

## Bull Whackers, Donkey Punchers, And Other Timber Beasts

This chapter was written by T.R. Shannon, proprietor of STEAM POWER FOREVER VIDEO, and was adapted from the script Mr. Shannon wrote for his video production of the same name. Additional material provided by me to make Mr. Shannon's work applicable to the history of timber operations in central Oregon.

This chapter covers basic logging techniques and explains many of the terms used in the woods.

The photographs included in this section are from the Al and Rose Kuhlman collection through the courtesy of the A.R. Bowman Memorial Museum. Various photographers are represented and will be identified when known.

### FOREWORD

*Bullwhackers, Donkey Punchers, And Other Timber Beasts* is the story of logging the big timber—West Coast Timber. The loggers handled the big timber with a lot of sweat, considerable blood and a few tears. They had fun too, showing a sense of humor in naming the various logging tasks. As a group, they called themselves TIMBER BEASTS. [There is another group of timber industry workers lovingly referred to as SAWDUST SAVAGES and are the men and woman that work in sawmills.]



Using "bulls" was a method employed by Alex Ammons when he supervised logging for the Hawkins Brothers on Duncan and Ochoco Creeks. Alex was hired as bull driver but the bulls didn't last long in Central Oregon. "Bulls" refers to Oxen, usually male. Photographer: Perkins, circa 1885.



This represents an 'advanced' method of getting the logs from forest to sawmill. Steam powered tractor pulling wagon with wheels of wood cut directly from a log. Photographer: Eastman.

At first, cursing men and grunting beasts muscled the Paul Bunyon sized logs from the woods to the sawmill. Then, the awesome power of a single steam engine eclipsed the best efforts of a whole team of straining animals, yanking them out of the woods and into obscurity. Finally, steam too succumbed to a superior technology as internal combustion engines—first gasoline, then diesel became reliable and powerful. Today, a single truck or tractor does the work of 400 or more horses.

In the early 1800's, the West Coast settlers were primarily ranchers and farmers. They preferred the open, fertile valleys—dense forest land had to be cleared before the immigrants could grow crops to feed their families.

Some lumber was needed of course and this was obtained at first by whip sawyers. By the early 1840's, water and steam powered sawmills were providing for local needs and a small export market.

But on January 24, 1848, gold was discovered in California, resulting in a population explosion in the West. The demand for lumber was so much greater than the supply that prices increased ten-fold in a single year. Forestland now became an asset, not a burden and timber earned the nickname, "Green Gold." Indeed, the value of the lumber produced dwarfed that of the gold found.

At first, most sawmills were built on a river with ocean access, because with roads poor or nonexistent and no railroads, shipping lumber by sea was the only practical choice. A nearby timber supply was also essential as moving big logs by hand or animals was slow, difficult and expensive due to the large number of men and beasts required.

If the timbered hillside above a river was steep, the logging could be done entirely by hand. A logger could go into business for himself with a minimum of tools and money. An ax, crosscut saw, spiked logging boots, wedges, a sledgehammer and a couple of jacks was all the equipment needed.

The plan was to fall the trees, remove the limbs and then slide the trees to the river. However, round objects on steep and often slippery hillsides have a tendency to roll or slide at inopportune times. Knowledge and skill plus the reflexes and agility of a mountain lion, along with a little luck, were required if a young logger was to become an old timer.

## FALLING

The men who bring the trees down have always been called, *FALLERS*. This was—and is—one of the most dangerous jobs in logging. A



**An early falling crew using whip saws or misery whips, technically cross-cut saws. Photographer: Perkins, date unknown.**

tree weighing up to 100 tons unleashes tremendous forces as it falls. It might collide with other trees—sending a deadly shower of heavy limbs hurling to earth—the other trees may fall in a domino effect—or the tree being fallen skips back over its trunk towards the fallers. Other hazards include rolling and sliding logs and *WIDOWMAKERS*. A widow maker is a dangling limb. A slight gust of wind can shake the widow maker free—or it might fall for no apparent reason.

The falling of a tree starts with the undercut. The undercut directs the trees fall. The backcut is made from the opposite side of the tree, but the fallers do not cut the backcut all the way to the undercut—a "hinge" of wood is left unsawed to guide the tree. Wedges or jacks may also be used to steer the tree into a desired path.

And it is critical for the tree to fall in the projected area—for safety reasons—and specially for larger trees, to prevent breakage....

Early fallers usually used both the ax and handsaw which they called a "misery-whip", to fall the trees. They chopped out the pie shaped undercuts because their handsaws were only effective in crosscutting. They often stood on "springboards" high above the ground because



**Cook house as background with the crew posing. In the center of the photo is a young boy standing between two men. That boy is Rose Kuhlman's father, Young Merrithew. Next to the boy, with a pipe in his mouth, is George Merrithew, Rose's grandfather. Photographer: Andrews; date uncertain.**

many tree species swell appreciably at their base. Once the tree started to fall, the fallers would usually move back to a safer area.

Fallers were artists with their axes and misery-whips—hard working artists. In an era when manual labor meant long hours of grinding effort, few men worked harder. And falling was among the last logging jobs to be mechanized. Numerous attempts were made to make a usable power saw for the woods—it was just that existing technology could not produce a saw that was light enough, powerful enough and, reliable enough.

In 1928, the Stihl Co. of Germany brought out a portable gasoline powered two-man chain saw which weighed about 140 pounds with a 6 foot bar. By 1937, the saws had improved enough that a logging company in British Columbia, Bloedel, Stewart & Welch, put a test saw to work. It ran

less than 3 months out of the first 6 months. Improvements were made however, and by 1939, Bloedells was using about 30 Stihls.

The Second World War ended the importation of Stihl saws for its duration, but North American manufacturers began making two man saws producing 5-6 horsepower and weighing around 125 pounds.

The end of hand falling was in sight, but the power saw takeover was not immediate. A falling team that had just packed a 125 pound saw a mile into the woods and then couldn't get it to start and had to pack it out again could equal the legendary profanity of the bullwhacker. Hand falling was not easy, but it was dependable.

But power saws kept getting lighter, more powerful, more reliable—saw chains vastly better. By the early 1950's, productivity of the power

saws was so much superior that hand fallers were a rare sight in the woods. Today's chain saws can produce 8 horsepower and weigh under 20 pounds.

## BUCKING AND LIMBING

Cutting the downed trees into the desired lengths—logs—is called *BUCKING*.

In hand-falling days and especially so when falling big timber, the falling crew did not buck. Depending on the size of the tree, one or more “buckers” would perform this task. Bucking, like falling, was hard and exacting work, for the cuts had to be true and a buckler whose misery whip got bound in a cut could spend hours chopping it free. As power saws evolved, falling, limbing and bucking were all done by the falling crew—which today is often one man.

In hand-falling and early chain saw days, limbs were chopped with an ax. Chain saws were used for the limbing when they became easier to handle.

Today, a single machine can fall, limb and buck trees to exact length—as long as the trees are not too big or the terrain too steep.

## MOVING THE LOGS

After the falling and bucking were completed, the logs had to be transported to log-hungry sawmills—mills that continually improved, sawing lumber better and faster, mills that often worked two shifts to meet the booming regional and worldwide demand.

## RIVERS

Rivers had obvious transportation advantages and early loggers used them extensively, both for floating logs to the sawmill and storing them prior to use. But, the logs did not just float



“High Wheels” sometimes called “Big Wheels.” This type of equipment was used by Brooks-Scanlon Lumber Co. and other companies until replaced by tractor logging (later called Cat logging because of the company that made many of the machines). Photographer: Miller, 1903.

serenely down the river to the mill. It was the job of the *RIVER PIGS* to get them there. Log jams were common and the River Pigs had to find the *KEY LOG*—the one causing the jam, free it and then scramble to safety over shifting and rolling logs.<sup>1</sup>

## SKID ROADS

Getting logs to the mills became much more difficult after the timber that was close to rivers was depleted. A path or road over which the logs could be skidded was called a *SKID ROAD*. The skid road might lead to a river, to the sawmill, or to a *LANDING* where the logs would be loaded onto wagons or other conveyances for a trip to the mill. When using animal teams, traversing soft ground or uphill grades was nearly impossible. In soft ground, poles were laid crosswise and the space between them filled with dirt. Low spots were filled with a cribbing of logs.

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1. River drives were used on the Deschutes but not for long as more efficient means for transporting logs were found. More about this in the chapter on the Deschutes Lumber Company.



**Log chute coming down slope at right. Flumes used water to float the logs on their trip; chutes used gravity (and sometimes grease). Photographer: Eastman.**

A row of logs was chained together, making a *TURN* of logs. Then, the team— sometimes horses, but quite often oxen— would be hitched to the lead log. Horses were more agile, while the oxen were slower but much stronger.

The logs brought in at one time—whether one log or ten, and whether moved by animal or helicopter, make up a *TURN* of logs.

Handlers of horse teams were called *TEAMSTERS*—a term still in use although teamsters of today usually drive trucks. If oxen were used, the team was called a *BULL TEAM*—and the driver of the team was the *BULLWHACKER*. The bullwhacker carried a pointed stick—sometimes with a nail in the end, with which he would encourage his team to perform seemingly impossible tasks. Bullwhackers had a legendary fluency in the use of profanity—it was said that they could burn the bark off a tree—and could even make a sailor blush.

Assisting the bullwhacker was the *GREASE MONKEY* or skid greaser, generally a greenhorn teenager. The grease monkey's job was to apply a lubricant—oil, grease, tallow, water, anything available—to the skids in front of the lead log in order to reduce friction. On steep downgrades, he would throw dirt instead in order to increase the drag and hopefully prevent the logs from overrunning the team. The ox and horse teams hauled in countless turns of logs, but they were slow and

were only capable of so much. A practical skid distance for them was less than a mile. When the logs were loaded onto wagons, the feasible hauling distance increased considerably, but the longer the haul, the higher the costs.

## CHUTES AND FLUMES

Chutes were troughs widely used by early day loggers to guide and contain logs. They might be made of wood or dug into the ground. Flumes were troughs, made of lumber, which used water to float logs—or rough sawn lumber.

## BIG WHEELS

Not to be confused with a “big set of wheels,” such as a 59 Cadillac, *BIG WHEELS* were used to lift the logs off the ground, allowing the teams to bring in bigger turns. Coastal areas were often too wet to support big wheels, but they were widely used in the dryer inland pine forests. Big Wheels, being brakeless, could not operate in steep terrain. Even on moderate downgrades, runaways were not uncommon—which is why horses were usually used as they were much faster than oxen and had a chance at least of staying ahead of the logs. Later models lowered the logs to the ground if they started to overrun the team—or at least they were supposed to. Big Wheels were later used behind steam traction engines and tractors—but were never towed by a 59 Cadillac.

## STEAM DONKEYS

The Steam Donkey was invented by John Dolbeer, a partner in the Dolbeer and Carson Lumber Company of Eureka, California. First tried in the Redwoods near Eureka in 1881, it easily skidded a large log, convincing most observers that the days of animal power were ending.<sup>2</sup> The Bull Whacker was about to be replaced by the *DONKEY PUNCHER*, the logger who operated the steam donkey.

The steam power takeover was not immediate or total however, for several reasons.



Example of a “steam donkey,” circa 1895. Photographer: Miller.

Mounted on a log platform, the donkey was not readily moved. A locomotive could bring it wherever railroad tracks reached, but from there the donkey had to pull itself, a time consuming job. The donkey was unsurpassed in steep ground and big timber. To this day, animals are used to a limited extent where trees are small and sparse.

The donkey’s line was made of rope at first—then wire cable. The original small, *SPOOL DRUM* design limited the early donkey’s range to a few hundred feet. Therefore, the initial use was to skid logs down into a gully where animal teams would take over. Continual improvements, including vastly more power, enabled loggers to use the donkeys for more and more tasks. For example, donkeys could soon wind more cable on larger drums and they would be set up along the skid roads and ground skidded the turns of logs all the way to the landing. At the landing, they loaded logs. And the power of steam lead to the

development of a greatly superior method of yanking the logs from the woods—the *BRUSH* to the landing.

The *HIGH LEAD* was the closest thing yet to the *SKY HOOK*, a mythical device dreamed about by loggers since the first log became wedged behind a stump and could be moved only by great manual effort—if at all. A donkey would be moved close to the base of a *SPAR TREE* after a *HIGH CLIMBER* limbed and *TOPPED* it. A pulley was placed high in the spar tree and another was connected to a stump as much as half a mile away. Wire cable—the *MAINLINE*—from one of the donkeys’ drums pulled the *TURN* of logs in and another cable—the *HAULBACK LINE*—returned the mainline to the *CHOKER SETTERS*.

The choker setters would wrap a short cable—a *CHOKER*, around a log and then connect the choker to the end of the main line. Depending on the power of the yarder and size of logs, a turn might be one or several logs. Because the pull was upward, many potential hangups were avoided with this method of yarding logs. Since the donkey puncher often could not see the choker setters, a *WHISTLE PUNK*—usually a beginner or tired old logger—would send signals to the donkey puncher.

The *SKYLINE* was a refinement of the high lead that eliminated almost all hangups. Two spar poles were used, one at the yarder and the other in the brush. With this system, logs could be lifted straight up and “flown” through the air.

The internal combustion engine displaced steam in this application too, of course. The use of the sky line logging system declined greatly after the introduction of the crawler tractor. The skyline has made a comeback however. It is often

2. “Dolbeer, [was] a seafaring man turned logger and founder of Dolbeer and Carson, early day logging outfit. Eureka, California. Dolbeer adapted the ship’s capstan to woods use in his donkey, using one small upright cylinder to drive a vertical spool through a rough set of gears. Manila rope [called ‘line’] was used at first to haul in logs, the line being taken back to the woods by a line horse. It was several years before wire rope [never called ‘line’] supplanted the manila. The first Dolbeers were used only to yard 150 to 200 feet, merely bringing the logs to the edge of the skidroad where the bulls could reach them easily. It was some time before loggers developed the method of roading, or moving the logs down the skidroad, all the way by steam. When they did try it, the bull was all through in the woods. A Dolbeer was used on the Wishkah River in Washington as early as 1889. The rope was not held on a drum on the Dolbeers, but merely turned three or four times around the capstan, and spooled off into a pile as the log came in. The machine was also known as Dolberry and Dolby.” Quoted from, *Woods Words*, by Walter F. McCulloch, Oregon Historical Society, 1958. Out of print, hard to find. As of this writing I noted 10 copies for sale via the Internet.

used on steep ground where possible soil erosion from road building is a concern. It is often more economical also, if extensive roads would have to be built.

## HELICOPTERS

The ultimate dream of the early loggers, a sky hook, is also used extensively when harvesting timber in steep and difficult terrain. Today's sky hook is of course, attached to a helicopter.

The hourly cost of operating a helicopter is very high and priority is given to expediting efficient use of the chopper. All the loggers who harvest timber with helicopters hustle—but SAFETY is still of prime concern. The landing men do not move until the logs are safely on the ground.

Out in the brush, the chopper pilot does not lift the turn of logs until the men on the ground radio him that they are safely out of the way. These loggers who set chokers on a helicopter show, call themselves *HOOKERS*, not choker setters.<sup>3</sup>

## STEAM TRACTION ENGINES

Steam traction engines, like big wheels, were used primarily in drier inland areas—the pine logging regions. They needed solid ground for traction, were unstable on hillsides and could not climb over tree limbs and other debris. A lot of hand effort was sometimes required to build a path upon which they could operate. Nonetheless, steam traction engines had their place. By 1880, a few were being used in logging operations. They would tow wagons heavily loaded with logs or would be hooked up to big wheels left behind by departing horses. In 1885, a local newspaper reported that a Roberts & Doan engine could pull



Logging by rail, circa 1900. Photographer: Miller.

100 ton loads on a level hard packed dirt road in the Sierra Nevada Mountains and average 3.5 Miles Per Hour at 45 engine revolutions per minute. The Roberts and Doan steam traction engines were made in Sacramento, the traction engine itself weighed 30 tons.

Originally designed for, and used primarily in farming, an increasing number of the engines were used in logging. Steam traction engine production in the United States peaked in 1913 when approximately ten thousand were built. By 1920, production had plummeted to about 1700 and by 1925 only a few diehard manufacturers were building these dinosaurs.

Steam engines could produce plenty of power, but they were heavy and had ravenous appetites for water and fuel. Steam continued to power locomotives until the 1950's, but for most other uses, the internal combustion engine had blown steam out of the woods decades earlier.

3. "a. A logging operation (cat show, high lead show, winter show, summer show, etc.). b. The operating conditions which affect logging, as a poor show, a good show." Ibid.



This steam tractor is rigged not only for skidding but also to serve as a donkey for providing power for various tasks at the logging site. Photographer: Andrews, circa 1888.

## GAS AND DIESEL TRACTORS

By the early 1900's, gasoline and kerosene powered tractors were being produced. At first they were neither reliable nor durable and had overheating problems. But they continued to improve and by 1912, a giant Holt track layer was working in the woods. [The] Holt Tractor Co. named their track laying tractors, Holt "Caterpillars." Tractor operators in the woods became known as *CATSKINNERS*.

By 1913 Holt was advertising; "A successful logging tractor, it will go uphill, downhill or side hill over loose, soft or sandy ground." The engine was advertised as 60 horsepower which meant it could do the work of 60 horses. Top engine revolutions per minute of these giants was 500 to 550—less than the idle speed of a modern car.

In 1919, the C.L. Best Traction Company introduced the Best 60—it soon became the yardstick by which all big tractors were measured—a machine better than the sum of its parts. When

Holt and Best merged in 1925, the Holt 60 was dropped and the Best 60 became the Cat 60. It was made until 1931.

Track laying tractors were soon doing a large portion of log gathering in the woods. They could go almost anywhere and one man could operate them—unlike steam which required a minimum of two.

And they just kept on getting better. By the early 1920's, winches were available. When a tractor could not pull a load, the catskinners would go out to the end of his cable, then winch the logs to the tractor. Then, in the mid 20's, the first practical blades were put on tractors—the *BULL-DOZER* was born. Logging and construction would never be the same.

In 1932, Caterpillar introduced its first Diesel tractor and then in 1935, the D8—the tractor that became the worldwide symbol for brute strength and power.

The *RUBBER TIERED SKIDDER*, along with the resurgence of the skyline, has for the most part, superseded the track layer for log skidding today. The rubber tired skidder, equipped with hydraulic grapples, is faster and cheaper to buy and maintain. However, the track layer is still **KING OF THE MOUNTAIN** when the going gets rough and maximum stability and climbing ability are required.

## THE LANDING

In the woods, the *LANDING* is a gathering point for logs which are to be loaded onto a vehicle for transportation—usually to a sawmill.

At first, animal power would be used to roll the logs onto wagons or railcars. When the steam donkey appeared, it was soon put to work rolling the logs.

Then, someone had the ingenuity to put a boom on the donkey's sled, allowing the logs to be lifted into the air. This was a tremendous improvement, but the landing men had to swing the big logs into place—which was not an easy task.

Better and easier log loading methods were continually found. The first internal combustion engines used in log loading were not accompanied by other major changes in loading methods—just the motive power changed.

As in all the logging steps, change has been continuous. Shovels and heel boom loaders were the choice for years and are still used. However, they have been replaced by rubber tired loaders on many logging shows.

## WAGONS & RAILCARS

Wagons were used extensively. They required a decent road and some had rudimentary brakes, such as a block of wood rubbing against the wheel rims. Like big wheels, they were dangerous on steep grades. Railcars were often nothing more than wagons with flanged wheels which rode on rails. The rails might be just wooden poles spiked to cross ties. Generally, both were pulled first by animals and then machines.

## STEAM LOCOMOTIVES

By the early 1870's steam locomotives appeared in the western woods. While greatly extending the distance that logs could be hauled to the mill, they usually had to follow stream beds as they could not climb steep grades. Therefore, as the timberline kept receding, the ox and horse teams had farther to go to get logs to the railroad landing.

Help was on the way. Since 1873, Ephraim Shay, a Michigan logger, had been experimenting with a gear drive locomotive. His incentive was to reduce his logging costs or get out of the business. Tinkering in his shop in the winter, working his invention in the summer, Shay convinced the Lima Locomotive Company of the practicality of his design—and the first factory built Shay rolled out of the Lima shops in 1880. The Shay could climb 10-percent grades—which was two to three times steeper than the conventional rod drive locomotive. The shrill whistle of the Shay, in duet with that of the steam donkey signaled the beginning of a new age—loggings' *HIGHBALL ERA* had arrived.

The Shay, and its other gear drive competitors which followed, opened up vast new areas of timber. Loggers built *SPUR* lines up steep grades and around tight curves. Unlike the main lines which were permanent in nature, spur line ties and track were removed after a particular area was logged and then relaid into another stand of timber. Often laid down over an unstable roadbed with used up ties, worn out rails and rickety trestles, many spur lines were an invitation to disaster. Numerous accidents did occur, but since logging locomotives were usually traveling slowly, most were minor.

Like all loggers, railroad loggers had their own language. "Beat The Throttle With A Stick," meant full speed ahead which in the case of a gear drive locomotive was all of 15-20 miles per hour as the gear drives were made for pulling power, not speed. The only time that any real speed was



**Horse logging. I count at least 10 teams pulling this load, of which you see very little. Photographer: Eastman, circa 1895. By the way, J.H. Eastman was not the Eastman of Eastman-Kodak fame.**

attained was when a heavily loaded train would run away on a downhill grade, at which time the crew might jump off and, “Join The Birds.”

The steam power era was probably the most colorful—and dangerous—period in logging. Chugging engines spewing plumes of steam and smoke, shrill whistles, which could be heard for miles, rolling and skidding logs, hustling and cursing men—provided the color. The same rolling and skidding logs along with snapping cables, falling trees and runaway equipment provided the danger. In logging’s highball era, neither the bosses nor the workers were overly safety conscious—getting the logs to the mill was the main priority.

## **ROADS**

Building adequate roads had always been slow and expensive for logging or any transportation purpose. Scrapers pulled by animals had been used since medieval times. When machines

became available, they were utilized of course, but pulling the land leveling device behind your equipment had major disadvantages since the machine had to get over the ground first. On steep terrain, much hand work sometimes had to be done before the machine could go to work.

The development of the steam shovel was a giant step forward in road construction and today’s diesel powered models are indispensable where a lot of material has to be moved. However, for many tasks, they are too slow and awkward.

As previously mentioned, the *BULLDOZER* revolutionized logging and road construction in the mid 1920’s. The dozer was faster, more maneuverable and cheaper to operate and maintain. For logging, the bulldozer pushed the shovel into a distant second place.

Logging on steep ground with animals or tractors had always been a real problem and removing debris from skid paths had been a time eating hassle even on level ground. With tractors,

you could sometimes just crawl over the obstacle, but this put a lot of wear on the equipment. The bulldozer swept debris away with ease and built roads right to the logs.

Building rail bed for the logging trains was also much easier and faster—as was building roads for motor trucks.

## MOTOR TRUCKS

Motor Trucks—“Logging Trucks,” were hauling logs by 1915. And they were not pampered—the loads placed on these early trucks were incredible. As the trucks and the roads improved, logging trucks began to replace locomotives. They could climb steeper grades around sharper curves and get logs to the mills faster and

cheaper in most cases. By the end of the 1950’s, most logs were delivered from woods to mill by trucks.

Fibreboard Wood Products Company of Standard, California, was one of the last—if not the last Western timber products manufacturer to use steam powered locomotives to haul logs. They ran their last steam train in the fall of 1965.

## DIESEL POWER FOR TRUCKS

In 1932, Kenworth Motor Truck Company became the first American truck manufacturer to offer diesel power—a 6-cylinder, 125-horsepower engine built by Cummings. Diesel engines



**A complex skid road. Photographer: Eastman, 1895. By the way, “skid row” is not a term used in relation to timbermen and is, in itself, an inaccurate bastardizations of skid road. Timber towns like Seattle and Portland, and many others, all had a skid road. Usually it had been started for (what else) skidding logs. Eventually certain types of businesses sprang up along the road and the areas were usually seedy. For an excellent description of such roads and towns I recommend Murray Morgan’s *Skid Road; An Informal Portrait of Seattle*, it will crack you up.**



were much more economical to operate and were destined to become the standard motive power for large trucks—and all heavy equipment.

## THE END

Today's timber harvesting equipment is so capable, the workers and methods so efficient, that it would be easy to believe that the ultimate has been achieved—that the future will be marked by only small gains. Such thoughts were undoubtedly in the mind of some of those people who watched Dolbeer's little steam donkey skid its first log.

Change is continuous of course, and today's better educated, more efficient loggers know this.

But, in a constantly changing world, it is reassuring to know that some things never change. The logger was, still is, and will always be an honest, hardworking, WORKING MAN.

Fallers using electric chainsaw. The diesel tractor to the right of the tree is providing the power, serving as a generator. The saws were heavy and not too practical. Wonder how many power cables were cut? That would give you a jolt!