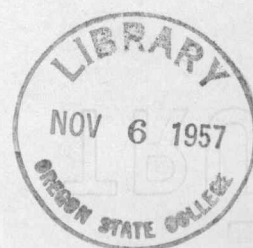


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FALLING AND BUCKING

by

HARRY OHLSEN



Falling and Bucking

by

Harry Ohlsen

A Thesis

Presented to the Faculty

of the

School of Forestry

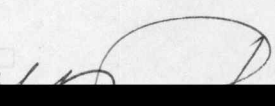
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Bachelor of Science

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SCHOOL OF FORESTRY
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FALLING AND BUCKING

As falling and bucking is a major operation and its costs makes up 10 to 30 per cent of the cost of logging, a well planned and executed logging operation needs a well organized falling and bucking department..

Many operators go by a hit and miss system in the supervision of their cutting crews. The bul/buckers, scalers, and men do not know just what is expected of them. The other parts of the logging operation has advanced greatly, but the falling and bucking has lagged.

By a general discussion of this subject I hope to give a complete picture of falling and bucking, its improvements and some of the problems connected with it.

Historical Notes

The first falling and bucking of logs was done with the axe. Saws came into general use for falling and bucking in the 1880's. Alex Polson was the first operator to bring them into use in the West. Crosscut saws have been improved from the old two tooth saws to the present 4 tooth saws in both the kind of steel that is in them and the finish. The various types power saws are being used more and more, and have been greatly improved.

Organization

In setting up a falling and bucking department the first task is the selection of the key men. In a large organization of more than one camp, a falling and bucking supervisor is needed. He should help the bullbuckers look over the settings and lay out the strips for the fallers. The controlling

factors of the strips are topographical features, principally ridges, gulleys, and the proper distances to insure safety of the men on adjoining strips. A set of fallers may work up to as long as 3 months on one strip. The falling and bucking superintendent sometimes aids in the selection of the spar trees.

The logging superintendent's approval should be gotten by the falling and bucking superintendent on the hiring of all bullbuckers, scalers, markers, and filers. The hiring of the other men on the cutting crew should be done by the falling and bucking superintendent and the bullbucker together. The bullbucker assigns the strips to the fallers and buckers.

There is a need for better trained bullbuckers and cutting foremen. They should have knowledge of grading, scaling, and log values. They also must be practical fallers and buckers. In cases where the bullbucker is also scaler he must also have experience in scaling, besides being capable of handling and judging men.

More young men should be trained for the more important positions, and this can be done only through education and co-operation.

The scalers work directly under the bullbucker and should co-operate with him to get the most efficiency from the cutting operation. The scaler should have practical falling and bucking experience and also woods and water scaling experience. He should have thorough knowledge of

values and grades of logs. He must be honest and accurate in his work. He must be able to go along with the men.

When the scaler marks the trees for bucking he can usually mark and scale for 3 sets. When he is not required to mark the trees, he can scale the output of four to six sets of fallers and buckers. His tools are a scale rule, a water-proof scale pad, pencil, a fifty-foot steel tape, crayon, and when marking, an axe.

The filer for fallers and buckers must be a skilled man. The saws are filed every day or every other day. One saw is filed while the other is being used. Filers can file for 6 to 12 sets of fallers and their buckers. A good filer can save the company a great deal and is essential. Poor filing is one of the greatest sources of trouble in a cutting crew.

There is shortage of real good filers and there are very few young men learning to be filers.

Bucking

Bucking consists of sawing the tree into logs lengths. In bucking the men must saw the trees in such a way as not to split them. The proper use of props, undercutters, and notching of the tree will prevent buckers' splits.

Bucker's tools usually consist of two 7-foot saws, one saw handle, one double bitted axe, two or three 8-pound wedges, one 10-pound sledge, an oil bottle, and sometimes a 50-foot steel tape. Sometimes a short handle shovel is used by windfall buckers for embedded trees.

Windfall buckers should be the most experienced men on

the bucking crew. Windfalls should be bucked ahead of the fallers and in short log lengths, never over 32 feet. Because of their criss-cross direction they are always a hazard to green timber when it is felled across~~s~~ them, consequently, short length logs move and give more readily, resulting in less breakage to both trees. Clean bucking of windfalls and other trees is an aid to yarding.

The day work basis of pay is usually used on windfalls. But when the contract system is used the contract rate is higher than for green timber. Windfalls are sometimes very difficult to buck, due to the way they have fallen, therefore, it is important that the men are capable and efficient.

In bucking there are some losses of scale due to man made defects such as ~~breaks~~ or splits, insufficient trim, odd length logs, poor marking on crooked and "schoolma'am" trees. Marking and bucking to grade must be followed to get the greatest return from the logs. Steel tapes should be used in marking instead of the old marking stick.

Falling

After the strip is assigned to him, the head faller must examine and plan to fall the timber on his strip in such a manner that the most timber can be saved and still be in good shape for bucking and yarding. If the strip is not well planned and is not correctly cut it will result in too large amount of breakage and poor bucking conditions.

Whenever possible the timber must be fell so it is easy to yard. In high lead shows it is fell to the "lead." That is, the trees are fell toward or away from the spar tree. In a slack line show the timber is fell across or at

right angles to the "lead."

Before starting the actual falling of the tree, the lean of the tree is determined with the aid of an axe acting as a plumb bob. The weight of the top and limbs maybe one-sided and cause the tree to "drag" in a different direction from the trunk and this must be considered by the fallers. The tree should be felled in the best possible lay. In so doing the path of the tree must be clear. Another tree which leans into the path of the falling tree may catch the top of the falling tree and cause it to lodge or fall in a different place. A good faller sees that the path of the tree is clear all the way to the ground.

A good lay consists of ground which has the same gradient and will let most of the tree hit the ground at the same time. Rocks, stumps, or logs may break the tree. A slight ^{rise} in the ground is better than a slight dip.

The actual falling of a tree consist of brushing out, putting ⁱⁿ springboards, making ^{the} undercut, and sawing the back cut. Springboards must be used on side hills and high stumps. They are put in before the undercut is made. The undercut can be sawed or chopped in and has a depth of $1/5$ to $1/2$ the diameter of the tree. The sloping part of the undercut can be made on the stump or on the tree, but it is usually made on the tree. The back cut is ^{usually} made 2 to 18-inches higher than the undercut.

In falling side leaning trees the undercut can be faced farther around away from the lean than where it would other-

wise be, in order to get the tree to fall in the proper place. The tree may be pulled around to the lay by holding wood on the loose side or by leaving more wood unsawn on one side than on the other. A combination of the two methods is usually used. On heavy forward leaners a "V" is maintained in the back cut by sawing the outside parts of the back first. This helps to prevent splitting and checking of the butt.

Fallers tools consists of two saws, 7 or 8-feet long; 2 saw handles; 2 falling axes, 4 or $4\frac{1}{2}$ -pounds; one 10-pound sledge; ^{2, wedges, about 6 or 7 pounds} 2 springboards; two oil bottles; and a oil can. Fallers and buckers must have whetstones to keep thir axes sharp.

In the redwoods where men are not using power saws their falling tools may consist of two $4\frac{1}{2}$ -pound double-bitted axes, 44-inch handles; two 8-foot saws; two 10-foot saws; one 12 foot saw; 1 dozen, $\frac{1}{2}$ -inch plates; 1 dozen, $\frac{1}{4}$ -inch plates; 1 dozen shims, 4 x 7-inch about 18 gauge; ten wedges, weighing 7-pounds each, size $3\frac{1}{2}$ x 20 22-inches; 2 sledges, 10-pounds; 1 pair gun sticks, 8-foot; 1 plumb bob; 6 springboards, 2 x 6 inch tapered; 6 springboard irons; 6 pieces $1\frac{1}{4}$ x 6-inches, 9-foot staging.

Power saws

There have been several makes of power saws used in falling and bucking. Some of which are the Vaughn Blue Streak, Fortuna, Pesola, Dow, Stihl or Timberhog, Dolmar, Wolf or Reed Prentice, Erco, and Rinco. They are of two types, the drag saw and the endless chain. The Vaughn and the Fortuna are the main saws in the drag saw type, while the Stihl or Timberhog, Reed-Prentice, and the Dow are the best chain types.

The endless chain type of power saw was patented in 1907. Power saws have been made for use in falling and bucking since the 1900's, but they have not met with very much success until recent years.

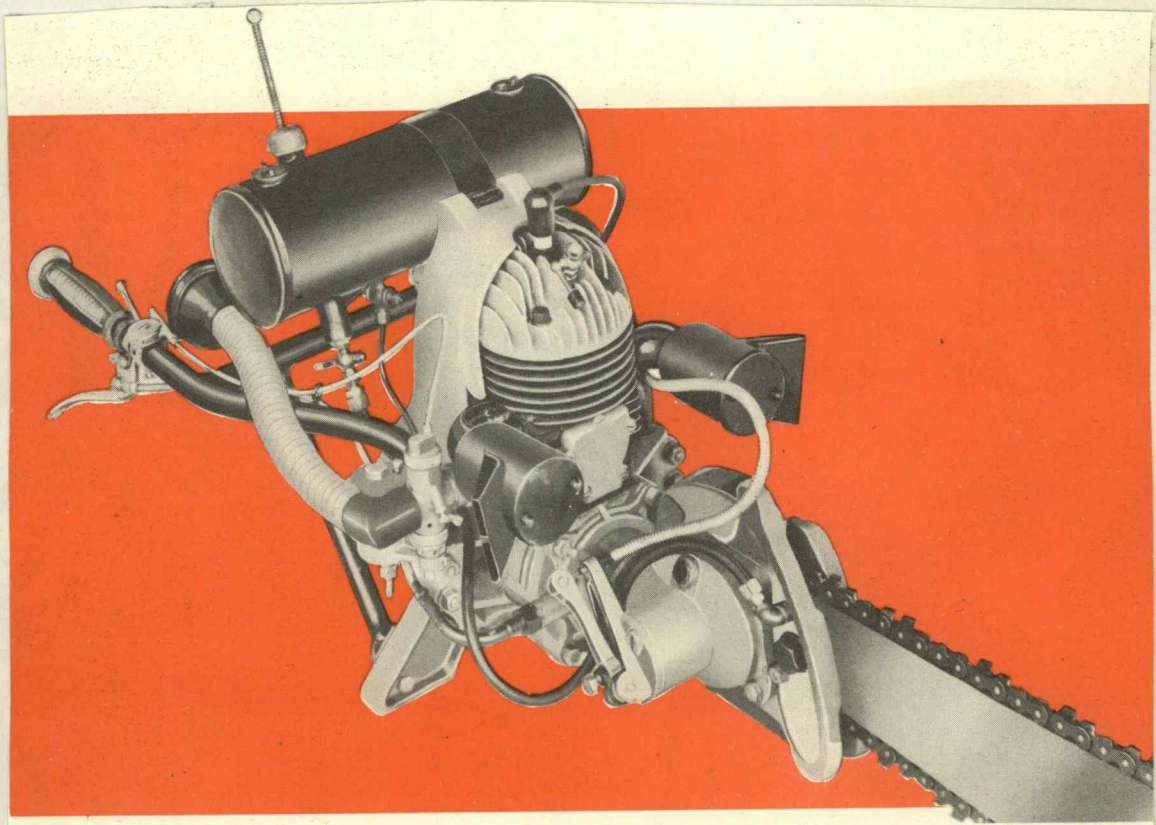
Stihl or Timberhog Saw

The Stihl or Timberhog chain saw is being developed by the Bloedel, Stewart & Welch Ltd. of British Columbia for use in the douglas fir region. Under the supervision of J. W. Challenger they have tested several saws and have decided that the Stihl saw was the best one to develop. They have made several changes in it since they have started to use it. As a matter of fact, the saw is now made in British Columbia instead of Germany, due to the war. Consequently, there is a better chance to develop it. They have also changed the name to Timberhog.

The Timberhog saw is made in two types, "A" and "B". Type "A" has a 8 horse-power motor and a weight of 120 pounds. Types "B" has a 6 horsepower motor and a weight of about 86-pounds. The motor is a single cylinder, 2 cycle, air cooled, and high speed type. The price ranges from \$430.00 to \$575.00 according to the type and length of saw blade. The air and electric models are also made, but they are built mostly for mill use.

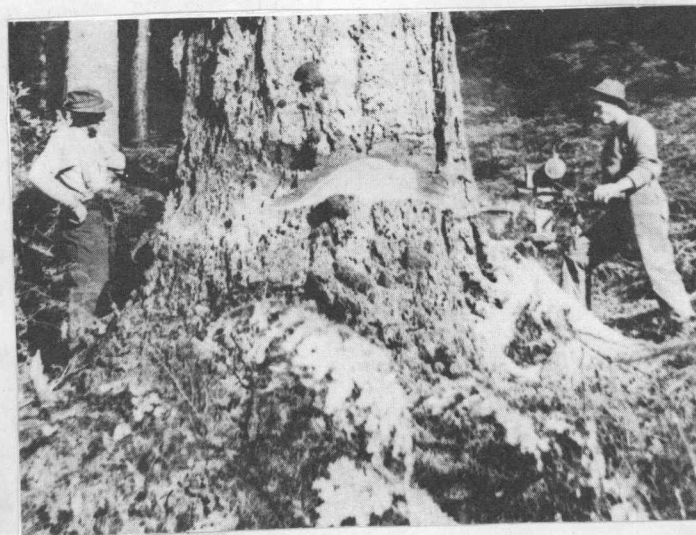
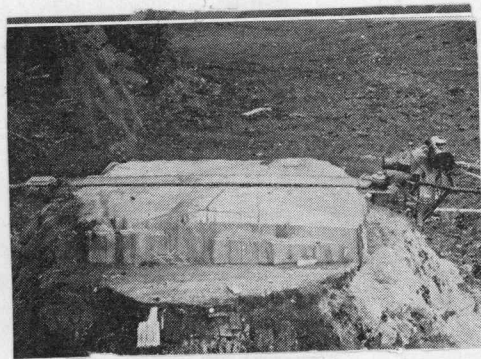
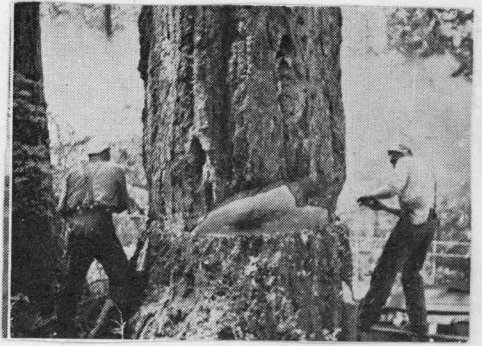
Some of the first models of this saw are still in use after $2\frac{1}{2}$ years but they have been repaired and several of the parts have been replaced. The estimated life is about 3 years.

This saw has been used very little for bucking due to the rough ground in British Columbia.

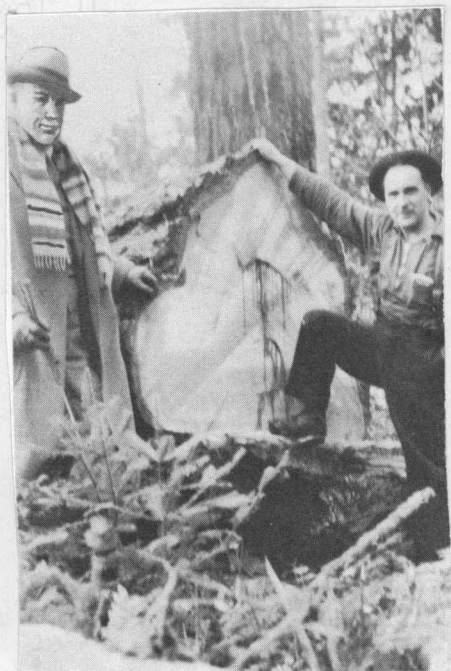
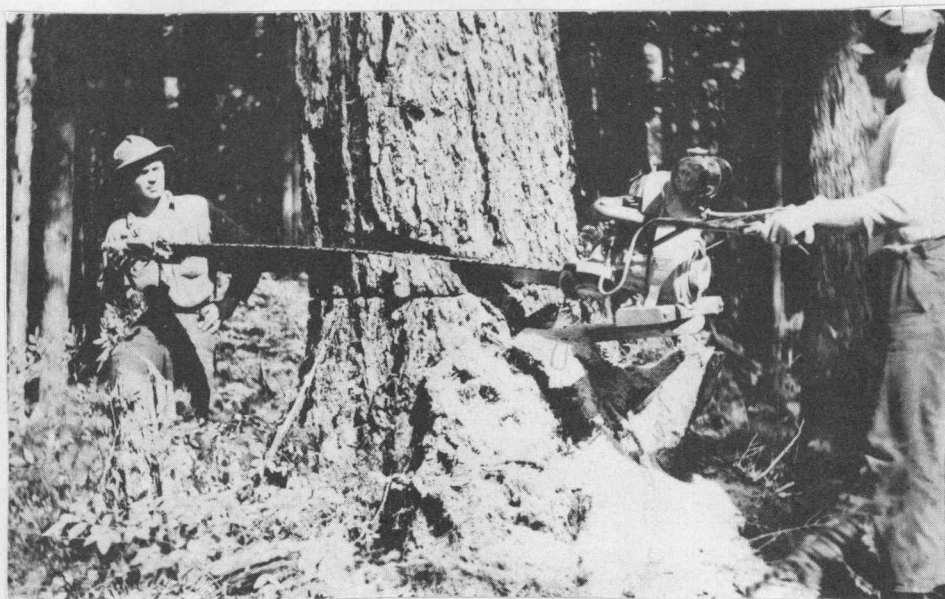


Type "A" 8 H.P. Approximate weight 120 lbs.

The Timberhog or Stihl Saw



The Timberhog in Operation



The timberhog saw

(Lower picture shows Mr. Stihl, German manufacturer
on the left).

In developing a power saw for the Douglas fir region it must be light and portable, in order to be moved with ease over rough ground, over down timber, and through heavy brush. At the same time the machine must be rugged and sturdy in order to stand the rough usage. It must have a simple quick starting, dependable motor, and efficient saw blade or chain. The sawing speed must be high in order to offset the loss of time due to moving and setting up of the machine. Output per man with the machine must be much higher than with hand work, in order to compensate for the extra expenses due to machine operation, repairs, fuel, and depreciation. The power saw has some real competition in the high degree of efficiency of contract hand fallers.

Bloedel, Stewart & Welch Ltd. in 1937 reported it cost them \$0.86 per thousand board feet to fall and buck when using the Stihl. The bucking was done by hand methods. The men were paid \$5.90 per day. Cost per item: (1)

Labor	\$0.72
Fuel	.005
Depreciation	.03
Repairs	.01
Supervision	.06
Filing	.035
	<u>\$0.86</u>

At this same operation they are now using 34 Timberhog saws and expect to cut 250 million feet with them this year (1940). Mr. Challenger states that his company will never go back to hand falling methods.

(1) The Timberman, August 1937.

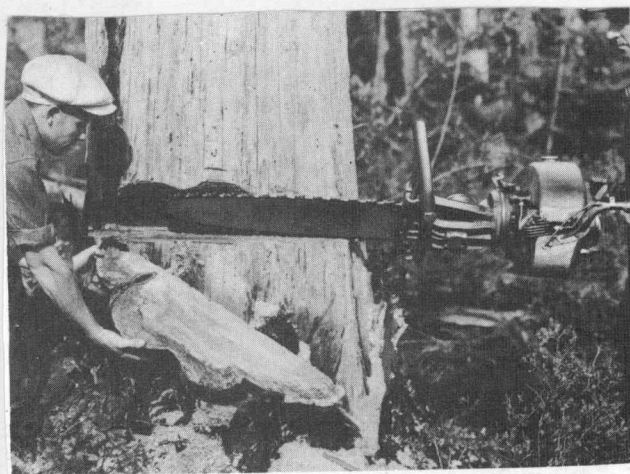
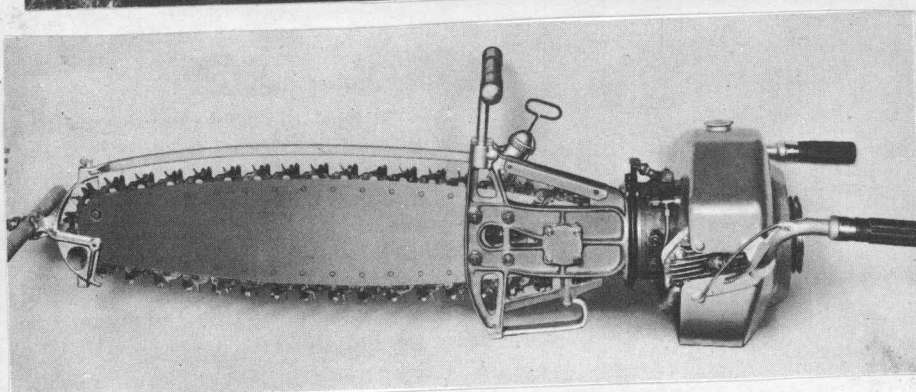
There is a small direct saving with power saws over the previous hand falling costs. The indirect savings are much greater. By the fact that this method is much faster, consequently, a setting or side can be cut in much less time, because the timber can be cut in $2/3$ the time it took with hand methods. The company can get along with only about 70 percent as much inventory of felled and bucked timber as previously necessary to carry. Interest and insurance savings amounts to a sizeable sum. Sap-worm and other damaging factors are prevented or decreased by the shorter period between cutting and yarding.

Another advantage is that the crew is more permanent, is smaller, and is made up of a more desirable, better satisfied, and ^{or} better type of men.

Reed-Prentice Saw

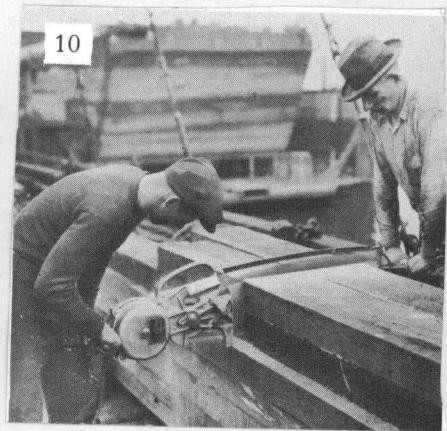
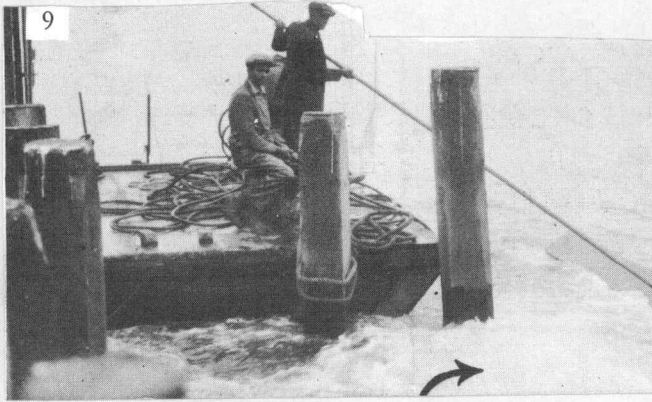
The Reed-Prentice chain saw, the wolf saw, has a 4 cycle, 2 cylinder, 5 horsepower air cooled motor, and weighs from 75 to 95 pounds. It has a very good and simple clutch. The motor is smooth, and vibration-free, but it is too intricate for simple repair work in the woods. The machine has a very effective swivel-joint between the transmission and motor, which enable the machine to be taken down into two parts--the motor in one part (weight 45-pounds), transmission and blade in the other part (weight 35-pounds)--almost instantaneously. This feature is a decided advantage at times when the machines must be carried considerable distances.

This saw has a short, wide blade. It can be used to cut trees and logs with diameters twice the length of the blade.

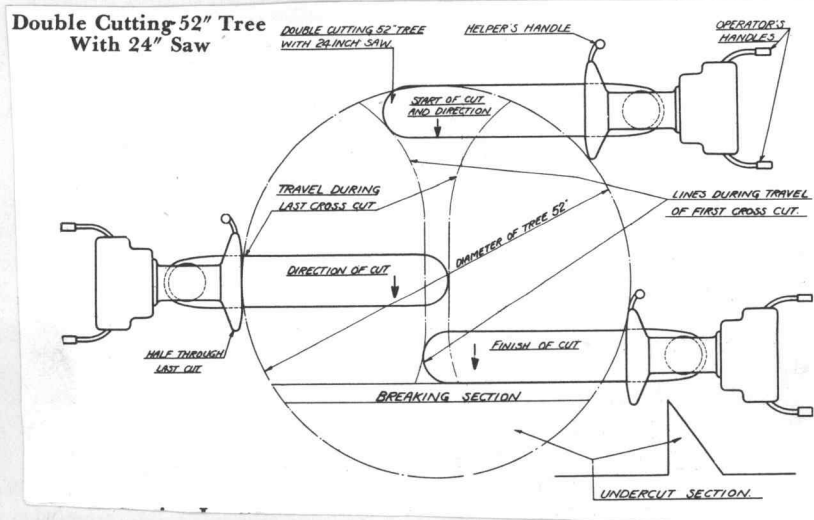


Reed-Prentice Timber Saw

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CORVALLIS, OREGON



Double Cutting 52" Tree
With 24" Saw



Some uses of the Reed-Prentice Saw

It has a special feeding device for falling. It takes about 10 to 15 minutes to fall a 48-inch tree.

Electric and air models are also made.

The Dow Saw

The Dow saw is used mainly in the pine region and has been developed for such conditions. It has a gasoline motor which is heavy and is very well built. The machine weighs about 490-pounds and is moved about on a pair of pneumatic wheels. It is also built with electric motors. The Dow saw is used to an advantage in the pine region where the ground conditions are very favorable(level) and where there is little underbrush.

The Dow saw has a good, quick starting, dependable motor and a fast cutting speed. There is an effected saving of about 12 cents per M where it can be used. It has been used to a great advantage in bucking on the landing where full length trees are yarded.

In one 10 day test of the Dow saw in 1935 at the Lamm Lumber Company's camp at Modoc Point, Oregon, it cut 613,470 feet at a cost of $72\frac{1}{2}$ per M.

Vaughn Blue Streak Drag Saw

The Vaughn drag saw is a gasoline, water cooled type. It was first used for log bucking in 1923. The saw weighs about 210 pounds including water and gasoline. The engine is a single cylinder, two-cycle motor developing 3 horsepower. The blades are 10 or 12 gauge and are up to 12 feet long. When the saw was first changed over into a falling saw, it had to have several changes made in its oiling system,

and fuel and water tanks. Also the carburetor did not work well with the motor on its side.

In bucking the cut is finished with a crosscut saw. On easy lays the cut is stopped about 2 feet from the bottom. On rough ground much more hand work is necessary. The cost of operation of the saw is about 10 cents per thousand feet. The total cost of the saw with 8 blades is about \$280.00.

These saws are used for falling and bucking only in the redwoods. The size of the redwood timber makes the use of this saw effective as the moving and setup time is not too large in comparison to the cutting time. The use of the drag saw is limited to stands of timber which averages 5 feet DBH and over.

The men fall a few trees and then buck them with the same saw. This policy of cutting only a few trees before bucking aids in reducing breakage and gives the men a chance to get at all the bucking cuts on the tree.

General on Power Saws

It seems as though power saws are being proved to be effective for falling and somewhat for bucking. Many operators are waiting until they have been thoroughly proved before they will invest in power equipment. The power saw at present makes the work easier, and does not save the operator much.

Power saws can be used to the best advantage on the larger operations where there are several machines and it is economical to have a repairman and extra machines.

Power saws are just coming out of the experimental stage. They will be improved more and more by the various

manufacturing companies. I believe within a few years they will come into general use for the entire industry.

Wages and Wage Payments

The wages for timber fallers and buckers are higher than most other types of semi-skilled work. The wages run from \$4.50 to \$10.00 or more per day.

There are two general methods of wage payment, one by the day wage and the other on the contract or "busheling" basis. The payment of a set wage per day is used where the timber is extremely valuable or the ground is rough and choppy. The men are instructed to save the timber as much as possible.

However, the general practice among douglas fir loggers is to use the contract method of so much per M for paying fallers and buckers. This method of payment started in the Pacific Northwest in 1918, although some bonus methods were used previously. When contract work is used, a good deal more supervision is needed. The bullbucker should make an often check on fallers and buckers and inspect their work. He can also act as check scaler in case of disputes, when no regular check scaler is on the pay roll. He should be on the lookout for "steals" from both the company and other members of the crew.

The timber should be scaled as soon possible after it is bucked. The scaler should never be more than 2 or 3 days behind the buckers.

Many operators pay just so much per M with no consideration for the show. Some operators have a sliding scale of

pay so that the men will make about the same under the various kinds of conditions. The slopes maybe classified as flat, gentle, moderate, and steep, and a different rate is paid for each. The kind of timber may also be considered by the operator. This system takes a good deal of supervision to get it done effectively and without friction with the crew. One man had a sliding scale for falling of 32 to 55 cents per M, for bucking of douglas fir of 32 to 45 cents per M, and bucking of hemlock and cedar of 35 to 55 cents per M. Most of the douglas fir contract work is done on a woods or gross scale basis. In the pine region, where the defect is small, the net scale is used.

The square foot or square inch method has been used to some extent, but has not proved any too satisfactory. The men do not pay enough attention to breakage, which is usually increased under the square foot method. The method of finding the square feet or square inches is determined by squaring the diameter in feet or inches, respectively. That is, a 5 foot stump or cut has 25 square feet or 3,600 square inches. The method to get the square feet between even feet is to square the diameter in inches and divide by 144. This type of contract work is easy to use, the length of the logs of no consequent to the buckers, and it is a fair basis where the stand is clearcut--defective trees, snags, and all.

The amount paid for falling and bucking varies from one locality to another. In 1937 the average was about 32 cents per M for bucking and 35 or 36 cents for falling. 20,000 board feet ^{per day} is considered a fair average for a buckers

in the douglas fir region. On the square foot method the is about 7¢ per square for bucking and 8 to 9½¢ for falling.

Breakage

Excessive breakage of timber has been one of the largest wastes in logging. By keeping the breakage down to a minimum the logger can recover the greatest amount of timber from the land. Excessive breakage will cause the log scale to fall below the cruised volume.

Good falling methods are necessary to keep the per cent of breakage low. By bucking all windfalls before falling aids in reducing breakage. Where the yarding is done by tractors the windfalls maybe yarded before the green timber is fell.

From studies in the redwoods, it has been shown that the greatest breakage has been in the larger trees. By the use of tractors the timber can be removed in rounds. This is called the installment method. The tractors are also used in making beds for the larger trees.

Where cedar and fir are in a mixed stand, the fir is usually fell first and the cedar last. There is less breakage in this method because the valuable cedar is never crossed and mashed by the tougher and heavier fir timber.

The use of a skillful set of fallers to cut the big and valuable trees and a less skillful set to fall the remainder or make the "pick up" has been suggested. This is called the "double falling system."

The The bad leaners--those trees leaning away from a good lay-- should be left ot the last round of cutting. The use of

tractors and other equipment to pull them into good lays has been tried on valuable trees.

Kelly McGuire gets less breakage on a contract system which pays more on trees which have a low per cent of breakage, and less on tree wich have a high per cent of breakage.. The fallers get paid only to the first break. Breakage at the Caspar Lumber Company, which is logging redwood, has been reduced to 4 per cent from about 10 per cent by this method.

An expert faller has been used by some operators to mark the trees to be cut and in what direction they are to be fell. He can estimate the amount of timber that should be saved(usually measured in length) and the fallers can be paid more or less per M if they save more or less than the estimated amount. This man also inspects the trees and decides which ones should be cut. The problem of choesing and placing of the trees is placed into more skillful hands by this method.

Breakage is the smallest in the pine region (0 to 4%), next in the douglas fir region (3 to 20%), and largest in the redwoods(4 to 25%).

Costs

The cost of falling and bucking is not easy to determine. To state that falling and bucking costs are so much a thousand is not accurate because there are many hidden expenses. The factor of breakage is one of the hidden expenses.

The costs of falling and bucking varies from operation to operation and region to region. In the pine region the

cost ranges between \$0.80 to \$1.00 per M, in the douglas fir region it ranges between \$1.25 to \$1.80 per M with an average of about \$1.50, and in the redwood region it ranges between \$1.40 to \$2.00 per M.

Some of the factors influencing the costs of falling and bucking are as follows: 1. Efficiency of the supervision and labor. The higher caliber men cost less per M for industrial insurance and other overhead expenses. 2. The percentage of breakage and improper grading of the logs. 3. The size and species of the timber. Vary from swell-butted cedar to clean, smooth pine and fir. 4. The percentage of defects. Man made defects should be prevented. 5. The amount and quality of windfalls. The cost of bucking may or may not be repaid by the good logs obtained from windfalls. 6. Scale of wages. The cost of falling and bucking are in the most part is labor, consequently, it varies directly with wages. 7. Supplies and depreciation. It is impossible to arrive at any exact cost per thousand for supplies and the replacement of equipment. The approximate cost is about \$0.0455 per thousand.

The three main things needed to reduce costs are: first, efficient supervision; second, a more skilled crew, third, better logs.

Instructions to the Cutting Crew.

A good set of written instructions would help establish the policies and rules of the operator. Oral instructions are indefinite and are soon forgotten. As the crew changes a good deal each season written instructions would aid in getting the new men adjusted.

Here is a set of written instructions used by one logging company; it was put out in a $3\frac{1}{2}$ x $5\frac{1}{4}$ -inch booklet:

"INSTRUCTIONS to FALLERS-BUCKERS-SCALERS

Log Scalers' Instructions

We ask that you follow these instructions as closely as possible as your work will be judged by the way these instructions are carried out.

1. Get instructions from foreman as to where you start fallers:
2. Go over setting with fallers to determine the proper way to fall the timber.
3. Great care must be used to avoid all pot-holes and jack-pots. Do not permit fallers to cover up down trees before they are bucked or scaled.
4. Look standing trees and ground over carefully so you may be able to judge whether the breakage was avoidable or not.

Log Scaling

1. Be fair to both the men and the company, and make it a rule that you do your work carefully the first time you do it; then under no circumstances change your scale.

If any difference as to scale arises between you and the fallers and buckers, then and in that event the check scaler shall rescale the logs and said rescale shall be final.

2. On ordinary run of logs scalers shall scale to average diameter but on logs of extreme oval shape scale narrow way plus one inch. Scale back to full inch on all logs.
3. See that all logs have correct amount of trim.
4. See that fallers and buckers are penalized for any unnecessary splits, slabs, breakage, short trim or incompleting cuts.
5. See that all instructions in this book are followed.
6. Keep careful account of all tools in woods and see that they are returned to tool room when not in use.
7. You shall lay out timber in strips for each set and properly mark the limit of same, either by blazes or natural contour of ground.

8. You shall keep proper records of each strip on forms provided for same.

Fallers' Instructions

All trees to be felled if possible in such a way that all commercial timber is saved. This will require:

1. Low stumps.
2. Considerable wedging at times.
3. Heavy undercut and side notch on heavy leaners.
4. Look over ground of setting carefully with scaler before the first tree is felled, to avoid jackpots and unnecessary breakage.
5. Large timber felled and bucked first, smaller trees and cedar last.
6. Buckers MUST be given a chance to make cuts before covering previously felled trees.
7. Find out from scaler the boundaries of your strip.
8. Fall snags according to scaler's instructions.
9. With buckers and scalers in the woods, a shout of "TIMBER" and direction of fall must be given in plenty of time to allow all to get in the clear.
10. Fallers will receive no scale for broken trees or barber's chairs which could have been avoided by the use of proper care.
11. Fallers will receive no scale for bucked logs which are broken by the later falling of heavy trees which should have been felled first or which have been improperly felled as the result of too small an undercut.

NOTE: The scaler shall exercise his judgment as to when this rule has been broken.

12. Fallers shall receive the following scale on snags:
 - (a) In trees unfit for logs, 96 feet scaled in 32 foot logs, with a taper of 1 inch to 5 feet of length.
 - (b) In trees of one or more logs which do not use up the full 96 feet, the balance should be scaled for the faller, using the same taper of 1 inch to 5 feet of length.
13. Fallers shall not receive scale for breaks or side-winders.

14. Fallers shall receive actual scale of log butts.
15. A penalty of 20 per cent shall be deducted on any set for refusing to finish their allotted strip, the same to be figured on their total cut to date on that strip. The 20 per cent penalty shall be held over and paid to the set completing the said strip and shall be so recorded in the books kept by the scaler.

Buckers' Instructions

1. Measure with a steel tape and clean brush from top of the log so the tape lies straight along log when measuring.
2. Do not stand up and sight where tape appears to come but lay tape on log for full length of log.
3. Side notch when necessary.
4. Leg up when end of log hangs over bank or other logs or have heavy center sag.
5. Use hang wedges to prevent rolling and slabbing and rolling off legs.
6. When legging use heavy props with solid foundation.
7. Work with fallers as near as possible to prevent burying cuts. Fallers MUST give buckers a chance before covering felled trees.
8. Make all cuts square across tree.
9. Bucker will not be paid for logs that are
 - (a) Not properly measured.
 - (b) Not properly cut.
 - (c) Not bucked off.
 - (d) Or unnecessarily split.
10. Forks of schoolmarms should be bucked as close to the fork as possible, or the crotch bucked out as a break. When in doubt, ask the scaler.
11. Buckers will be paid for what is actually cut out of snags.
12. Buckers will be paid a 24-foot log, scaled at small end, for breaks, and log butts.
13. Buckers will be paid double scale for butt logs of side-winders.
14. When cut fails to open up so scaler can see end of log,

the buckers shall bark sides of log so the wood will show.

15. Measure all logs with a snipe of not less than 8 inches. On butt logs carry from 2 to 3 inches more if logs are of large diameter. On hemlock logs suitable for squares, carry 11-inch snipe. Avoid overmarking all logs, especially those of 40-foot length. Observe U. S. rules in National Forest sales.
16. As per rule 12: When any butt is 100 per cent cull, buckers will be paid a 24-foot long butt for same. Fallers will be paid the full length.

General Instructions

All rules given in this book which conflict with those previously posted shall supersede such rules and regulations. Study these rules carefully, as you are expected to know and follow them. If you do not understand them, ask the scaler to explain them.

Fallers and buckers are required to observe the safety-first rules posted at the office, which apply to them.

Fallers and buckers are required on quitting or on being laid off to return all tools to the place designated by the scaler.

Fallers and buckers are required to account for all tools in their care.

During the fire season all instructions with regard to care with fire are to be followed, and in case of the fire call being blown, all fallers and buckers are to come promptly to the track, with their tools.

On quitting or being laid off, this instruction book is to be turned in at the office. In case of its loss, a charge of 25¢ will be made."(2)

Safety

Logging is one of the most dangerous occupations in the United States. The falling and bucking phase takes its toll in death, injuries, and loss of working time.

Taken from the Proposed New Logging Safety code of (2)

(2) Instructions to Fallers-Buckers-Scalers Employed in Logging Operation of Simpson Logging Co, Shelton, Wash.

Oregon State Industrial Accident Commission are the following safety regulations for falling and bucking:

"FALLING AND BUCKING (2)"

C-1 Fallers and Buckers shall be so placed that they will not endanger other workmen.

(b) Fallers shall be sufficiently spread that they will not endanger each other from falling trees or snags, side-winders, leaners and other causes. In steep country, one set shall not work immediately above another. Buckers shall not work close enough together, or to fallers, to endanger each other.

(c) Fallers and buckers shall not be placed near enough to any running lines, guylines or other units of operation that they will be endangering themselves or other workmen. A sufficient amount of felled and bucked timber shall be maintained for this purpose.

(d) The head faller shall be informed of the location of buckers or other workmen placed in his vicinity.

(e) When there is any probability of danger in falling a tree adjacent to a railroad, cat road or motor road, a flagman shall be stationed to protect traffic until this danger is past.

C-2 All Dangerous Snags and Trees within the reach of landings, donkeys and guylines shall be felled before the regular operations begin. (Tall or rotten snags, rotten or leaning trees, or trees which may possibly be blown over or pulled down are among those considered dangerous.) Saplings near a landing which may reach any workmen if pulled over are extremely dangerous and must be felled or pulled over before operations begin.

(b) All snags that will be dangerous to rigging men or cat operations must be felled.

(c) Particular care must be taken in falling snags, and in working around snags. Snags which are to be felled should be felled ahead of the green timber. Whenever practicable, dangerous bark shall be removed from snags in preparation to falling.

C-3 Working Tools Shall be kept in good condition. Guards shall be kept on saw handles. ~~Axe~~ and sledge handles shall be firmly attached. Mushroomed or cracking wedges or hammers shall be immediately repaired, or removed from service. Springboard irons shall be well-lipped and firmly attached with bolts, and boards shall be substantial and

shall be replaced before worn beyond the point of safety. Springboards of sawed material shall be straight-grained and of sound stock.

(b) While carrying tools, faller and buckers shall use utmost caution in selecting their footing to prevent falls. Saws shall be carried with the teeth pointed away. Wedges should be carried in a sack. Oil bottles should not be carried in pockets. It is better to make an extra trip than to carry more tools than can be safely carried.

(c) Tools shall be placed well away while brushing around a tree or log. Saws should not be leaned against the tree, or on a log where they might slide and fall against a workman.

(d) Caution shall be used in removing tools from crew cars and in carrying them near other workman.

C-4 In Falling Timber, adjacent brush shall be cleared away from around the tree to be felled so there is sufficient room to use saws and axes and to permit a quick getaway.[^] Rough bark and other material that may catch the saw shall be removed.

(b) A way of escape shall be determined and arranged for before the tree is felled, and this way kept clear of brush and tools. The point of escape should be well back and to one side. Workmen shall not stand beside or near the stump as the tree falls.

(c) Undercuts shall be large enough to properly guide the tree and eliminate the possibility of splitting. Especially large undercuts are necessary in heavy leaners.

(d) While one faller is wedging, the other shall watch up for limbs and other material which might be jarred loose.

(e) In falling through standing timber or near a standing tree or snag, fallers shall watch for hanging limbs, limbs and tops thrown back, and for sidewinders. It is advisable to fall trees out into the open whenever possible.

(f) Fallers shall give timely warning to buckers and other persons in the vicinity of a tree about to be felled, indicating the direction of fall and taking notice that such persons are not only out of reach of the tree but also out of the reach of possible side-winders, snags, or other trees which may be knocked over by the tree being felled. Fallers shall cease sawing when giving such warnings, and make sure that this warning has been heard and heeded by all known to be in the vicinity.

(g) A tree lodged in another tree should be knocked down by falling another tree against it. If this is not possible, extreme care must be exercised in working around

the "hung" or the "supporting" trees.

C-5 In Bucking Logs, the buckers shall keep the fallers informed of his position, and when the faller's first warning is heard, he shall immediately answer the faller and move to a place where he is safe.

(b) Buckers shall look for loose overhead limbs when working in or near standing timber.

(c) A clear chopping and sawing range shall be swamped about the place where cut is to be made. The saw shall be placed well out of the way while this swamping is being done.

(d) The buckers shall carefully examine the tree before making a cut to determine which way the logs will roll, drop, or swing when the cut is completed. The safe position thus determined shall be used in finishing the cut.

(e) If it is dangerous or impractical to cut a log clear through, a safe margin of wood may be left uncut. In this case each log shall be distinctly marked at both ends with an "XX" to warn rigging men and others. The bull buck shall also be notified.

(f) When props are used to hold logs, they should be removed when the cut is finished. Extreme care shall be used in removing props.

(g) Undercutters shall not be driven with the side of a double-bitted axe.

C-6 Experience is essential for safety in falling and bucking.

(b) Men in charge of falling and bucking shall be experience in this kind of work so that they will use good judgment in placing crews and supervising their work. Bull bucks, scalers, and others shall be careful in approaching sets of fallers, and shall notify the head faller when working in his vicinity.

(c) The head faller of each set shall be an experienced man.

(d) Windfall buckers working alone shall be experienced men. Green men shall not be broken in by bucking windfalls unless in company with an experienced man.

C-7 Weather Conditions, Common sense and good judgment govern the safety of allers and buckers. At no time shall they work if the wind is strong enough to prevent the felling of trees in the desired direction. (3)

(3) A Proposed New Logging Safety Code, Industrial Accident Commission, State of Oregon, Chapter No. 3.

There is more danger to faller and buckers in the selection cutting methods than in the old clear cutting methods. The falling of trees through other trees causes limbs and chunks to fly back. Also many loose limbs are left hanging in remaining trees.

The "hard hat" or "skull guard", which has been used by underground workers, firemen, and construction employes, is used by loggers working by Blodet, Stewart & Welch Ltd.. Falling limbs and parts of snags have hit several men with the "head guards" and the men escaped serious injury.

General

In very defective stands a high climber has been used to climb doubtful trees and find out if they are conky or rotten and how much. Usually only large trees are inspected in this manner. This has been done by the Peterman Manufacturing Company; L, B, & L Logging Company; and the Weyerhaeuser Lumber Company.

By grade marking, one concern has increased their income from sales of logs by 9%. Logs can be correctly graded before bucking to effect this increase in price at a nominal cost. The use of a special man to do the marking is the approved practice. Such a marker must know logs, be a good judge of timber, a rigid and exacting inspector of work, and a patient instructor of those charged with the actual marking. Getting the men to actually cut for grade is a problem facing many operators.

From studies made by James W. Girard, Logging Engineer

for the U.S.F.S. at Missoula, Mont., it was shown that the board foot rate of timber cutting is greatest on trees between 32 and 44-inches in DBH.

The practice of bucking at the landing is practiced in rough country where bucking very difficult and also where power saws can be used to an advantage. In order to ^{do} the bucking on the landing, it needs to ^{be} large and this requires considerable expense for clearing.

Where trees are yarded in full lengths there is a problem of falling them so they point toward the landing and still keep the breakage down to a minimum.

Rotten and defective timber presents a large problem to the falling and bucking crew. It is very hard to get the greatest amount of good timber without a waste of ^{either} timber and or time.

In selection cutting operations the problem ^{is to} of falling the timber to the lead and still not damage the young and seed trees.

In the redwoods the problem of falling big trees and heavy leaners on rough ground is encountered. Double trees are very difficult to cut in the large redwoods.

Times studies which were taken during a falling operation with power saws brought out many periods of lost time and their cause. Time studies might also be applied to other phases of logging besides falling and bucking to pick up lost time.

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