

**Forest History Association of BC (FHABC)**

**Publishers Note:**

## **Highlead Logging on the BC Coast in the 1920s**

**FHABC is pleased to publish this story by Allen Hopwood. A short teaser appeared in newsletter 114, June 2023, while the full article is hosted on our webpage.**

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# Highlead Logging on the BC Coast in the 1920s<sup>1</sup>

Allen Hopwood. 2023.

*"..... Logging was one of the founding industries of the New World, and surely one of the most colourful, and here in the Pacific Northwest is where it reached its final glorious climax. .... Logging is the story of a certain kind of man, a true-breeding North American species that evolved through 300 years of lonely and brutal confrontation with the continent's wilderness, to be swallowed in the end by the civilizing tide that followed it west."*

- Howard White

*It seemed to us then that the technique of logging had reached its peak, that nothing could be faster or more efficient or more brutally powerful than the steam monsters we served – skidders that swung three and four great logs at a turn across canyons and valleys, bringing them twelve hundred, fifteen hundred, even two or three thousand feet from the bush to the tracks, high-lead machines that roared throaty answer to the signal whistle, tightening their heavy sky lines, rattling the chokers, cracking the logs free from tangled ground six or eight hundred feet from the spar tree; and the locomotives, seventy-ton geared Shays that dragged empty cars up four-per-cent grades and clattered back down with the loads from the logging sides; the hundred-and-twenty-ton straight-connected Baldwins on the mainline, swinging grandly down to the beach twice a day with sixty or more loads of logs behind them.*

- Roderick Haig Brown

The great size of the trees and the ruggedness of the terrain for the most part obviated the general use of oxen and horses for moving logs out of

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<sup>1</sup> This article does not cover skyline logging, a more specialized form of highlead logging. See end for image credits.

the forests in the Pacific Northwest. By employing a steam-powered engine and overhead cables (for lift) these difficulties were (largely) overcome.

The Oregon Encyclopedia describes a steam donkey (or donkey engine) as follows (with some modifications):

*A donkey engine was an integrated machine consisting of a power plant and gearing that turned one or more drums or winches containing wire (originally, hemp) rope. Designed to lift, drag, and move logs from the stump to an accumulation point, donkey engines were also used to load logs on (rail) cars that transported logs to distant mill sites. Though invented in California, the donkey engine helped accelerate timber harvesting throughout the Pacific Northwest.*

After the railroad, the donkey engine was the next major application of industrial revolution technology to the movement of logs. Prior to the invention of the donkey engine, logs had to be moved by gravity or brute force, usually in the form of hand labor or by using teams of oxen or horses. The advent of the steam-powered donkey engine made high-volume, mechanized logging possible, thus ushering in the era of large-scale logging and lumbering during the early years of the twentieth century.

John Dolbeer of the Dolbeer and Carson Lumber Company of Eureka, California is generally credited as the inventor of the donkey engine. He first tried out his invention in 1881, and the device was patented in 1882. Many innovations followed, including the use of wire rope, the addition of more cylinders, and multiple drums.



*(The colour photograph above shows a restored single-drum steam donkey. The mural depicts a single-drum steam donkey [in 1902] yarding a large log, with a line horse in the background waiting to pull the cable to the next log. Note that the log is being pulled along the ground through an obstacle course of stumps, gullies, rocks and streams. Getting "lift" on logs via highlead yarding using a spar tree came later. This mural, painted by Nancy Lagana and Frank Lewis, is on display at Chemainus.)*

Generally devised to yard and load logs, the design of the donkey engine evolved greatly. Early models dragged logs along the ground and used "line-horses" to return cable to the woods for subsequent log "turns". Later, multiple-drum units allowed for a continuous-loop system, enabling the donkey engine itself to return rigging to the woods without human or animal intervention. With the advent of "high-lead" logging systems, wire rope was suspended from spar trees, providing lift when moving logs toward accumulation points with corresponding improvements in efficiency. Most donkey engines were designed for mounting on paired, parallel sled logs that enabled the machines to pull themselves across the landscape.

From the 1890s until the 1920s, most steam donkeys were wood-fired. Labor savings by converting to oil-burning engines were significant, eliminating a woodbuck and a fireman from each donkey crew. By the late 1930s, the fuel efficiencies, the elimination of the need to pipe water to the donkey, and the reduced fire hazard of internal combustion engines spelled the end of steam engines in the woods. Rationing and



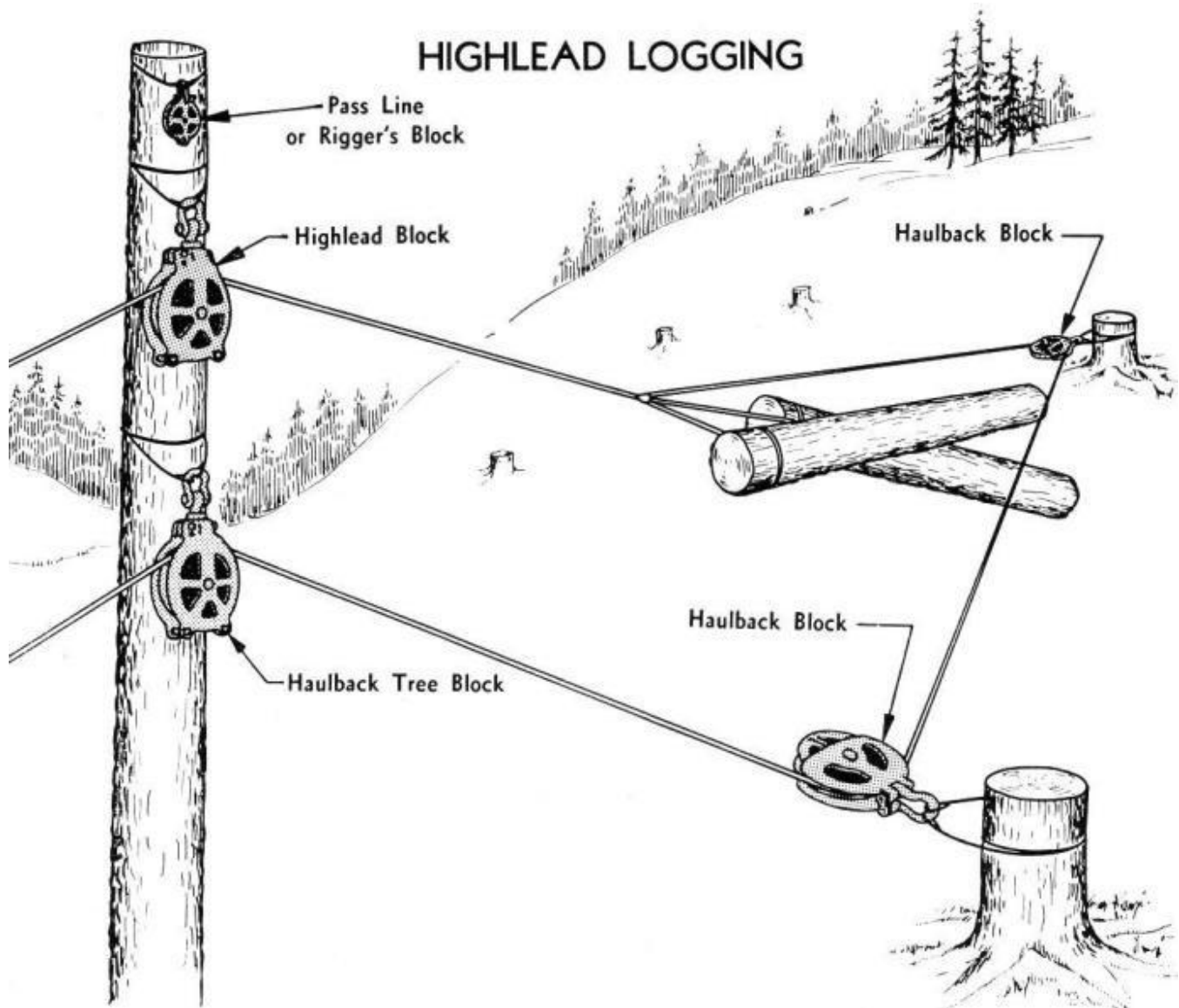
the conversion of industrial goods manufacturing to military production during World War II delayed the complete changeover from steam to internal combustion motors until after the War.

The steam donkey pictured here has been converted to run on gasoline rather than wood. Note the sleigh (or sled): the two log skids (with cross-members) bolted to the bottom of the donkey engine and its winches. The fronts of the two logs are tapered to allow "easier" locomotion as the sleigh pulled itself into position beside a spar tree. Imagine the difficulties of and skill involved in manoeuvring a steam donkey through broken terrain, stumps, rock outcrops, and felled and bucked timber.



Steam logging or wire-rope logging, using a highlead yarder, first appeared in BC in 1911 (Comox Logging). This method had been in use elsewhere in North America since around 1900.

The logging crew of the 1920s required a range of skills and body types. Ian Mahood said that "ladies of the night and hucksters... knew (that)...the loggers' various physical characteristics revealed their spending power."



Fallers and (log) buckers had broad shoulders and thick arms from wielding axes and steel saws ("misery whips") all day. The pictures show fallers' tools: cross-cut saws (misery whips), tools for keeping the saws sharp, springboards, double-bitted axes, and a whiskey bottle of oil

to lubricate the saws with a sharp hook to keep it handy while the fallers were on their springboards. Springboards are wooden planks, 1.5-1.8m long, inserted into notches up to 3.7m above the ground. Fallers stood on the springboards to avoid having to cut through the swelled butts of trees.





Around 1900, the first dragsaws were introduced to buck logs to length. Dragsaws were the forerunners of the modern chainsaw. The one pictured here is a 1923 Wee MacGregor "portable" (136 kg) model powered by a one-cylinder gasoline engine. The photograph below shows an early (1942) chainsaw. Chainsaws were first used on Vancouver Island at H.R. MacMillan's Franklin River logging division where they were phased in from the mid-1930s to the early 1940s. Early powersaws weighed about 68 kg.

12 WESTERN LUMBERMAN JUNE, 1922

THE "Wee MacGregor"  
Trade Mark Registered

**PORTABLE DRAG SAW**

*For Cutting Shingle Bolts, Bucking Wood  
For the Donkey and Land Clearing*

Used and specified by Dominion of Canada Government and by Government of British Columbia

**New Price: \$160**

|   |  |  |
|---|--|--|
| <b>SPEED</b><br>Cuts 15 to 30 cords per day — a fair average. | <b>ECONOMY</b><br>Cuts less than \$1.00 for a full day's work. | <b>EFFICIENCY</b><br>Adopted by the leading camps; will out-cut ten men. |
|---|--|--|

Order Repairs from Manufacturer and get Service and Reduction in Prices

Beware of Imported imitations. The "WEE MacGREGOR" is made in British Columbia by B. C. Workmen, using B. C. Materials.

Write for New Folder.

**THE HANES-WALKER ENGINE & MACHINERY CO., LTD.**  
SUCCESSORS TO THE WEE MacGREGOR SAW CO.

Granville Island Phone Seymour 4417 Vancouver, B.C.



Many fallers were Scandinavian. They were independent, militant, and strong in physique and character. They stuck together and were said to have built the loggers' union.



Supervisors of fallers and buckers were/are called Bull-buckers.<sup>2</sup> In a large operation, a Bullbucker might have been in charge of 100 fallers and buckers, 8-10 scalers and a saw filer. Payment for falling was piece rate – a base price per thousand board feet, with any increase (based on timber species / size / quality and terrain) negotiated between the falling team and the Bullbucker. This system was in effect until a falling day rate was put in place in 1972.

The number one problem for Bullbuckers was accidents, followed by quality control.<sup>3</sup> Falling was and is the most dangerous of logging jobs. All fallers make mistakes, but a good faller recognizes his mistake while making it. Ninety-five percent of falling accidents were due to human error.

High riggers who limbed and topped the spar trees and "hung" the rigging had huge thighs, legs like springs and nerves of steel. High riggers were the elite of a logging crew. Using long spikes ("spurs") strapped to their lower legs and a rope attached to a strong leather belt,

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<sup>2</sup> Around 1972, a politically correct desk jockey in Canadian Forest Products Ltd.'s head office decided that Bullbuckers would be renamed Falling & Bucking Supervisors – a much more modern and respectable title. Predictably, Canfor's loggers transposed two letters in the new title. An embarrassed head office soon got the message and the rightful title was restored.

<sup>3</sup> Poor falling results in excessive breakage and waste of merchantable portions of trees. Poor bucking results in logs being cut to the wrong lengths causing expensive waste in the sawmills which require precise log lengths for each species and grade of log.

they climbed the spar trees, limbing with an axe, and then topping them at a height of about 30-45m. After the tree stopped swaying from the top dropping off, some riggers would show off by standing on top of the spar – some peed and a few even did headstands. High riggers then carried up a small steel block (pulley) and a narrow cable to be used to pull up the big mainline block (bullblock, pictured here) and haulback block and their straps, then the mainline and haulback line themselves, as well as guylines.



The levermen who operated the steam donkeys had to be lean and agile, with "a touch as gentle as a surgeon's" (one abrupt movement of a lever could whip the rigging into the crew). The rigging consisted of heavy steel swivels, shackles, hooks and chokers – see the photos below.

The hook tender was the boss of the rigging crew – a jack-of-all trades with a "well-balanced body" and often a hair-trigger temper.<sup>4</sup>

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<sup>4</sup> I had a hooktender who had the well-earned nickname of "Gasoline Gus." Hooktenders were held responsible for the carefully watched log production at each "side."

The rigging slinger "spotted" the rigging on the logs he wanted wrapped by the chokers,<sup>5</sup> untangled the chokers for the chokermen and directed which logs would be wrapped for each turn. Rigging slingers were lean and demanding. "Rigging slingers, providing they had the command of profanity for it and the necessary savvy, were generally promoted to full-fledged hookers (hook tenders) in time."

Chokermen had to be agile and resourceful at finding holes to get the wire chokers under each log. Chokermen needed long arms and were said to walk with "the uncertain, jerky gait of those who expect to fall face down with repeated, exhausted frequency."

The whistle punk, in the 1920s, was middle-aged (disabled or no longer able to do strenuous work), "walked with one ear forward and the other backward, listening, poised to translate the rigging slinger's voice to an order (whistle signal)" to the leverman to move the rigging. The whistle punk "had the hangdog look of a man who knew one moment of inattention or a wrongly timed (whistle) signal could be fatal to a comrade."<sup>6</sup>

Chasers unhooked the chokers when the logs reached the accumulation point (landing) at the spar tree. Chasers were usually not mean enough to be rigging slingers. The photograph, below and right, shows a chaser untangling butt rigging and chokers.

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<sup>5</sup> A choker is a piece of cable with a steel knob at each end and a sliding "bell" into which one knob fits to form a slip noose around a log, "choking" it – see the photograph below.

<sup>6</sup> A wire, like a clothesline, was strung to a steam whistle on the steam donkey. Pulling on the line set off the whistle; a special set of signals was used to direct the leverman in his operation of the logging lines.



*Chaser untangling butt rigging and choker*



*Rigging, swivels*

Loading logs onto railcars or logging trucks involved a crew of five. The engineer ran the lines on the hayrack, heelboom or gin pole,<sup>7</sup> two second loaders set heavy steel tongs near each end of a log, the head or first loader directed the logs into perfect pyramids on the railcars and undid the tongs if necessary. The third loader painted and/or stamped the logs to show their origin (i.e., which side had produced them).<sup>8</sup>

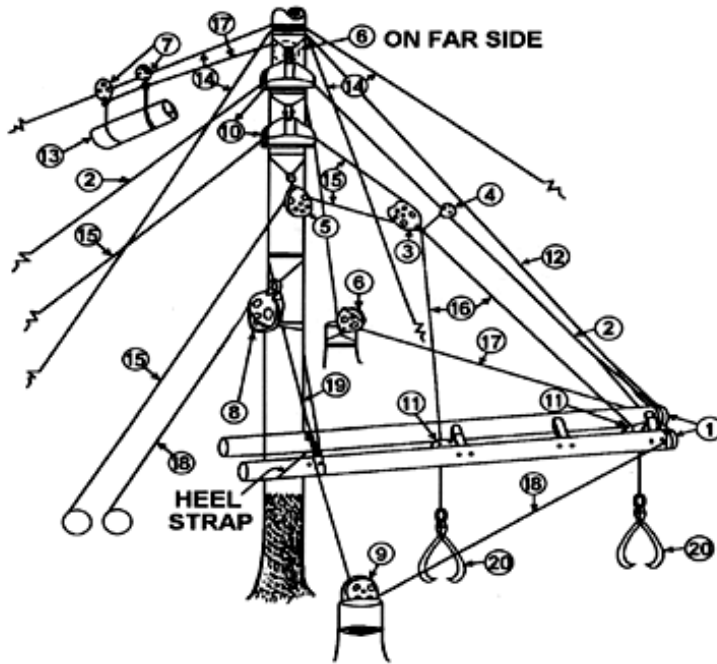
Diagrams of Hayback Boom Loading and Heel Boom Loading:

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<sup>7</sup> Heel Boom: "A loading boom attached to the sled of a cherry picker (a small donkey engine) and fitted with a single line and tongs. The engineer used the heel boom to swivel, position, and place logs one at a time on a rail car."

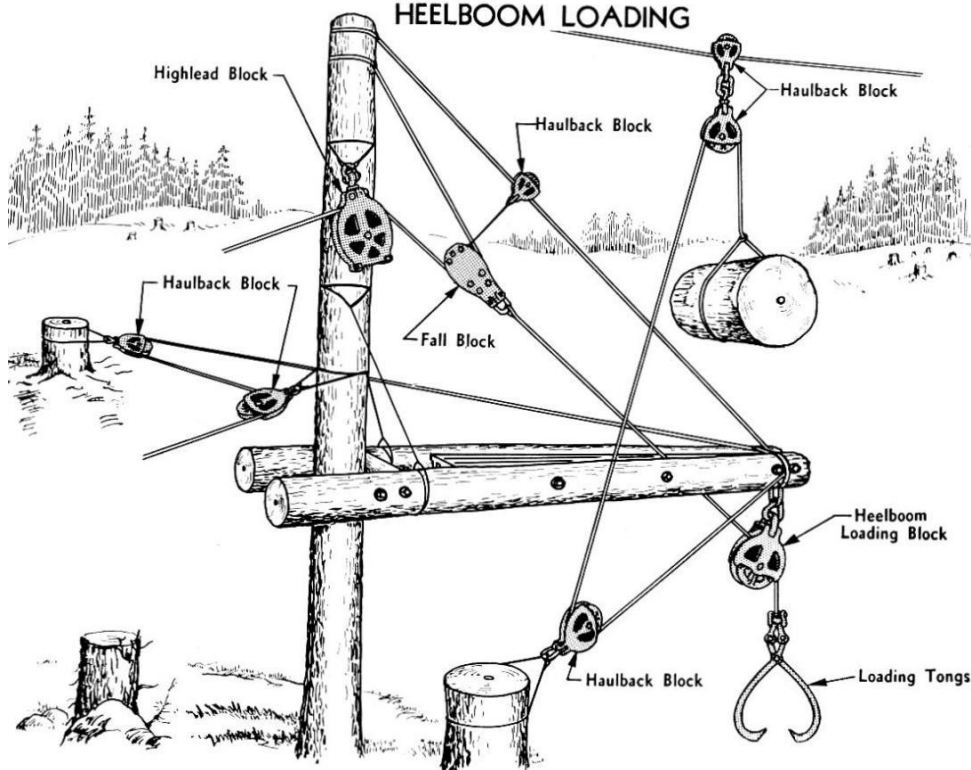
<sup>8</sup> Other than that a special machine (loader) was used, the same system was in use in 1965 when I was logging at Holberg. One Saturday a crew needed a third loader and they picked me. I had to get on top of each load and paint and stamp each log. On a brand new logging truck, the paint can "fell over" and red paint ran down the shiny yellow cab. The truck driver and Woods Foreman taught me some new words and that was the end of my third loading career.

### HAYRACK BOOM LOADING



- (T) Tail-Hold to Stump
- (1) Loading Boom
- (2) Sail Guy
- (3) Loading Block
- (4) Sail Block
- (5) Load Line Lead Block
- (6) Squirrel Line Swing Block
- (7) Squirrel Suspension Block
- (8) Haul-Back Lead Block
- (9) Haul-Back Swing Block
- (10) Tree Shoe or Jack
- (11) Tong Line Block
- (12) Loading Boom Safety Guy
- (13) Squirrel or Counterweight
- (14) Buckle Guys
- (15) Loading Line
- (16) Tong Lines
- (17) Boom Swing Line
- (18) Boom Haul-Back Line
- (19) Boom Hold-up Straps
- (20) Loading Tongs

### HEELBOOM LOADING





*1920's loading operation*

In camp, there were cooks, bullcooks (usually an old or disabled logger



doing odd jobs such as cleaning bunkhouses and making beds), flunkies (cooks' helpers), handymen and mechanics.

The rail lines were built by gandy dancers, often recent immigrants.<sup>9</sup>

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<sup>9</sup> A gandy dancer was a hard-working, poorly paid section hand who laid and maintained railroad tracks. A gandy is a long bar to lever tracks into alignment. The coordinated movement of the crew to get tracks re-aligned resembled a dance.

This 1919 photograph displays gandy dancers laying tracks for Royston Lumber.



LAYING TRACKS AT ROYSTON LUMBER CO., BEFORE 1919 -

Timber cruisers measured and estimated the volume and quality of merchantable timber in a given area of forest.

Keeping the steam donkey running required wood cutters and spark chasers (demonstrating the ever-present threat of forest fires.)

There was a host of ancillary jobs in the bush and in camp, including foremen, timekeepers, log scalers, blacksmiths (a 1920s blacksmith's shop is pictured) and mechanics.



"If there was a demi-god in camp it was the forest engineer." He chose the grade, designed the bridges and measured and located the areas where the logging cables would reach to bring in the logs.

"Workers evaluated camps by rating the meanness of the superintendent and (more importantly) the quality of the food...."





I borrowed some of the foregoing material from Ian Mahood's graphic description of railway loggers and logging. I knew Ian and don't think he would mind.

Loggers got from camp to the bush and back in crummies, old boxcars with wooden benches. The picture indicates that the crummy was well named. Some had the luxury of a woodstove.



Comox Logging is said to have introduced highlead logging (then called "aerial logging") to BC in 1911 in the form of track-mounted (i.e., on a rail car) Lidgerwood steam skidders (made in New York State).

A truck was first used for transporting logs in Washington State in 1913. After WWI ended, "a plentitude of surplus military trucks made their adoption attractive to logging companies, particularly smaller outfits that could not afford expensive locomotives."

The first logging trucks had open cabs, solid, hard rubber tires, and no bulkhead. They were extremely dangerous and hard to handle. Drivers had to be very strong to affect steering and braking. In early days, logging trucks "killed men like flies." A driver had to be "half Edison and half Sasquatch."

In 1925, Seattle Car & Foundry Co. introduced a two-wheeled trailer for hauling logs by auto truck (or motor truck), "modern mechanical steeds," capable of transporting up to 22,000 kg of logs according to the manufacturer. Logging trucks ("motor trucks and trailers") were introduced to BC in late 1918. Royston Sawmill and Courtenay Sawmill were using them in the Comox Valley by late 1919.<sup>10</sup> The photographs on the next page compare a 1919 Seattle Car logging truck with a modern self-loading one.<sup>11</sup>

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<sup>10</sup> In January 1920, the Western Lumberman reported that the gasoline driven motor truck and trailer had more and more potential as the mileage of improved road was constantly increasing.

<sup>11</sup> This self-loader was working on my Woodlot Licence near Courtenay and is owner-operated by my long-time contractor and expert, Paul Appleyard.



**A 5-TON GENERAL MOTORS CO. TRUCK AND 8 $\frac{1}{2}$ -TON PACIFIC CAR & FOUNDRY CO.'S DOUBLE BUNK UNIVERSAL TRAILER, LOADED AND READY TO MOVE DOWN THE MOUNTAIN, A DISTANCE OF A MILE AND A HALF, THE ELEVATION AT THE LOADING POINT BEING 1200 FEET HIGHER THAN AT THE WHARF, WHERE THIS LOAD OF LOGS WILL BE UNLOADED: 5,500 FEET B. M. OF FIR LOGS ON THE TRUCK AND TRAILER.**



Once the logs got to the booming grounds, the nimble boommen took over, balancing on floating logs and using pike poles to steer each log into its designated pocket based on species and grade.



In 1920 in BC, there were 268 logging operations (i.e., more or less "permanent" camps) employing 7,767 loggers. The average logger made \$1,572 per year and worked 202 days (\$7.78/day). Superintendents and

managers in these operations earned an average of \$3,010 in salary. Clerks and other salaried personnel earned an average of \$1,408. These logging operations produced 1.316 billion board feet of logs which sold for an average of \$19.82 per thousand board feet.<sup>12</sup>

In 1920 in BC, there were 435 "donkey engines" (272 powered by steam and 163 by gasoline) employed in the 268 "more or less permanent" logging operations (camps).

### Illustration Credits

|                          |   |
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| Single-Drum Steam Donkey | A. Hopwood from the BC Forest Discovery Centre                  |
| Single-Drum Steam Donkey | A. Hopwood from a Chemainus Mural by Nancy Lagana & Frank Lewis |
| Steam Donkey             | A. Hopwood  |
| Steam Donkey             | A. Hopwood  |
| Highlead Logging         | Mosaic of Forestry Memories                                     |
| Fallers                  | Montanapictures.net   |
| Hand Fallers' Tools      | A. Hopwood from the BC Forest Discovery Centre                  |

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<sup>12</sup> These statistics come from a Dominion Bureau of Statistics report. The BC Forest Branch reported log production of just over two billion board feet in 1920 (which included three million board feet of railway ties). The federal report only accounted for larger logging operations ("more or less permanent" camps) and did not include railway ties or timber from land clearing, small-scale operators and miscellaneous production. The BC Government placed the overall number of logging operations at 2,796. The BC Forest Discovery Centre at Duncan and the McLean Mill at Port Alberni are wonderful forest history museums. They provide more visual and complete representations of logging in the 1920s. The founder of the BC Forest Discovery Centre was Gerry Wellburn (1900-1992), a venerated forestry figure in BC. Before starting his own sawmill and logging business in 1928, he worked in the circulation department of the Victoria Times newspaper. In 1945, Wellburn sold his forestry company to H.R. MacMillan.

|                                      |   |
|--------------------------------------|---|
| Hand Fallers' Tools                  | A. Hopwood from the BC Forest Discovery Centre      |
| Dragsaw 1923                         | Western Lumberman Magazine                          |
| Early Two-Man Chainsaw 1942          | BC Campus   |
| High Rigger                          | Mendocino Coast Model Railroad & Historical Society |
| Bull Block                           | A. Hopwood from the BC Forest Discovery Centre      |
| Chokers                              | A. Hopwood  |
| Chaser & Butt Rigging                | A. Hopwood  |
| Hayrack Boom Loading                 | Mosaic of Forestry Memories                         |
| Heelboom Loading                     | Mosaic of Forestry Memories                         |
| Gin Pole Loading                     | Pinterest   |
| Bunkhouse                            | A. Hopwood from the BC Forest Discovery Centre      |
| Laying Tracks at Royston Lumber 1919 | Cumberland Museum & Archives C150-040               |
| Blacksmith's Shop 1920s              | A. Hopwood from the BC Forest Discovery Centre      |
| Cookhouse                            | A. Hopwood from the BC Forest Discovery Centre      |

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|-----------------------------------|---|
| Crummy                            | A. Hopwood from the BC Forest Discovery Centre                                |
| Logging Truck 1919                | Seattle Car & Foundry Co.   |
| Modern Self-Loading Logging Truck | A. Hopwood  |
| Booming                           | Tim-ber Blog  |
| Booming Ground                    | Jewish Museum & Archives of BC  |
| Booming                           | A. Hopwood from a Chemainus Mural by Frank Lewis, Nancy Lagana & Paul Marcano |