

J.M. Johnston Sawmill

Steam plant

"An impressive operation..."

In 1934 the sawmill comprised: three planing machines, a Sandcroft steam engine, one twin-circular log breaking down plant, four saw benches, 29 circular saws, one log rolling winch, two saw sharpening machines, and three cross-cut sawing machines. Amongst all this, the steam plant was the heart of the mill, providing most of the power and heavy lift capacity.

Stirling water-tube boiler

Steam had to be generated using a boiler. A water-tube boiler creates steam as water flows in hundreds of tubes, connected to five tanks inside the brick structure. Hot air from the furnace flows around the tubes.

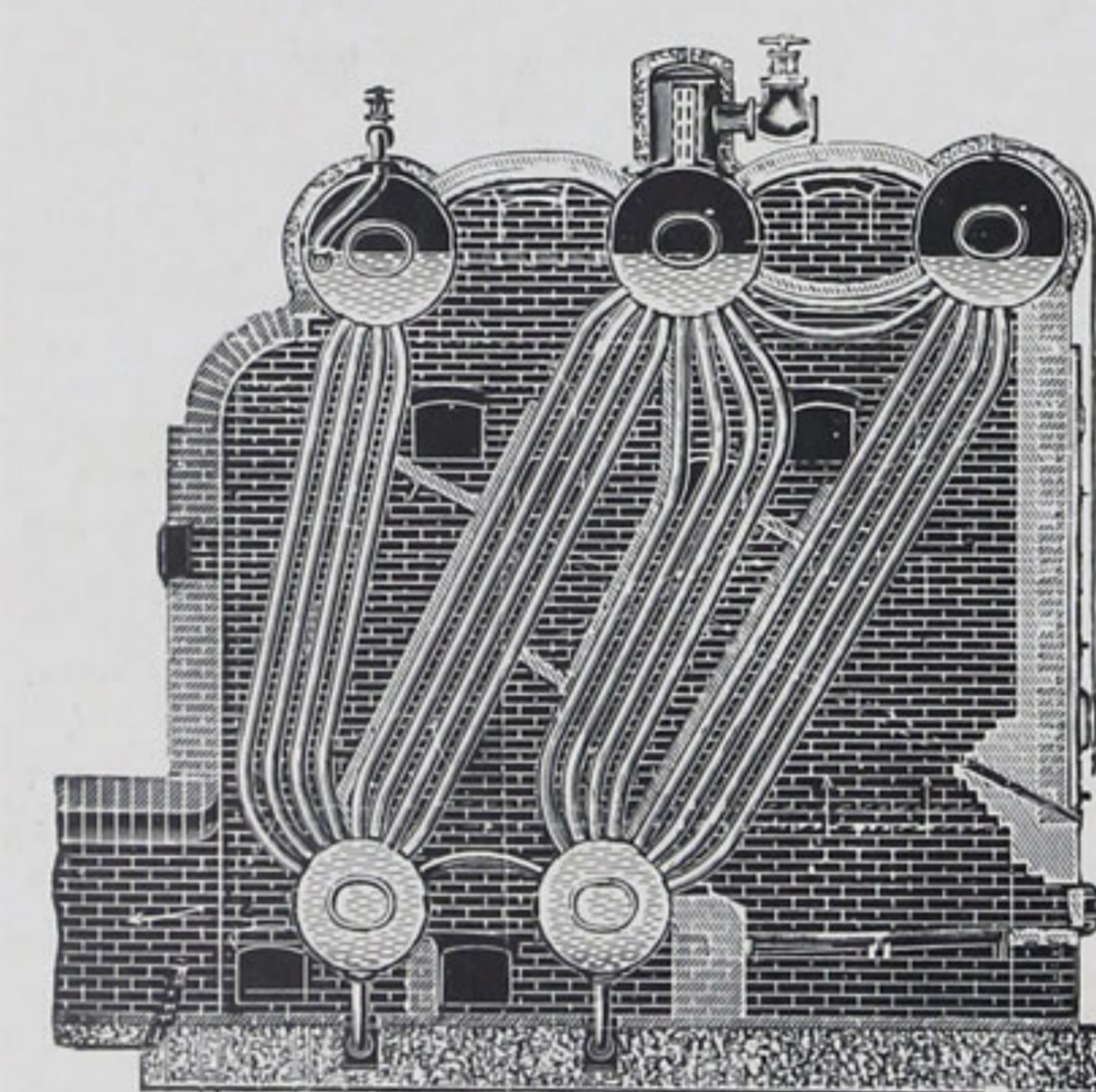
The tanks and tubes are very strong, allowing the steam pressure to run at approx 1,000kPa (150psi).

The three upper tanks are exposed, and the two lower tanks are suspended from the tubes. An iron frame provides structural support, and the bricks are an insulating filler.

The boiler was fired on wood off cuts from the sawmilling operation. This is a W type boiler made by The Stirling Boiler Co, Ltd at their works in Motherwell, Scotland.

This is one of Queensland's few examples of a Stirling boiler and Marshall engine still in their locations after over a century of history.

THE STIRLING BOILER.



Manufactured under Letters Patent.
In use in some of the leading Electric Light Stations, Works and Collieries, Largely used in the West Indies and Abroad.
Very suitable for gas firing, either with Producers, Blast Furnaces or Destructors.
Safety.—All parts circular in form. Drums not exposed to flame. No deposit in hottest part of Boiler.
Efficiency.—Large Combustion Chamber. Cold Feed meeting gases as they leave Boiler. Rapid and Continuous Circulation.
Economy.—Will burn Cheapest Class of Fuel. Very small Ground Space. Small First Cost. Large Units. One Boiler can evaporate 25,000 lbs. per hour.
The Back Sections, which receive the Feed Water, act as an Economiser and Purifier. The temperature of chimney gases is thus reduced to a minimum, and scale and dirt are deposited as far as possible from the fire. The circulation is extremely rapid and continuous, and the efficiency of the Boiler very high.

Sole Manufacturers—**THE STIRLING BOILER CO., LD.,**
 2, ST. ANDREW SQUARE, EDINBURGH.
 LONDON OFFICE: 26, Victoria Street, Westminster, S.W.
 GLASGOW OFFICE: 75, Bath Street.
 NEW WORKS: Motherwell, N.B.
 MANCHESTER OFFICE: 17, St. Ann's Square.

Extra steam drum: providing additional capacity to help power though big cuts.

Stirling boiler: converting wood into heat energy, and then into steam energy.

Marshall steam engine: converting steam energy to rotating horsepower

Walker winch: steam power to assist with pulling and lifting.

Blow-down tank: helping to keep the boiler water clean.

Marshall steam engine

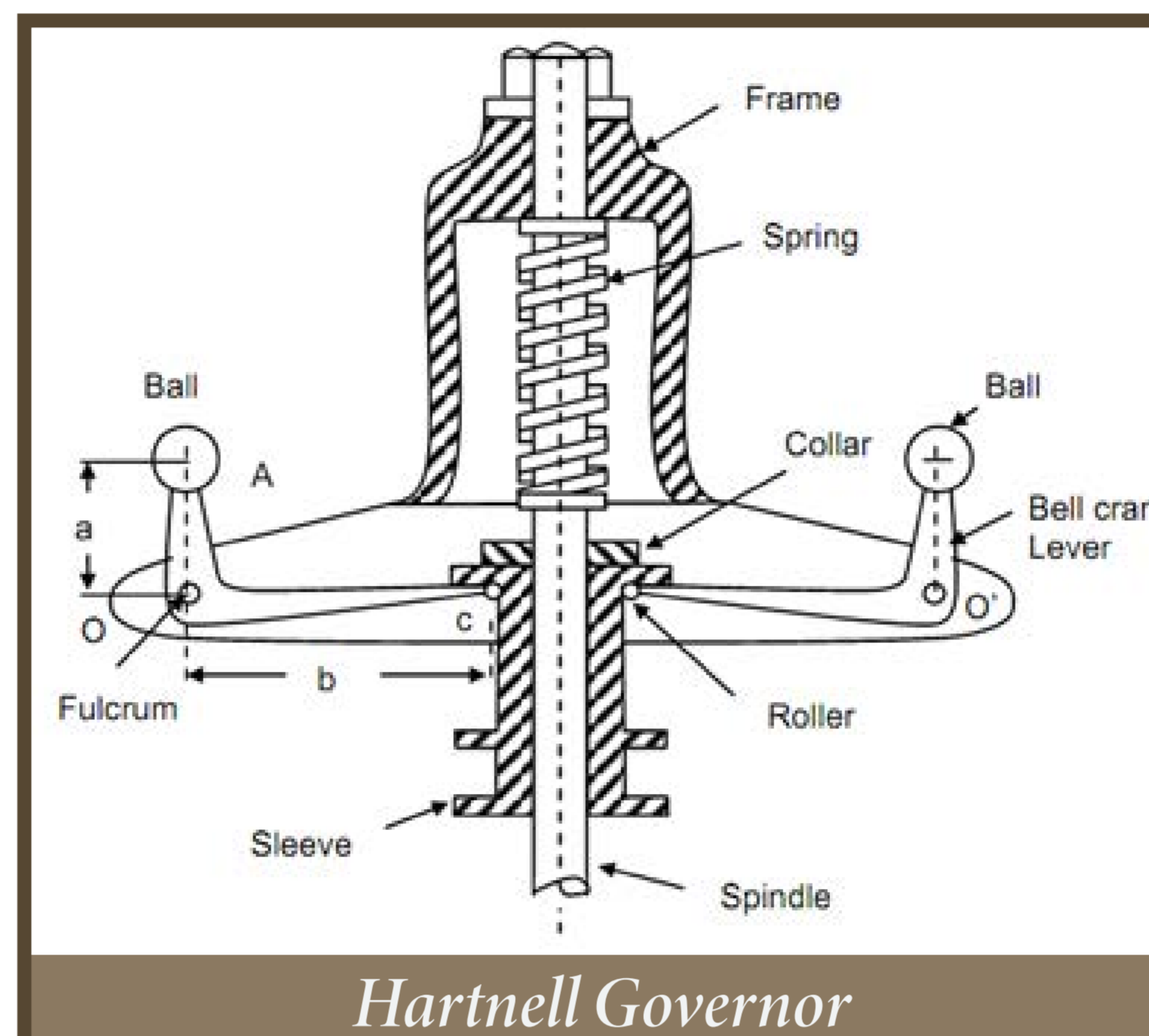
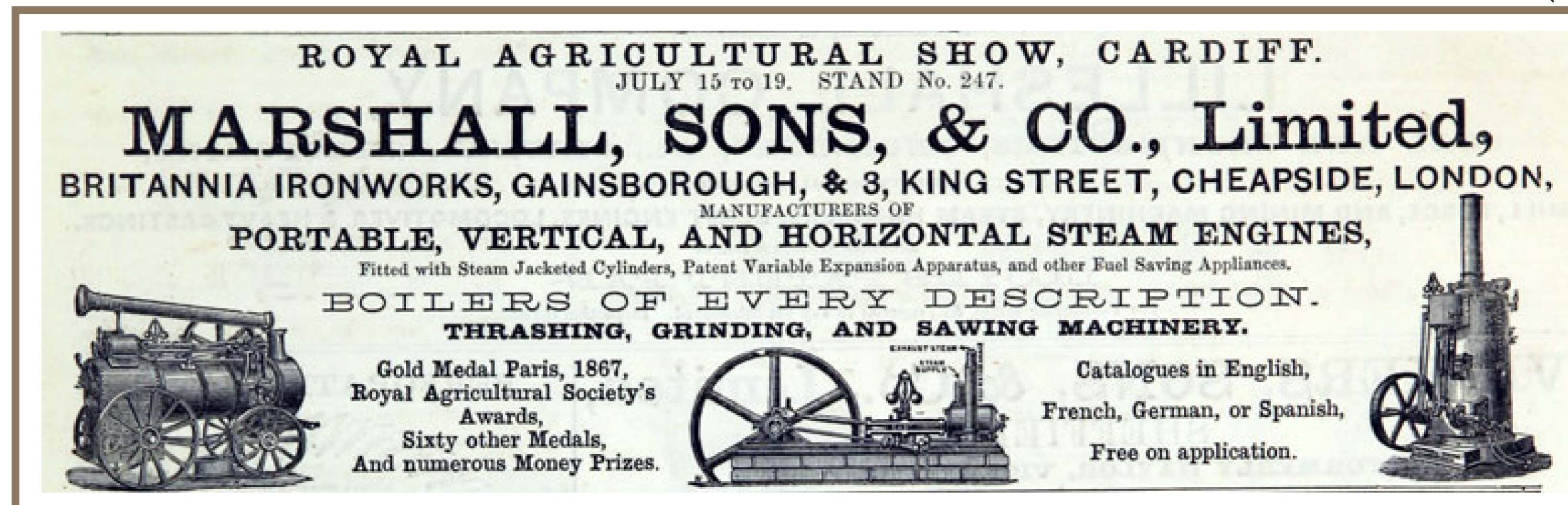
The large steam engine was the main power source for the sawmill. The heavy flywheel drove a flat belt that connected with a main power shaft. Other belts took power off this shaft and drove the various saws and planers.

Although the nameplate has been removed, the engine fits the description of C model engines built by Marshall, Sons & Co, Gainsborough, England.

This engine is a rare surviving example of a compound engine being used at a sawmill. Compound engines have two power cylinders. The small one is for high pressure steam from the boiler.

On the out-stroke, steam is piped from the small cylinder to the large cylinder to extract more energy from the steam, before being exhausted to a condenser and returned to the boiler.

To maintain constant speed, the engine is fitted with a Hartnell's Patent automatic expansion-gear governor.



Hartnell Governor

The governor was linked to a simple tapered regulating mechanism which could open or close off the steam supply. As steam was fed to the engine and it sped up, the governor shaft began to spin and the heavy iron balls were thrown outwards. This forced the regulating mechanism to close the steam supply down, thus slowing the engine.

As the iron balls returned toward the centre, they allowed the regulating mechanism to open the steam valve back up.

Thus, with the proper adjustments, a constant speed could be maintained regardless of the load from the saws and planers.

The high-pressure cylinder bore is approx 15 inches (380mm) in diameter, and the low-pressure cylinder bore is approx 24 inches (610mm) in diameter. The stroke of both cylinders was 36 inches (915mm). The flywheel is 10 feet (3050mm) in diameter, and 21 inches (535mm) wide.

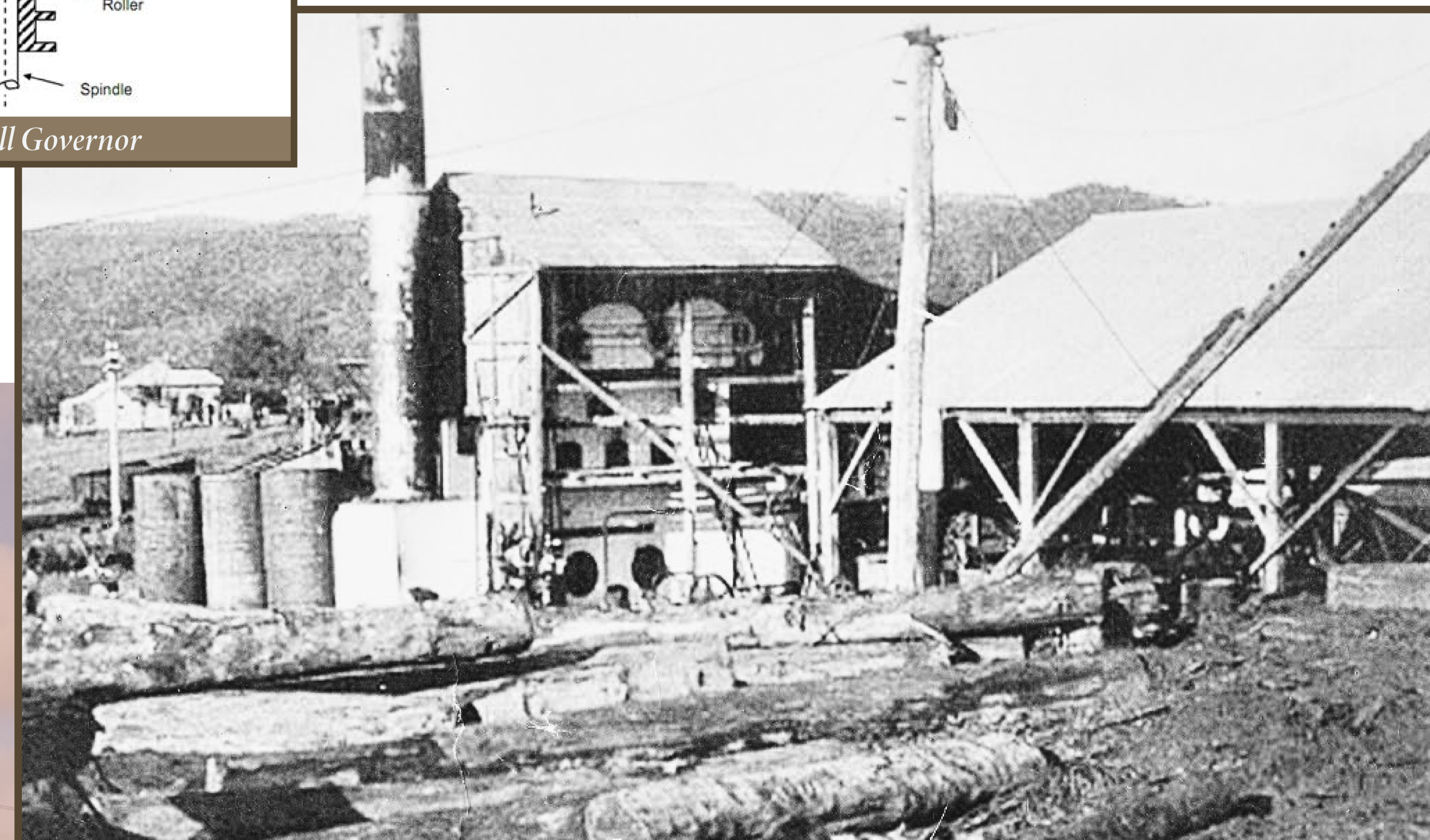
The size of the engine suggests it would have developed about 140hp at 135rpm.

Walker winch

Near the boiler is a steam winch which was used to "snig" (pull) logs around the yard using long wire cables. In conjunction with a "guy derrick" crane, the winch could also be used to hoist heavy loads.

The winch was locally made by Walkers Ltd, Maryborough, Queensland. It is a twin-cylinder, horizon-

tal reversing, single-drum, second-motion steam winch. The steam cylinders are approx 8 inches (205mm) in diameter, and the stroke is 14 inches (355mm). The maker's name is cast into the winch frame, as well as the steam chest covers.



J.M. Johnston Sawmill *History*

Copper collapse leaves rail stranded

In 1906 the Mount Molloy Copper Mine was in full swing. The main town of Molloy stretched along Bakers Road and featured several pubs, a race track, numerous dwellings, a hospital, and police station. Over 250 men and boys were employed by the mine operations. There was so much optimism that a group of investors took out loans to fund the construction of a private rail line from Mareeba to Molloy. But all was not well.

In 1907 world copper prices plunged. Practically overnight the mining company found itself at the edge of collapse. Just two miles short of Molloy, rail construction work was halted. The syndicate had no feasible way to pay for further construction. The railroad needed a new business plan and needed it fast.

Timber, and a favourable arrangement

A delegation of investors approached the Queensland Government and, after some aggressive lobbying, secured monopoly rights to log 10 million superfeet (see inset: *How big is a superfoot?*) of timber per year within a 5 mile (8 km) radius of Molloy. Hauling the timber to market would provide the railroad with a way to pay for itself.

Bouyed, the syndicate re-commenced work on the rail line which opened for service in 1908.

Timber was felled in surrounding forests and brought to Smelertown (as it was known) to be loaded onto rail wagons for transport to Granite Creek (Mareeba) where the Mount Molloy company had set up sawmill that commenced operations in 1909.

When the mine and smelter closed in 1911, the operations manager, Rolley Polenz attracted the attention of entrepreneuring sawmiller John Michael Johnston.

Johnston was going from success to success. After a stint at Martin Brother's sawmill at Tolga, Johnston had rented an old sawmill at Ravenshoe for two years. It was at this point Johnston began discussions with Polenz. About 1912-13 he bought the small sawmill, boiler, and steam engine from the defunct smelter operations of the Mt Molloy Mining Co and built up the sawmill at its present site. In 1914 the fine new the JM Johnston sawmill opened.

A leading figure in the industry

John Michael Johnston was born at Reykjavik, Iceland on Dec 28th, 1884. His father, Angus Johnston, a native of Belfast, N. Ireland, was engaged in the fish-export business.

J M Johnston left school when he was eleven years old, spent ten years at sea, and worked in sawmills in Finland, Sweden, Russia, Canada, and New Zealand.

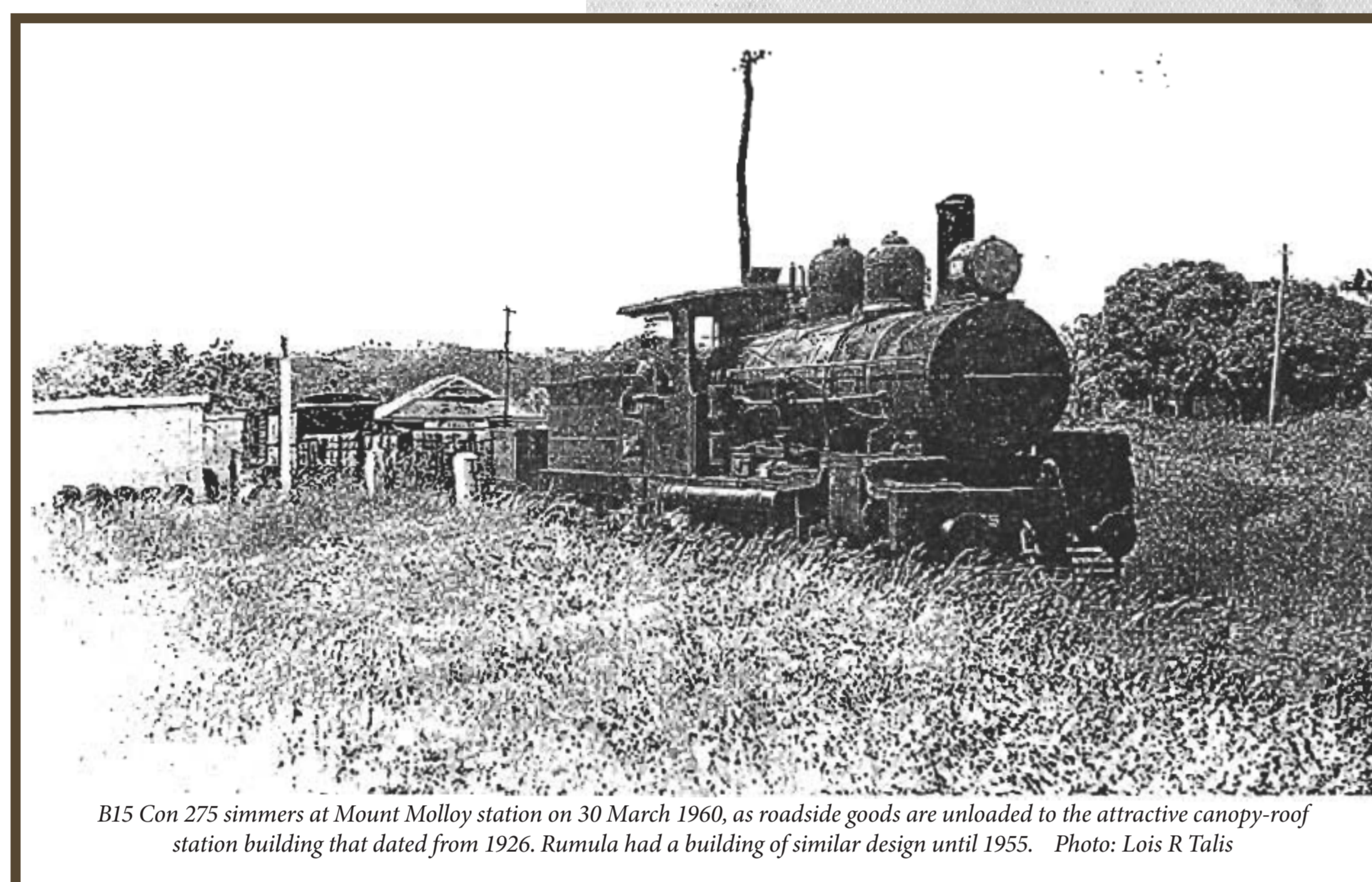


Curtis of Cardwell. The Johnston's raised four children: Henry, Maxwell, Rex, and Olga.

He came to North Queensland in 1906, and did some gold prospecting on Cape York Peninsula.

He soon left prospecting and became foreman at Chapman and Co's Innisfail sawmill.

In 1909 he married Annie Jane Curtis, daughter of James



B15 Con 275 simmers at Mount Molloy station on 30 March 1960, as roadside goods are unloaded to the attractive canopy-roof station building that dated from 1926. Rumula had a building of similar design until 1955. Photo: Lois R Talis

Booming business

The sawmill regularly appeared in the Cairns Post between 1914 and 1916, advertising as sawmillers and timber exporters. The sawmill processed many of the local timbers including hickory and kauri pine trees.

Logs were originally hauled to the sawmill by bullock or horse teams. These teams were still being used in the 1930s along with more modern practices. For example, the sawmill used three motorised lorries as well as Caterpillar crawler tractors in the bush. However, animal teams could often get back into the forest earlier than motor vehicles after the wet season.

After rain it could be difficult to cart logs to the mill, and the mill then relied on logs that had been stockpiled. Once these ran out the mill would close until local roads became passable again.

Up until around 1927 the mill employed more than one hundred workers, with an average output of four to five train loads of sawn timber per week. After this, the output of the mill declined with only two to three train loads per week, and employing only 60 workers.

A history of fire

The mill was vulnerable to fire due to the proximity of a wood-fired boiler to a great collection of timber and sawdust. The sawmill first burned in 1932. Fortunately, it was a still night, and when the fire started at midnight near the boiler, the mill workers were soon able to contain the fire.

The mill caught fire again on 31st January 1934. This time there was a breeze which fanned the fire quickly through the main building. The boiler, main steam engine, and planing machine were thought to be gutted, but closer inspection showed the boiler and steam engine only had superficial damage. All of the saw benches were destroyed.

Fortunately, the drying and stock sheds were not damaged. W. J. (Bill) Santowski, who had worked for Johnston since 1914, was the mill manager at the time.

A third fire occurred at the sawmill on the night of 12 September 1938. This time it was confined to the planing building. Johnston used the planing facilities at his Stratford sawmill to keep up with orders while the Mount Molloy sawmill was repaired. The sawing section of the mill was unaffected, and the planing section was working again by mid-October.



Photo: Sawmill with building still standing. Courtesy of family of Maureen Clayton

Passing on

The Mount Molloy township was saddened by the news of J. M. Johnston's death in May 1943. Many employees made the trip to Cairns to attend his funeral and pay respects. Bunning Bros purchased Johnston's mills at Stratford and Mount Molloy in the late 1940s or early 1950s.

In 1953 the RSL hall was built in Mount Molloy, dedicated to the memory of soldiers killed in the war. Darby Edwards donated the timber from his land, and Jack Crothers carted it to town.

Bunning Bros allowed the mill to be used on Saturdays with the workers donating their time to cut the timber for the hall. Bunning Bros sold the mills to Rankine Bros. The Rankines were sawmillers who had established works at Peeramoon, on the Atherton Tablelands, in the early 1960s.

Rankine Bros were focussed on recouping their investment.

Clear-felling and over-harvesting were standard practices at the time. Sawmillers ignored the advice from foresters who sought to establish a more sustainable tropical hardwood practice.

Inevitably the tide of public opinion swung toward conservation. The whole timber industry was shut down when the Wet Tropics were listed as a World Heritage area in 1988. Rankine Bros had closed their electric mill just ahead of the whistle, in 1986.

In 2011 a group of prominent locals led by Joan Crothers was successful in gaining protection for the remaining relics of the sawmill through listing on the Queensland Historical Register. The Boiler Block Committee was formed in 2020 to conserve the site and dedicate it to village-scale self-sufficiency. The block was acquired from Rankine Bros with assistance from George Chapman.

Looking forward

The pioneers thought there would never be an end to the timber, but by the 1980's it was clear that the industry would have to change radically. It did not change, so it crashed.

Perhaps a similar situation faces our world today as we look into a troubled future where radical action certainly appears to be called for.

It is here that we introduce the fig tree growing out of the chimney. The fig is the "Queen of the Rainforest", a species as old as the dinosaurs and remarkable for its ability to nourish, enliven, and support the living abundance of rainforest country. The Indigenous people of this area knew its secrets and had the patience to listen and learn from its wisdom.

The sawmill was set up to harvest money from the living forests. Now, as surely as the sawmill sliced up the trees, the patient fig would destroy the sawmill. Is reconciliation possible between "all money" or "all fig"?

Perhaps, with humility and curiosity, we might find a more abundant conversation arising between these extremes?

So, every year, we trim the fig, but we don't try to kill it. This produces a creative tension, a living poetry, that could help guide us in the uncertain future ahead.

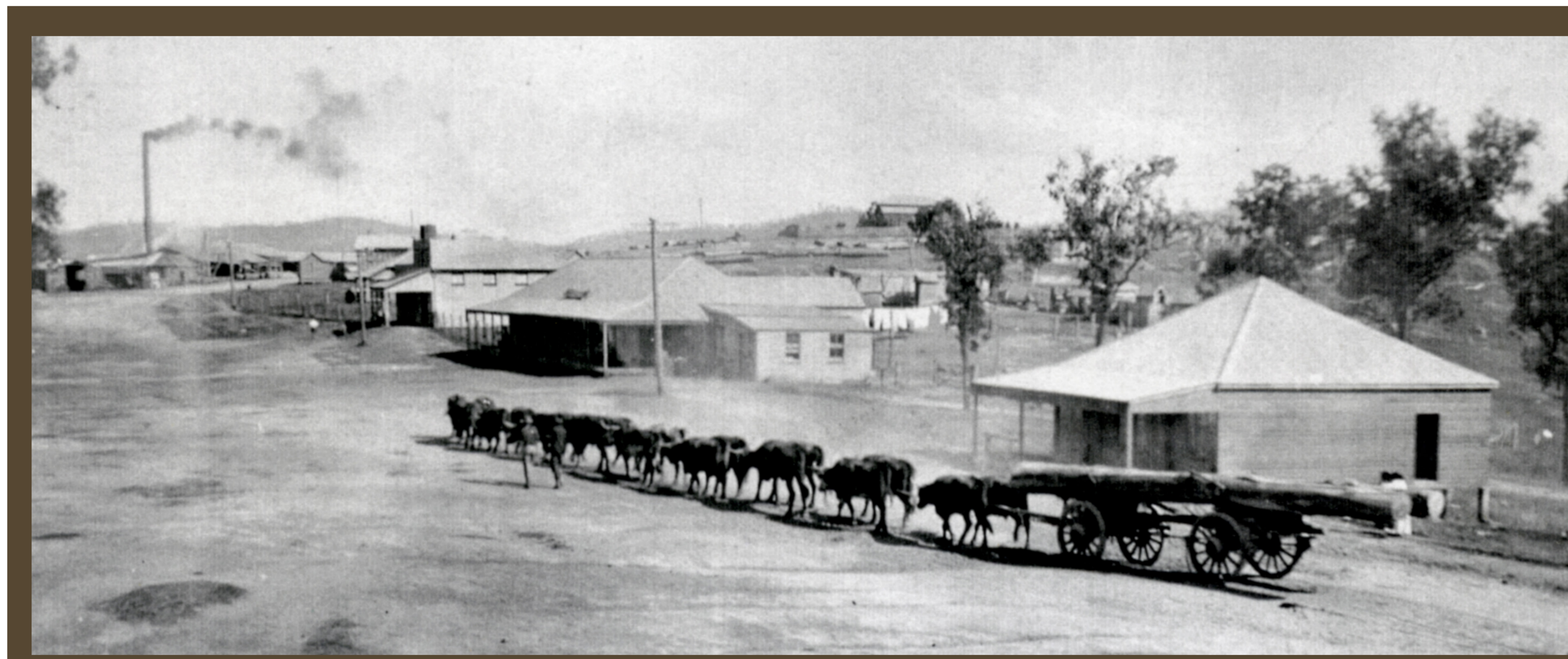


Photo: Bullock team pulling toward the sawmill. Cairns Historical Society, P05163

How big is a "superfoot"? 144 cubic inches.

The bullock team above, pictured about 1920, is hauling two logs of about 400mm diameter and about 6m in length, yielding roughly 300 superfeet each. The Molloy Mining Co was entitled to log 10,000,000 superfeet, or about 30,000 logs of this size every year.

The last flame

Rankine Bros owned the sawmill when it was destroyed by fire for the last time in late 1963. The fire destroyed all the saw benches and burned the boiler housing down. Only the planing shed was saved.

The railway was closed on 30 April 1964. Around 1968 Rankine Bros purchased the Cooktown sawmill and shifted it to Mount Molloy. This was an all-electric mill capable of significant throughput.