 1929.



H. A. Peterson

A loaded log train backs down the lower leg of a switchback on the D. M. Co. Kalispell Creek narrow gauge railroad, summer 1929.

to dominate the then only vaguely emerging truck logging era.

The Plymouth locomotives were also purchased with the thought in mind of minimizing potential forest fire hazards in the area in which they were to be used. Coal or wood burning locomotives were prohibited in the Kaniksu National Forest and oil burning steam locomotives were not really welcome. The costs of transporting fuel oil by motor truck a distance of over 35 miles from Priest River, Idaho to the logging camps to provide fuel for a steam locomotive, if analyzed, would have been found to be prohibitive. The greater efficiency of the gasoline engine thus proved to be a significant factor in selection of motive power to be used on the new line.

Weight was another consideration that encouraged the purchase of the two Plymouth locomotives. Two 18 ton locomotives were much easier to transport from the Northern Pacific Railway at Priest River, Idaho over the late winter snows by tractor drawn sled to the new line

than a larger 40 to 50 ton steam locomotive would have been.

The Plymouth locomotives were equipped with special guard frames to protect their fragile radiators from puncture damage and/or being crushed by the accidental swing of logs being loaded on adjacent cars. Each locomotive was also fitted with a spark arrestor at the top of each exhaust stack. This equipment permitted the locomotives to operate within the Kaniksu National Forest without undue fear that forest fires would be kindled by the deposit of glowing carbon sparks.

Each locomotive was powered by a Climax* six cylinder gasoline engine producing 130 horsepower from cylinders having a six inch bore and seven inch stroke.

*Climax gasoline engines had no relationship to the Climax Locomotive and were produced by the Climax Pump and Manufacturing Company of Clinton, Iowa.



H. A. Peterson

The D. M. Co. slideback loader ("Jammer") loading four bunk P. C. & F. Co. built log cars from log rollways at a chute landing west of Priest Lake, Idaho, July 1929.



H. A. Peterson

Diamond Match Co. narrow gauge Plymouth locomotive No. 2 and log train ready to leave a log landing for Priest Lake, July 1929.

Standard E-T type Westinghouse air brakes were fitted on each locomotive while air pressure was supplied by a Gardner air compressor capable of supplying 59 cubic feet of free air to the brake system per minute.

On the uphill trip from the log dump on the lake to the woods, the locomotive could push a train of 8 empty cars to the log loading area in about 1 hour and 45 minutes in second gear. Each locomotive had the four following operating speeds in both forward and reverse:

1st gear	2 3/4 mph
2nd gear	6 mph
3rd gear	10 mph
4th gear	15 mph

Fuel consumption for the two Plymouth locomotives per 12 hour shift was 42 gallons, which at the prevailing prices of that era resulted in total daily fuel costs of less than \$10.00.

The log cars were equipped with standard Westinghouse "K" type air brakes with an 8 inch x 12 inch cylinder and H-1 triple valves. Each car was also fitted with a single spring retainer. When set, for use on down grades, the retainers insured that 25 pound per square inch brake cylinder piston pressures were maintained to control speed. On 3 percent down grades with trains of 8 loaded cars, the application of retainers on 3 or 4 cars was required to keep speeds under control.

During the operating season, train crews worked on a 12 hour per day basis. Each crew was composed of an engineer and brakeman. The usual train was made up of one locomotive and eight log cars, each of which when loaded carried a log load of about 6,000 board feet. Each locomotive made an average of 1 1/2 round trips per day, two locomotives thus providing a total of at least 24 cars of logs per day which were dumped into Priest Lake for the start of a water-borne trip which would eventually bring the logs far down river to the mill at Cusick, Washington.

Following clearing and grading of the right-of-way and the laying of track, the railroad began logging operations in the middle of June, 1927. The main line followed the course of Kalispell Creek as it wound uphill towards its source from the west shore of Priest Lake. The railroad had 11 miles of narrow gauge main line with maximum grades of 3 percent and 24 degree (240.48 foot radius) curves. The longest 3 percent grade extended over a distance of nearly 4,000 feet. Longer stretches of 2 and 2 1/2 percent grade were common on the main line and a few sections of level track were to be found. An additional 3 miles of track was located in three different spur lines whose routes were constantly subject to change and relocation as the timber salvage task proceeded. These spurs were built with maximum grades of 7 percent and with 40 degree (146.19 foot radius) curves. Rail weighing 40 pounds per yard was used on both the main line and branches although experience indicated that due to the relatively high axle loadings imposed by the short wheelbase locomotives, 50 pound rail would probably have been more suitable for the job.

Logs were moved to the side of the railroad right-of-way from the stump by a system of skidding and chuting. Chutes made of hewn logs placed side by side to form rough "V" shaped troughs covering routes of up to 1 1/2 miles in length were used as skidways over which logs could be dragged by a small tractor or horse



H. A. Peterson

Slideback loader on the Diamond Match Co. narrow gauge ready to skid logs cut on either side of the right-of-way to trackside, summer 1929.



H. A. Peterson
D. M. Co. slideback log loader skidding logs cut along the railroad right-of-way to trackside, July 1929.

team from the cutting area to a track-side loading point. Small two ton "caterpillar" tractors were used in the chute trailing task while larger 10 ton machines were used for cross country skidding of tree length timber. Mechanized log skidding was also supplemented by crews using large draft horses to skid logs into the chutes or to the railroad on a gyppo basis.



H. A. Peterson
New narrow gauge track just built in a rock cut on the Diamond Match Co. narrow gauge railroad, spring 1930.

Additionally, a five mile long flume was used on the Big Creek operation to supply the line with logs. In this operation, logs were trailed directly from chutes into the upper end of the flume.

Waste foliage and branches (slash) trimmed from green timber cut in unburned areas was gathered in piles after the logs were limbed, bucked into carload



H. A. Peterson
Large pine log being trailed in from the woods on the log chute at a landing on the Kalispell Creek Railroad. The wire rope (cable) attached to the tractor pulling the log is visible at the right, summer 1929.

lengths, and skidded away. The slash was then burned in accordance with state and U. S. Forest Service regulations. Slash from timber cut in the burned areas was left where it was cut from the felled logs.

All of these logging and log transportation activities on the "Diamond Match" salvage operation were not actually performed by the company, but were instead subcontracted to Mr. E. C. Olson of Spokane, Washington.

During the latter part of November as the first seasonal snows arrived in the high elevations around Priest Lake, it was discovered that the new internal combustion powered locomotives could easily operate through snow up to 2 feet in depth. Such operation was unexpectedly discovered to be possible without any need for special track clearing by plow after the arrival of an unexpectedly deep early season snowfall. Deeper fall snows were common in the area however, and in November 1927, Diamond Match ordered an 18 foot snow plow flatcar from the Pacific Car and Foundry Company of Renton, Washington. This car, after being delivered to the railroad, was equipped with a snow plow on one end for use in removing snow from the railroad in emergency situations.

At the end of the first season of logging on this salvage operation, early in December of 1927, the railroad and mill were shut down with a resumption of operations planned for the following May. During this cessation of activities, company planning called for logging to continue in the woods and it was expected that 15 to 20 million board feet of timber would be felled, limbed, and bucked into car length logs ready for the start of transportation to the mill when warmer weather returned. However, six to seven foot snows were common in the area and plans for winter time logging were rapidly abandoned. Logging was resumed the following spring after the bulk of the winter snow pack had melted.

During the period from September 1, 1928 to the completion of the sale in 1930, Mr. Henry A. Peterson was the U. S. Forest Service staffman in charge of the sale. The Diamond Match Company operated three logging camps simultaneously during the warmer months throughout this period. To facilitate travel between these

camps and the Priest Lake Ranger Station, the Forest Service purchased a small gasoline engine powered speeder. Mr. Peterson operated the speeder daily over the narrow gauge during logging season while traveling from camp to camp to inspect work progress and company compliance with sale provisions.

The Diamond Match Company narrow gauge operated until salvage of timber in the sale area was completed. The railroad carried both fire damaged and undamaged logs from the salvage area and adjacent unburned sections to the shores of Priest Lake where they were then dumped for the start of a lake and river log drive to the mill. The track at the log dump was banked gradually from its usual level orientation to a position adjacent to the rollway where the rail closest to the lake was spiked down several inches lower in elevation than the outside rail. This "banking" in the track tilted loaded cars toward the water so that the effects of gravity could be used to encourage the log loads to roll easily off and over the rollway log ramp into the lake. Gravity unloading was assisted as required through use of a gasoline engine powered unloading winch fitted with an "A" frame boom. The winch cable, when passed over the boom and then under the load of logs to be dumped provided the required assistance needed to off-load even the most stubborn load of logs.

The lake/river drive traversed a route about 100 miles in length southward down Priest Lake and then down Priest River to the Pend Orielle River. A further 25 mile westward river drive on the Pend Orielle carried them to the mill located at Cusick, Washington.

In terms of the board foot output of cut lumber, the mill produced an average of 150,000 board feet of lumber per day. Lumber from the mill at Cusick, Washington was shipped to the Diamond Match Company plant at Spokane, Washington or on to outside customers by rail over the standard gauge Metalline Falls branch of the Chicago, Milwaukee, St. Paul and Pacific Railway.

The lumber mill and camps for mill crew and loggers were located at widely separated locations in Washington State while much of the timber salvage work and the logging railroad was located in Idaho. Operations of



Kalispell Bay, Priest Lake looking northeast past Kalispell Island (right) as viewed from the D. M. Co. log dump at the end of the railroad. Logs delivered by the narrow gauge choke the bay, July 1929. H. A. Peterson



D. M. Co. Plymouth No. 1 pulling a loaded log train heads down grade to Priest Lake, summer 1929.

H. A. Peterson

the narrow gauge were completed by the end of 1930. By late 1931, all traces of the logging camps and narrow gauge were rapidly disappearing. As a side note, it should be mentioned that since the Diamond Match narrow gauge was not connected to any other railroad, or even to a main road, it was necessary in 1927 to transport all of the equipment for the new line in from Priest River, Idaho located 35 miles to the South of Priest Lake in an unusual manner. This task was accomplished by pulling the equipment over the late winter snows on sleds drawn by Caterpillar type tractors to a point on the south end of Priest Lake where the locomotives, cars, loader, and rail were then loaded aboard barges which were then towed up the lake to the starting point for the new railroad. When the line was abandoned, this tedious procedure had to be repeated to carry resalable equipment back out to civilization for future reuse.

Disposition of all of the logging equipment has not been verified with complete certainty. Locomotive No. 1 was sold to and standard gauged for a construction con-

tractor working on the Ross Dam project of the Seattle City Light Company. Evidence exists that some of the log cars may have been sold during the early 1930's to the Oregon Lumber Company of Baker, Oregon for use on logging lines running northwestward up the middle fork of the John Day River from Bates, Oregon.

Locomotive No. 2 and the remaining log cars were retained by the Diamond Match Company. After being moved to Sandpoint, Idaho they were standard gauged for use on a new D. M. Co. logging railroad. This new line was built northeast from the Spokane International Railway at the small town of Kootenai to facilitate the harvesting of timber in the area drained by Rapid Lightning Creek. Logs hauled out over the new railroad on the recently standard gauged cars were switched onto the Spokane International Railway at Kootenai and were then hauled another nine miles to the west over the rails of this common carrier to a log dump on the Pend Oreille River. The log dump was located just south of the bridge which carried the S. I. Ry. track from the north to the south shore of the river. After being dumped, the logs

DIAMOND MATCH COMPANY
LOCOMOTIVE ROSTER*

Spot	Type/Class	Builder	Const. Number	Year	Weight (lb.)	Engine/ Cylinders Dia. & Str. (in.)	Driver Dia. (in.)	Tractive Effort (lb.)
1	Gasoline - Mechanical 18 ton HL2	Plymouth	2527	2-1927	36,000	Climax 6 - 6x7 127 H. P.	33	9,000
						Sold 1931, standard gauged, to General Shea Morrison, Ross Dam Project, Rockport, Washington		
2	Gasoline - Mechanical 18 ton HL2	Plymouth	2529	2-1927	36,000	Climax 6 - 6x7 127 H. P.	33	9,000
						Standard gauged 1931, used until 1942 on a Diamond Match Co. standard gauge logging line northeast of Sand- point, Idaho, operating into the area drained by Rapid Lightening Creek.		

*Roster information from P. A. Copeland, "Extra 2200 South"

Note: Both locomotives were delivered from the builder painted a dark shade of green.



P. C. & F. Co./F. Moline

Builders side view of Diamond Match Company four bunk narrow gauge log car No. 12. These cars were identical in design and size to the "long" Biles-Coleman Lumber Company cars.

were than rafted 21 miles further down the river to the Diamond Match mill just to the west of the Albeni Falls Dam (a short distance east of Newport, Washington).

The 1941 issue of West Coast Lumberman's Statistical Review and Directory credited the Diamond Match operation in 1940 with having a daily logging capacity of 100 thousand board feet of logs, 3 tractors, logging trucks, a flume, railroad trackage of unspecified mileage and 2 locomotives.

The Rapid Lightening Creek logging railroad remained in operation until just after the start of World War II, reaching a total length of almost 14 miles prior to being abandoned in 1942.

The Diamond Match Company narrow gauge remains virtually unknown today, even to those individuals interested in the history of lumbering. The rolling stock used on this line represented the culmination of years of development of narrow gauge logging railroad equipment. This development had been continuously directed toward the goal of providing the most modern capable equipment, and up to date logging procedures ever used on a pine region narrow gauge logging railroad. Simultaneously, the development of this line marked the termination of the long history of progressive equipment development for such lines on the West Coast. Within months of the construction of this line, motor truck modes of log hauling were reaching increasing levels of acceptance by pine region loggers and no major new narrow gauge logging railroad was ever to be started in the West after the Diamond Match line was built.

SPECIFICATIONS

FOR

TWENTY (20) NARROW GAUGE
DIAMOND MATCH COMPANY
LOG CARS BUILT BY
PACIFIC CAR AND FOUNDRY COMPANY
RENTON, WASHINGTON IN 1927

	*	*	*
Type	Four Bunk Logging Car		
Gauge	36 Inch		
Capacity	60,000 pounds		
Weight	20,644 pounds approx.		

GENERAL DIMENSIONS

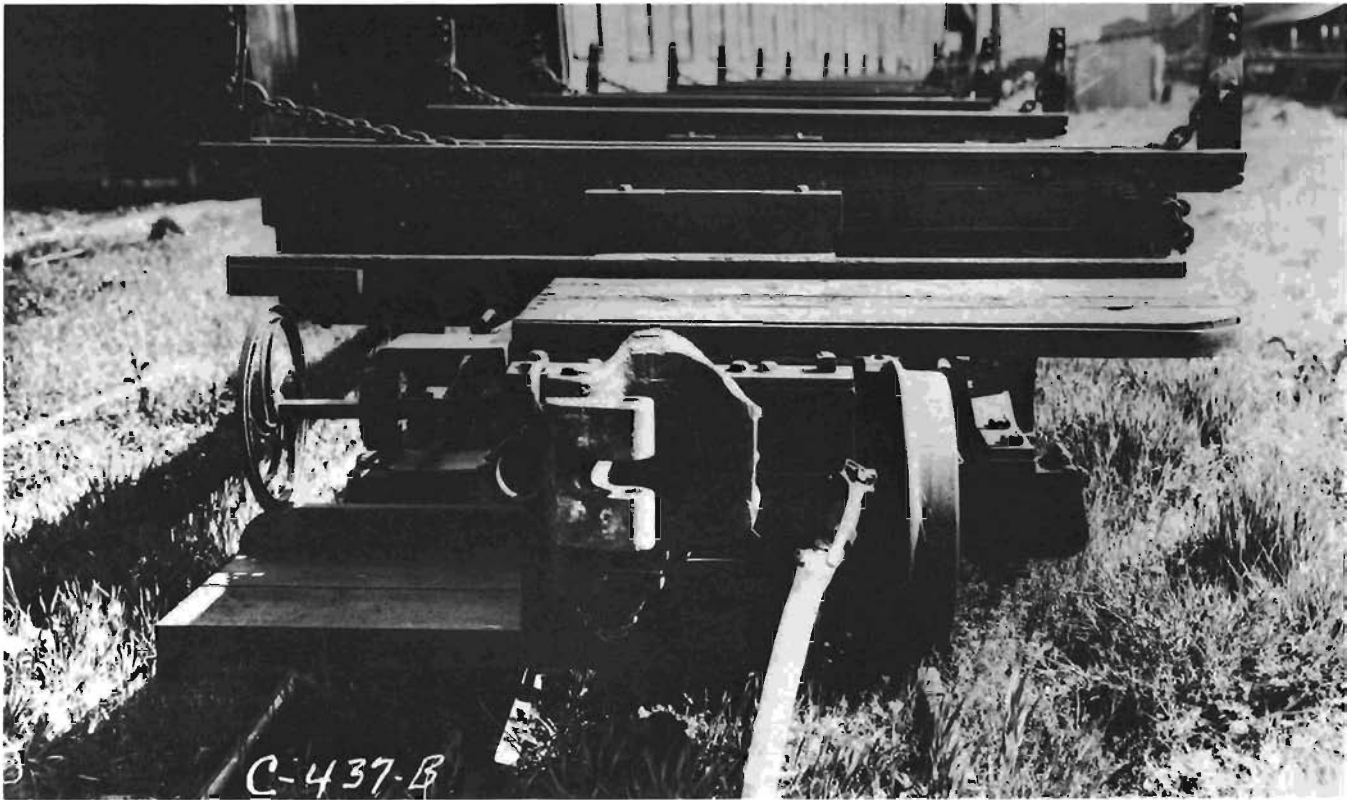
Length over coupler faces	44' 4 1/2"		
Length over draft sills	42' 0"		
Distance center to center of body bolsters	30' 0"		
Distance center to center of bunks	10' 0"		
Distance center to center of cross ties	10' 0"		
Width over bunks	9' 0"		
Width over body bolsters	7' 10"		
Width over side sills	7' 2"		
Height to top of bunk above rail	3' 9 5/8"		
Height to top of stakes above rail	4' 11 3/4"		
Height to center line of drawbar from top of rail	2' 6 1/8"		
Truck wheelbase	4' 4"		
Wheel diameter	26"		
Journal boxes	4"x7"		
Brakes	Westinghouse Automatic Air		
Draft gear	Sharon MCB Automatic (9" slotted face knuckle)		
Sills	Type	Number Used	Dimensions
	Center	One	8"x8"x35'8 1/4"
	Draft	Two	8"x8"x42'0"
	Side	Two	8"x8"x30'4 1/4"

Note: Cars were numbered 1 through 20, and were painted black with white lettering. This company maintained its headquarters at Spokane, Washington, while rail logging operations were centered in Idaho.



P. C. & F. Co./F. Moline

Builders photo of Diamond Match Company narrow gauge snow plow flat car No. 21 at Renton, Washington, December 1927.



P. C. & F. Co./F. Moline
 Builders end view of Diamond Match Company four bunk narrow gauge log car No. 12 taken on dual gauge track at the builders shops, 1927.

SPECIFICATIONS

FOR
 ONE (1) NARROW GAUGE
 DIAMOND MATCH COMPANY
 SNOW PLOW FLAT CAR BUILT BY
 PACIFIC CAR AND FOUNDRY COMPANY,
 RENTON, WASHINGTON IN 1927

* * *

Type	Snow Plow Flat Car
Gauge	36 Inch
Weight	14,085 pounds approx.

GENERAL DIMENSIONS

Length from plow end sill over coupler face	19' 8 5/8"
Length over end sills	18' 8"
Distance center to center of body bolsters	10' 0"
Width over end sills	7' 8"
Width over side sills	7' 2"
Width over deck	7' 4"
Height to top of deck above rail	3' 3"
Height to center line of drawbar from top of rail	2' 6 1/2"
Truck wheelbase	4' 4"
Wheel diameter	26"
Journal boxes	4"x7"
Brakes	Hand
Draft gear	Sharon MCB Auto- matic (9" slotted face knuckle)

Sills	Type	Number Used	Dimension
	Draft	Two	8"x10"x17'3"
	Side	Two	8"x10"x18'0"

Note: Car was numbered 21, and was painted black with white lettering. Only one end of this car was equipped with a coupler. The opposite plain end was specifically designed to permit easy installation of a wedge type snow plow.

A MAP OF THE DIAMOND MATCH CO.
 NARROW GAUGE RAILROAD WILL BE
 FOUND ON THE LAST PAGE OF BOOK.

Appendix III

WHY NARROW GAUGE?

Considerations leading to the selection of narrow gauge track width by any firm planning to construct a resource exploitation railroad during the first thirty or forty years of the twentieth century can be segregated into the two major categories of economics and operating limitations. The usual American rail to rail spacing of 3' 0" for narrow gauge was primarily used for such railroads in the West although infrequent variations in gauge from as narrow as 2' 6" to as wide as 3' 6" did exist.

These narrow track widths led to lower initial construction and operating costs while simultaneously allowing operation under topographic conditions which were more severe than acceptable for the larger size standard gauge lines having a rail to rail inside spacing of 4' 8½". The economic and operating considerations justifying selection of a narrow gauge track width are usually not clearly separable into purely one category or the other. A listing of the most significant considerations applicable partially or wholly to either or both of these categories follows:

1. Roadbed grading costs were lower due to the narrower width of cuts and fills which resulted in lower earth moving/excavation costs.
2. Curves of a smaller radius were acceptable thus eliminating much of the major earth moving work needed in rough terrain for standard gauge construction. Narrow gauge lines regularly used curves as sharp as 60 degrees (100 foot radius) while standard gauge curves rarely exceeded a maximum of 25 degrees (231 foot radius). Obviously, the narrow gauge line could snake through the roughest country with only a small fraction of the major earth moving work required to build a standard gauge line over the same general route.
3. Steeper grades were permitted, thus reducing total track lengths required. A narrow gauge locomotive of a given size could haul a slightly larger paying load per car due to standard American car design practice than a standard gauge machine of the same power. This seemingly incongruous situation existed because the ratio of payload to car dead weight is greater for narrow gauge rolling stock than for standard gauge. The smaller diameter wheels, shorter length axles, and narrower width truck bolsters and spring planks used on narrow gauge cars significantly reduced the weights of moving and stationary parts required to carry a given load. The design of standard gauge rolling stock has never been pushed to the limits common for narrow gauge. The ratio of the usual narrow gauge car width of about 8' to a 3' track gauge, if followed for standard gauge would have led to car width of more than 12' 6" (or 14' usable bunk widths if compared to Biles-Coleman or Diamond Match log car designs). Most standard gauge cars built in the 1920's did not exceed 9' 6" in width. Today, the American Association of Railroads limits car width to 10' 8", subject to further

reduction if the car length between truck centers exceeds 41' 3".

4. The costs of track materials used per mile of railroad were less for narrow gauge since lighter weight rails and shorter length ties were used. The average weight of rail used on most narrow gauge logging lines was about 35 lbs. per yard with minimum and maximum weight variations ranging from 20 to slightly more than 50 lbs. per yard. Standard gauge rail weights usually ranged from 60 to 90 pounds per yard with an average weight of about 75 pounds per yard being common. Locomotive weight was not always the limiting factor in choosing rail size for western standard gauge logging lines. The weights of massive skidders and log loaders was often a major factor in deciding upon rail size.

In the west, narrow gauge ties were usually 6 feet in length with cross sectional dimensions of approximately 8 inches in width by 6 inches in depth. By comparison, standard gauge ties were usually 8 to 9 feet in length with cross sections measuring about 9 inches by 6 to 8 inches.

On an average weight and board foot basis, track materials could be expected to cost about 53 percent less for rails and up to 55 percent less for ties on a narrow gauge line than when the same materials were purchased for an equivalent standard gauge line.

5. Lower bridging/trestle work costs were incurred during construction of narrow gauge lines due to the shorter lengths of transverse horizontal members and the reduced number of stringers spanning between trestle bents. Resulting cost savings could total as much as 5 percent
6. The initial cost of equipping the new railroad with motive power and rolling stock was lower for narrow gauge than for standard gauge. New narrow gauge locomotives and cars usually cost less than their standard gauge counterparts of identical pulling and load carrying capability due to their lower weights and slightly smaller sizes.

Alternatively, used equipment and track materials were available from railway equipment dealers at a small percentage of their original new cost. Such equipment could, with little or no modification, be used by a firm possessing limited financial assets to start revenue producing operations with minimal initial expenditure. The relatively simple yet sturdy rolling stock used on many of the final western narrow gauge lines frequently consisted of equipment, or was built from equipment components, which had seen prior service on three to four different lines. Such equipment had usually been built between 25 and 60 years prior to entering service on the line of their final owner.

7. A narrow gauge line could operate in many areas offering potential traffic weights and volumes smaller than those which could provide the justification for construction or operation of a standard gauge line.

Cost Item	Narrow Gauge Construction Cost - \$		Standard Gauge Construction Cost - \$	
	Minimum	Maximum	Minimum	Maximum
Design Engineering	200.00	400.00	200.00	400.00
Right-of-Way Clearing	100.00	160.00	125.00	200.00
Stump Removal	200.00	400.00	200.00	400.00
Grading Costs	3,500.00	5,000.00	4,000.00	5,500.00
Tie Costs @ \$12.00/ 1000 board feet, 2992 ties per mile	861.60	861.60	1,339.20	1,339.20
Track Laying/Surfacing	450.00	550.00	600.00	600.00
TOTALS	\$5,311.60	\$7,371.60	\$6,464.20	\$8,439.20
AVERAGE COST PER MILE	\$6,341.60		\$7,451.70	
AVERAGE NARROW GAUGE COST SAVINGS PER MILE	\$1,110.10 (14.89%)			

8. When properly designed and built, a narrow gauge line could carry traffic weights and volumes which approached the standard gauge capacities commonly utilized in that era. Proper and careful track alignment insured that heavily loaded narrow gauge cars could carry standard gauge size loads over narrow gauge track although such operations were somewhat reduced in speed for reasons of stability.

Recognition of the significant construction cost savings obtainable through the selection of a narrow gauge track width was given official status by a U. S. Forest Service report made in the year 1917. This report stated, the differences in construction costs in the Sierra Nevada Mountains of California for building narrow gauge (3' 0" gauge) and similar standard gauge (4' 8½" gauge) logging railroads. During the same time period, railroad construction costs in adjoining states for the same types of terrain evaluated in California would have varied only a minor amount from the values given in the report.

The results of the Forest Service comparison include all costs per mile except for the cost of the rails used and any possible bridging/trestle work. Rail cost was not included because of the variation in sizes of locomotives used on the various lines. This resulted in the requirement for the use of differing sizes of rail depending upon the weight of the locomotive(s) intended for use on a given line. The cost of bridging per mile was not included because no valid set of average values could be computed to apply to every type of terrain which might be encountered. The results of the U. S. Forest Service cost comparison follow (in 1917 dollars):

If the previous values are adjusted to include representative costs for the rails to be used, the average costs (assuming the use of new rail) would rise by about \$1,846.20 and \$3,812.53 (for 35 and 75 pound rail respectively) to new totals of approximately \$8,187.80 and \$11,264.23 respectively. The average cost saving per

mile, including rails, realizable by selecting a narrow gauge track width for a new logging railroad thus became \$3,076.43, a value equivalent to 27.31 percent of the total cost of the equivalent standard gauge line. Construction cost savings in the range of one-fourth to one-fifth of the cost of building an equivalent standard gauge line provided a significant incentive for selecting the option of building a narrow gauge line to operate over the same route.

The primary cost and operating disadvantage of a narrow gauge, that of a lack of rolling stock interchangeability from narrow to standard gauge at junction points with consequent high freight transfer costs became meaningless in the context of logging railroad practice. Logs carried from the forest to the mill by log train had to be offloaded at the mill to be cut into lumber regardless of whether the logging line was narrow or standard gauge. Under such circumstances, the selection of a narrow gauge track width was an attractive financial proposition to the future owners/operators of any newly planned logging railroad.

Narrow gauge was not ideal for all logging situations. In areas where very large trees were common, such as in the Redwoods or Douglas Fir region west of the Cascade Mountains, narrow gauge rolling stock was generally considered to be too small to handle the immense 8 to 10 foot diameter logs frequently harvested. Further, such timber required the use of special high capacity log skidding and loading equipment requiring standard gauge trackage for support during movement from one location to another. In the pine forests however, where the trees were more moderate in size, narrow gauge logging railroads were well accepted by western lumbermen during the logging railroad era. This acceptance was strongly encouraged by the distinctly lower initial construction and continuing operating costs previously discussed.

Appendix IV

ECONOMIC CONSIDERATIONS

Throughout the chronicle of the Biles-Coleman narrow gauge, reference has been made to the cost of certain items of equipment purchased, or work tasks performed. Unfortunately, when such costs are detailed in the economic environment of 1977/1978* without a conscious knowledge of the change which has occurred in the value of the dollar over the intervening years, the casual observer invariably reaches the erroneous conclusion that logging equipment/construction costs in the "good old days" of 1925 through 1930 were really inexpensive.

The purpose of this appendix is to relate in terms of familiar dollars the costs of building and equipping a "typical" narrow gauge logging railroad in the 1925 to 1930 era. This will allow the reader to reach a valid understanding of what the true magnitude of such an investment was in those long departed years related to current financial terms. This section does not attempt to reconstruct what the actual costs of building and equipping the Biles-Coleman narrow gauge might have been. Sufficient data to address that subject is unavailable.

At this point it must be stressed that no one common index exists for the purpose of relating the value of the dollar in the mid to late 1920's to that of the 1977/1978 period. Various indexes, not all of which are continuous in terms of using the same base have been prepared by numerous governmental and private agencies for differing commodities and services. Since none of these indexes appear to be consistent with each other or even indicate completely common trends in the change of the value of the dollar, the author has developed a "composite index" based upon the equivalent values in the time periods being compared of Gold, Silver, Lumber, and Steel Rails/Machinery. Professional students of the rather inexact art of economics may well choose to argue with the choice of these commodities as a base for the development of a comparative price index. The selection of Gold and Silver as bases for such an index will surely be subject to criticism by such individuals and arguments may well be heard to the effect that the use of a smaller multiplier for the index would be proper. Despite the potential for such arguments, the true decline in the value of the dollar over the fifty year period being considered has been underrated in many studies. Accordingly, the results obtained through use of the "composite index" selected are probably as valid as any other index which might be constructed by using different statistical economic data as a base.

Regardless of the objections which may be felt by a few readers concerning the comparative price index selected, the resulting comparison gives a useful approximation of what the equivalent investment in 1977/1978 dollars would be to build and equip a "typical" narrow gauge logging railroad in the Pine Forest regions of the Northwest in 1925. Variations in these costs (usually increases in other regions of the West or decreases in the South or East) could be expected if the results of this comparison were to be shifted to other geographic/eco-

nomie regions of the United States.

The costs considered in this comparison do not include any special attention to the freight or transportation costs associated with equipment or material deliveries. The assumption is made that all equipment/material is to be delivered F. O. B. at the point where the new "typical" line would connect with an existing standard gauge common carrier railroad.

One other caution in interpreting the following cost comparison is also pertinent. The 1925 cost in 1977/1978 dollars for a new 42 ton Heisler locomotive is listed as \$130,378. This figure should not be used to infer that a buyer in 1978 (if such an unlikely customer were to exist) would be able to go to a major foundry/steel fabricator and buy an equivalent new locomotive for that cost. More likely, such a buyer would discover that the new "42 ton Heisler" could not be bought for less than some value in the cost range of \$300,000 to \$450,000 1978 dollars. Much of the "steam locomotive age" technology has been forgotten. The amount of design, redesign, and pattern making effort necessary today to produce an equivalent to the 42 ton Heisler built in 1925 would boost costs far above what the equivalent value of the 1925 purchase price computes to be. Further, the worker in the heavy machinery factory of 1978 does far less actual heavy physical work per man hour than did his equivalent of 50 years earlier. In building a product where mass production and mechanization techniques would show minimal improvements between 1925 and 1978 due to the "one-off" hand-built nature of the machine being fabricated, it is possible that many more labor hours would be required to manufacture a new "42 ton Heisler" in 1978 than were actually expended to build the same machine in 1925. As a cost comparison it should be noted that a new log truck with an eight wheel trailer could be purchased for about \$65,000 in 1977/78. At least two and probably three such vehicles would be required to provide a log hauling capability equivalent to that provided by the Heisler and 24 log cars used as an example in the following pages.

Common sense indicates that the values resulting from the following cost comparison, and the index used, are not excessive. The construction and equipping of a 20 mile narrow gauge in 1978 at a total cost of slightly less than two million dollars would be difficult if not impossible for even the most cost conscious contractor.

With all of the previous conditions, qualifications and exclusions firmly in mind, the reader can now proceed with an examination of the following problem:

"Determine the cost in 1977/1978 dollars of building, in 1925, a 20 mile narrow gauge logging railroad in the Pine region of the Northwest with an equipment roster and capacity equivalent to the Biles-Coleman narrow gauge subject to the following conditions:

*No attempt has been made to relate to 1979 or 1980 dollar costs due to the unstable economic conditions and high inflation rates currently existing.

1. Main line length 10 miles, rail weight 56 lb./yd.
2. Branch line/spur/siding length 10 miles, rail weight 35 lb./yd.
3. Right-of-way access obtained at no cost.
4. Equipment to be used identical in design, size, capacity, and quantity to that used by Biles-Coleman Lumber Co. at Omak, Washington.
5. Steel rail cost (new) \$43.00/ton or (used) \$30.00/ton.
6. Lumber cost for ties \$12.00/1000 board feet.
7. Splice plates, 56 lb. rail (new) 72¢ each or (used) 50¢ each.
Splice plates, 35 lb. rail (new) 43¢ each or (used) 30¢ each.
8. Spikes, 56 lb. rail (new) 2.7¢/lb. or (used) 1.9¢/lb.
Spikes, 35 lb. rail (new) 3.25¢/lb. or (used) 2.25¢/lb.
9. Index value of a 1925 dollar in 1977/1978 dollars — \$8.091".**

Consideration of the preceding problem is presented in the following study:

I. EQUIPMENT COSTS

Equipment Item	Qty.	Cost Comparison	
		1925	1977/1978
Heisler, 42 ton	1	\$16,114*	\$130,378
Speeder, M. A. C.	1	3,000	24,273
Loader, Model C	1	11,000	89,001
"Buncher" (crane)	1	14,000	113,274
42 foot log cars @ \$653.00 each	24	15,672	126,802
Totals		\$59,786	\$483,728

*\$15,055 F. O. B. Erie, Pennsylvania

II. TRACK AND ROADBED COSTS

- A. Roadbed Clearing/Grading Costs—Using B. C. L. costs or \$49,943 for 12.51 miles or \$3,992.24 per mile x 20 miles\$79,845
- B. Ties — 2992 per mile, each 6"x9"x6" (27 board feet), or 80,784 board feet per mile @ \$12.00/M bd. ft. = \$969.41 per mile x 20 miles\$19,388
- C. Tie/Track laying Cost per Mile=\$450.00 x 20 miles\$ 9,000
- D. Rails — 56#/yd. = 98.56 tons per mile
Rails — 35#/yd. = 61.6 tons per mile
 1. New rail @ \$43.00/ton for 10 miles of:
56#/yd. rail = 98.56 x \$43.00 x 10 ...\$42,380
35#/yd. rail = 61.6 x \$43.00 x 10 ...\$26,488
 1. (alt) Used rail @ \$30.00/ton for 10 miles of:
56#/yd. rail = 98.56 x \$30.00 x 10 ...\$29,568
35#/yd. rail = 61.6 x \$30.00 x 10 ...\$18,480
- E. Splice Plates @ 357 per mile
 1. New rail for 10 miles of:
56#/yd. rail = 357 x \$0.72 x 10\$ 2,570
35#/yd. rail = 357 x \$0.43 x 10\$ 1,535

1. (alt) Used (relay) rail for 10 miles of:
56#/yd. rail = 357 x \$0.50 x 10\$ 1,785
35#/yd. rail = 357 x \$0.30 x 10\$ 1,071

F. Spikes @ 6588 lb./mile and 5046 lb./mile 56 and 35 lb. per yard rail respectively:

1. New rail for 10 miles of:
56#/yd. rail = 6588 x \$0.027 x 10 ...\$ 1,779
35#/yd. rail = 5046 x \$0.0325 x 10 ...\$ 1,640

1. (alt) Used (relay) rail for 10 miles of:
56#/yd. rail = 6588 x \$0.019 x 10 ...\$ 1,252
35#/yd. rail = 5046 x \$0.0225 x 10 ...\$ 1,135

G. Total 1925 Track/Roadbed Costs

	Used Rail	New Rail
	\$161,524	\$184,625

H. Track/Roadbed Cost Comparison

	Year	
	1925	1977/1978
1. Built with new rail	\$184,625	\$1,493,801
2. Built with used rail	\$161,524	\$1,306,891

III. TOTAL TRACK/ROADBED AND EQUIPMENT COSTS

Total costs for the "typical" twenty mile narrow gauge logging railroad including construction and equipment costs follow:

	Cost Comparison	
	1925	1977/1978
1. Built with new rail	\$244,411	\$1,977,529
2. Built with used rail	\$221,310	\$1,790,619

Obviously, the investment required to bring the "typical" narrow gauge logging railroad from the concept to the operating stage, not counting the cost of the timber to be harvested or right-of-way acquisition cost, was far more significant than a casual consideration of the unadjusted 1925 values could ever reveal. Costs may have been cheaper in the "good old days", but in terms of absolute value not subject to inflationary variations, the costs of building and equipping a real narrow gauge logging railroad of moderate length were great enough to require the owners of such an operation to either assume a major debt or tie-up a large sum of cash which would have otherwise been available for other investments.

Hopefully, this cost study has provided the reader with a better understanding of the true magnitude of the investment required to build a narrow gauge logging railroad. This investment had to be made well in advance of the time that a significant return of capital could be expected to start flowing into the pockets of the owners or other investors. The cost of constructing a lumber mill to convert the timber hauled in by the railroad into salable lumber was also a major financial undertaking and was over and above those discussed previously. These facts help to explain why so many Western logging railroads/lumbering operations were started either directly by, or with the assistance of lumbermen who had attained a reasonable degree of financial affluence previously in the east, or on other successful operations in the west.

**The composite price index used as the basis for cost comparisons in this study was developed from the data sources listed below and was derived as follow:

COMPOSITE PRICE INDEX EVALUATION

Commodity	Year/Valuation 1925	Comparison 1977/1978	Equivalent Value of 1925 Dollar in 1977/1978 Dollars (a)	Composite Dollar Value Index
Silver	\$0.694/oz. (b)	\$5.218/oz. (c, f)	\$ 7.519	
Gold	\$20.67/oz. (b)	\$179.45/oz. (c, f)	\$ 8.681	
Steel Rails	\$43.00/ton (b)	\$313.00/ton (d)	\$ 7.279	
Lumber (index)	26.5	235.5 (b, e)	\$ 8.886	
		Totals/Composite Average	<u>\$32.365</u> = 4	\$ 8.091

- (a) That is \$0.694 is to \$1.00 in 1925 as \$5.218 is to an unknown value "X" in 1977/1978. Thus $\$0.694/\$1.00 = \$5.218/x$, or $x = \$7.519$. So \$1.00 of silver in 1925 could cost \$7.519 in 1977/1978 dollars. Etcetera.
- (b) From "Historical Statistics of the United States, Colonial Times to 1970", United States Department of Commerce, Bureau of the Census, House Document 93-78, 1971.
- (c) From April 4, 1978 issue of "Barrons", a Dow-Jones publication.
- (d) Courtesy of Mr. K. H. Hurdle, Association of American Railroads, Economics and Finance Department. Value as of January 1, 1978.
- (e) From "Information Please Almanac", Viking Press, 1977 edition to update values noted in reference "b", both of which use a common index value of 113.7 for 1970.
- (f) Values for gold and silver at the end of 1979 were in the \$395 and \$17/oz. range respectively for reference only.

GLOSSARY OF PERTINENT TERMS/NAMES

- A. H. & D. Co. (American Hoist and Derrick Co.):** Manufacturer of steam, gasoline, and diesel powered cranes and hoists used in logging, construction, etc. located at St. Paul, Minnesota.
- Baldwin:** Major steam locomotive manufacturing firm located at Eddystone, Pennsylvania.
- Buncher:** Nickname applied by Biles-Coleman personnel to the A. H. & D. Co. built WS4G type crane used for loading log trucks. This was evolved from the way that the crane was used to pull logs together into "bunches" containing sufficient timber to permit it to accomplish the loading, at one site, of a logging truck, set of high wheels, or logging arch.
- Bunk:** Horizontal structural member(s) placed on top of log car frame at right angles to car center line and used to support log loads, usually composed of structural steel shapes such as "I" beams or channels or a composite wood beam/steel "I" beam combination. Two or four bunks used per car depending upon car size and length of logs to be carried.
- C. N.:** Construction serial number of locomotive, speeder, or crane.
- Connected Truck:** P. C. & F. Co. name for two or four bunk railroad logging cars.
- Cougarville:** Name of site on Omak Mountain where the first Biles-Coleman lumber mill/logging camp was built on the banks of Mill Creek. Located on the Southwest side of the peak on the Colville Indian Reservation.
- Degree Curve:** A measure of the amount or sharpness of curvature equal to the center angle between two radii of any given curve intersecting a chord on the circumference of the curve exactly 100 feet in length.
- Disautel:** Village on the Colville Indian Reservation near the Eastern end of the Biles-Coleman narrow gauge which was the center of logging and log re-load operations during the years 1925 through 1948. The town was named after Maximie Desautel, son of Joseph Desautel DeGaspar, a French Canadian from a family known among the Okanogan Indian Tribes as a strong race of men. M. Desautel died of tuberculosis at home in the village named after him at the age of 74 on June 19, 1928.
- Feet:** Contraction of the term board feet, a unit of lumber measure. A board foot is a unit of lumber measurement one foot long, one foot wide, and one inch thick or its equivalent.
- Gyppo:** A small logging operator usually working on a contract basis whose usual equipment assets started with a single truck and perhaps a crude log loader.
- Heisler:** Gear driven two cylinder logging locomotive built by the Heisler Locomotive Works of Erie, Pennsylvania.
- Mallet:** Steam locomotive with articulated wheel arrangement consisting of two separate engines, the rear one of which was rigidly attached to the boiler/cab assembly having high pressure cylinders, while the front one having low pressure cylinders was free to pivot from side to side to allow the machine to negotiate sharp curves, the two different size sets of cylinders allowing steam supplied by the boiler to be used twice thus yielding higher operating efficiency and reduced fuel consumption.
- Nespelem:** Town on Colville Indian Reservation some 22 miles Southeast of Disautel via State Highway 10A which served as headquarters for the reservation and as administrative center for the control of Indian owned timber sold to Biles-Coleman.
- Omak:** Community in Okanogan County in the North-Central portion of Washington State built on the banks of the Okanogan River and noted for the production of fruit from numerous orchards as well as being the site of the mill, starting point of the Omak Creek narrow gauge, and headquarters of the Biles-Coleman Lumber Company.
- P. C. & F. Co.:** Pacific Car and Foundry Company, a railroad car builder specializing in the design and construction of logging railroad equipment located at Renton, Washington and known in earlier years first as the Seattle Car Manufacturing Company and later as the Seattle Car and Foundry Company.
- Percent Grade:** A measure of the steepness of a grade equal to the number of feet that the track rises or falls in any 100 foot length section of railroad, i.e. a 2% grade rises 2 feet for every 100 foot horizontal length of track.
- Plymouth:** Trade name for gasoline-mechanical locomotives built by the Fate-Root-Heath Company of Plymouth, Ohio.
- Sharon M. C. B.:** Trade name applied to a specific design of automatic coupler manufactured by the National Malleable and Steel Castings Company complying with specification requirements of the Master Car Builders Association (M. C. B.), an organization later superseded by the American Railway Association.
- Shay:** Gear driven two or three cylinder steam logging locomotive built by the Lima Locomotive Works of Lima, Ohio.
- St. Mary's Mission:** Catholic Church operated boarding school for Indian children located a short distance East of Omak on the Colville Indian Reservation a few hundred yards Northwest of the mouth of the most rugged portion of the Omak Creek Canyon.

Shook: Lumber stock cut to dimension specifically for the manufacture of boxes or caskets.

Skidding: The act of towing logs from the point where they were cut to another location, usually by horse/ox team or tractor/high-wheel or arch combination.

Slide Back Loader: Self-propelled log loading crane mounted on skids able to slide from one log car to another over the car bunks as loading of the log train proceeded.

Speeder: Gasoline engine powered railcar usually used to carry loggers and supplies to/from work and for

the transportation of track maintenance materials, tools, and crews.

Spur: A branch track off of the main railroad line. Usually short in length and built to permit access to a specific location or area where a desirable stand of timber stood ready to be logged.

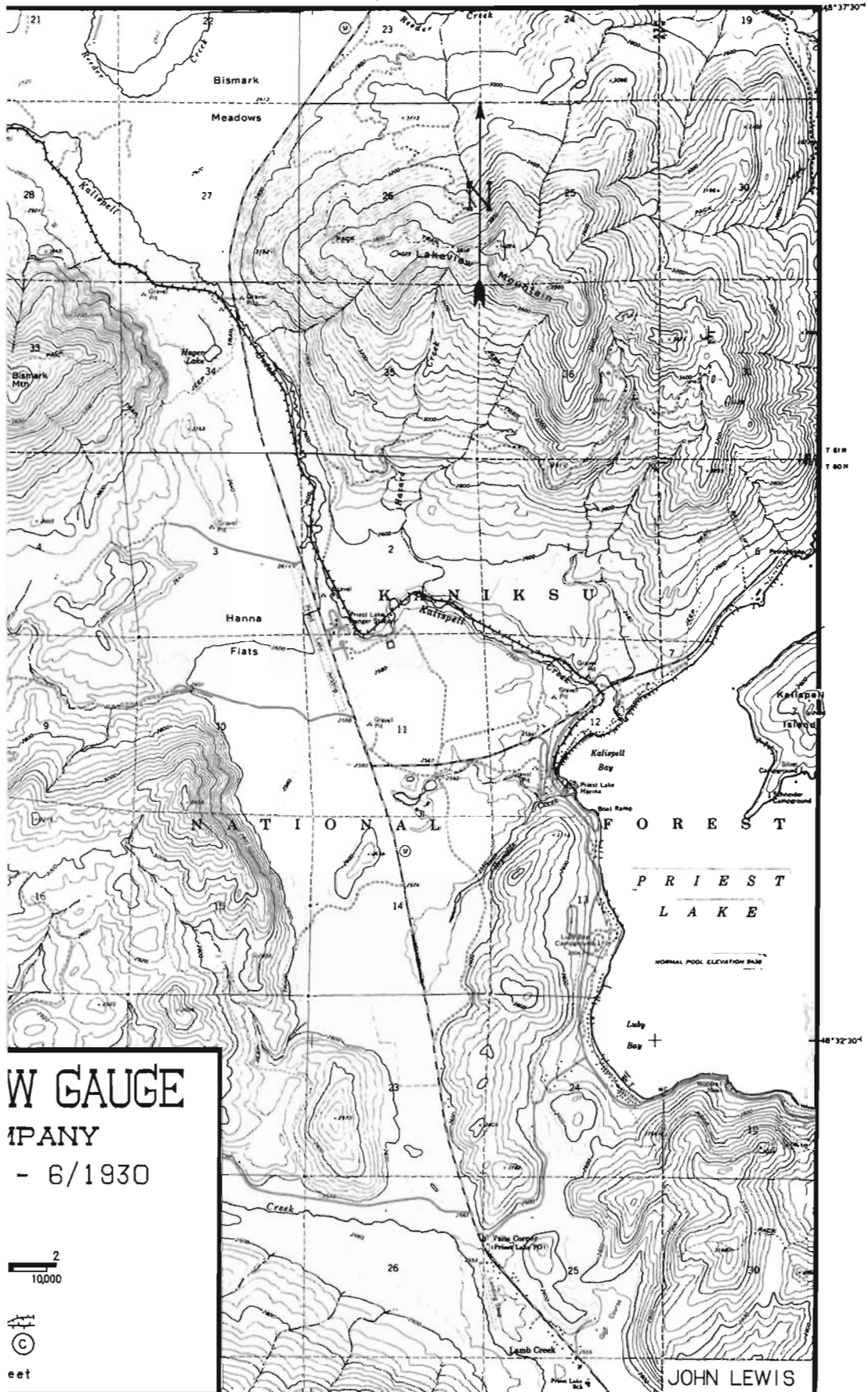
Yarding: Machine dragging of logs from the point where felled to another location, usually a loading point, by cables/chokers connected by cable (wire rope) to the winching drums of a donkey engine, skidder, or log loading crane.



Main line right-of-way of the abandoned Omak Creek Railroad at Disautel looking toward the east in December of 1965.

Authors Collection

NO. 10000 3 M.



W GAUGE
MPANY
 - 6/1930



©
 eet

JOHN LEWIS

117° 30'

116° 55'

PRIEST RIVER 26 M.

48° 37' 30"

T 61 W
 T 60 N

48° 32' 30"

PRIEST LAKE NARROW

DIAMOND MATCH CON

LOGGING RAILROAD 5/1927

GRAPHIC SCALE

MILES

FEET

0

1000

5000

DM. Co. Narrow Gauge (36" ga.)

Logging Camp Site

Contour Interval

40

2°30' WASH

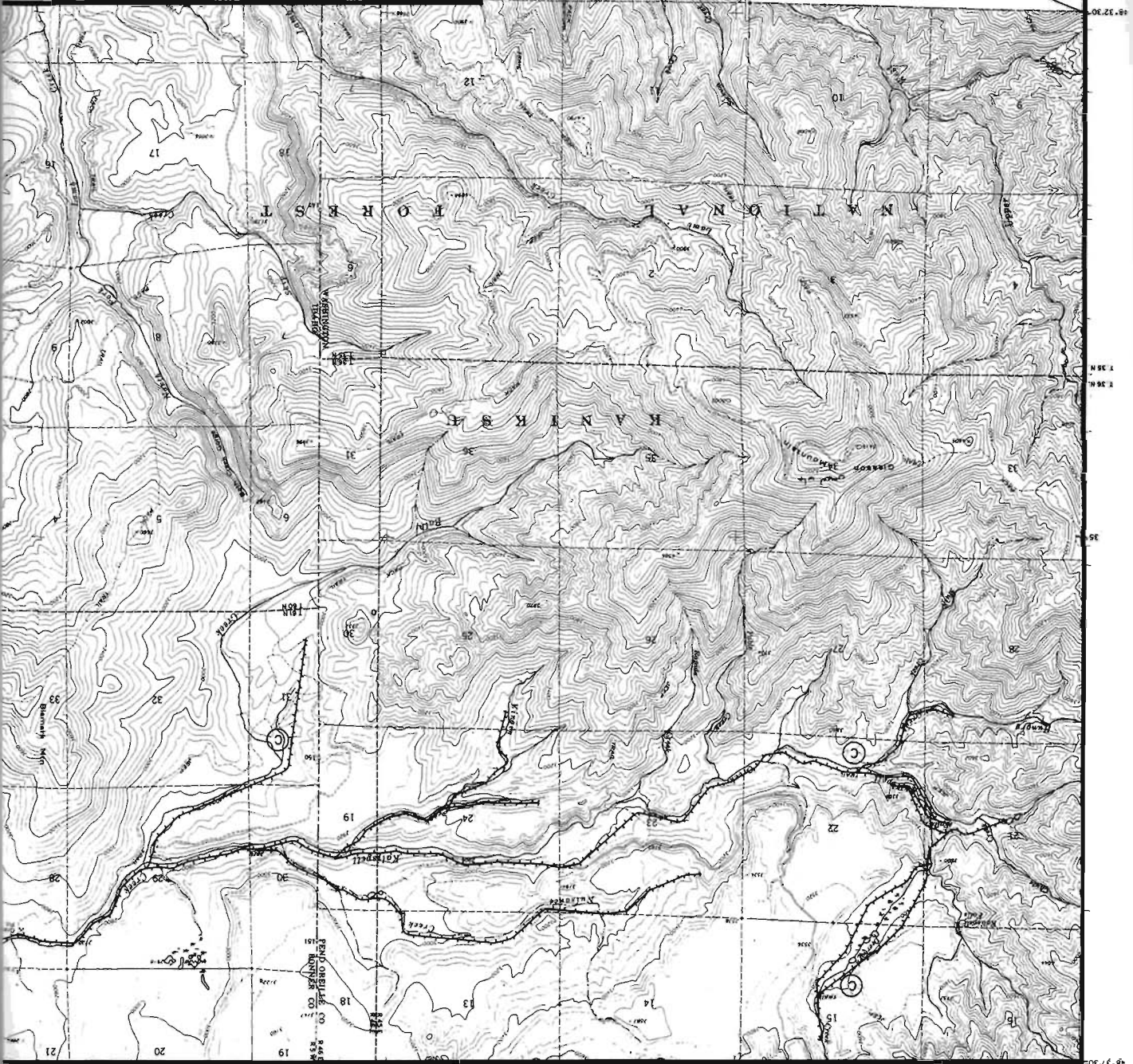
IDAHO

117°00'

MAP LOCATION

IDAHO

WASHINGTON



WASH. IDAHO

48°37'30"

